APPENDIX E.7
INSPECTION REPORTS

APPENDIX E.7.1
AANDC INSPECTION REPORTS AND BAFFINLAND RESPONSE

Inspection Report

License #: **2BB-MRY1114**

Inspector: **A. Keim**

CIDMS # **686367**

Client	Baffinland Iron Mines		
Mailing Address	James Millard, M.Sc., P.Geo. Senior Environmental Superintendent Baffinland Iron Mines Corporation Suite 1016, 120 Adelaide Street West Toronto, ON M5H 1T1		
Inspection site location	Mary River Project – Mary River Camp/ Milne Inlet Camp		
Contact name	Jim Mallard	Title	Senior Environmental Superintendent
Last inspection date	July 14, 2007	August 8th, 2008	July 14, 2009
	July 11, 2011	March 20, 2012	August 1&2 , 2012
Inspection start date	May 4&5, 2013		
Region	Qikiqtani		

AANDC Nunavut Regional Office
P.O. Box 2200
Iqaluit, Nunavut X0A 0H0

Submitted by E-Mail
Our File: 2BB-MRY1114
Your File:_____
CIDM # 686367

May 28, 2013

James Millard, M.Sc., P.Geo.
Senior Environmental Superintendent
Baffinland Iron Mines Corporation
Suite 1016, 120 Adelaide Street West
Toronto, ON M5H 1T1

RE: Water Licence Inspection Report – Mary River Project – Mary River Camp and Milne Inlet Camp May 4&5 2013.

The following inspection report was generated on a compliance inspection carried out on the Mary River camp and facilities located at Latitude 71 18'30" N and Longitude 79 23'30" W and the Milne Inlet Camp and facilities located at Latitude 71 52 56.0 N and Longitude 80 54 23.0 W in the Qikiqtani Region of the Nunavut Territory.

The inspection was conducted to determine compliance with the terms and conditions of the Water License (2BB-MRY1114) issued to Baffinland Iron Mines Corp. by the Nunavut Water Board (NWB). The current License was renewed on April 5 2011 and is set to expire on April 5 2014.

The report references the applicable parts of the Water License (2BB-MRY1114) and the findings observed under each of those Parts. During the writing of this report a compliance review was undertaken of the documents, plans and manuals filed by the Licensee and located on the Nunavut Water Board's FTP site.

The Inspector would like to also thank Mr. Allen Knight, Environmental Superintendent and Mr. Jeff Bush, Project Specialist both for taking the time to assist and accompany Inspectors during the inspection.

At the time of the Inspection a water license had been approved for the project which included the Mary River Camp. The License as issued, is an amended and renewed multi-year license reflecting an application from the licensee to continue their operations and expansion from exploration through a Bulk sample and on to Mine development. A Class A license application process is currently underway and while not yet issued the Proponent has also applied for a Camp / pre development license to allow for continued construction on site to facilitate the development of a mine operation. This splitting of the authorizations by the Nunavut water Board allows for a pre-development phase of operations and construction on site.

The Inspection was conducted during the First week in May of 2013. Activities on site were centered on getting the camps opened up for the 2013 season with the expectation that pending the issuance of the further Class B and Class A Licenses by the Nunavut Water Board the proponent expects to conduct large scale site development activities at both locations. Activities on site at both locations included;

- Snow Clearing
- Opening the Milne Inlet Tote Road for transit between the two camps
- General Maintenance

- Activation/ Operation of Heavy equipment to be used during the summer months
- Ramp up of Camp and site activity at the Mary River Camp site to facilitate increased staff presence on site.

A review of the Nunavut Water Board FTP site found that the 2012 Annual report had been filed in accordance with the issued license. Included in the list of submissions with this report were as follows;

- A chronological record of submissions to the Inspector and the Nunavut Water Board.
- An up-dated Abandonment and Reclamation plan (Appendix F)
- An Up-dated and renamed Spill Contingency plan now called the Environmental Response and Spill Contingency Plan (Appendix F2)
- A Surface Water and Aquatic Ecosystem management Plan (Appendix F3)
- A Fresh Water Supply, Sewage and Waste Water Management Plan (Appendix F4)
- A Comprehensive Environmental Monitoring Plan (Appendix F5)

(NB: It was noted during the review that the Revised Spill Contingency Plan (Environmental Response and Spill Contingency Plan) was not available for review on the FTP site but was to be included by the proponent in the 2012 Annual Report. A review of the report found Appendix F was submitted blank however a revised A&R plan was found located in the A&R file on the FTP site.

On site

During the period of Inspection a great deal of snow remained on the ground and the Camps were only just transitioning from the care and maintenance to an operational phase of activity. As such the Inspector was not able to complete inspections on the following areas;

- The length of the Milne Inlet Tote Road and the associated crossings (except crossing at Km 97)
- The site of the new and proposed Land Farming facility at Milne Inlet
- The landfill facility at Mary River camp
- The deposit and location of the salt mixing stations and drilling activities at the deposit
- Any quarries

Mary River Camp (Mine site)

The following were noted during the period of Inspection;

- Water Treatment systems in the Mary River camp were found to be running in tandem and not as individual systems thus there is no redundancy in case of a failure. This should be addressed. All water treatment systems and records, including usage, were found on site and up –to date. It was suggested by the inspector that water usage and waste disposal records be migrated to one standard of volumetric measure to allow ease of use and comparison during the period of inspection.
- Some of the exterior signage is to be replaced or reinstalled so to provide clarity to staff and visitors and to identify the locations of waste disposal and sorting for inspection.
- Spill Kits are to be kept readily accessible at all times at fuel transfer areas.
- Fuel transfer lines are to be monitored on a daily basis to prevent leaks especially during periods of warming weather and snow clearing activities. These records are to be maintained and made available to the inspector during the period of inspection.
- Waste Water treatment ponds are to have installed a Truck stop to prevent trucks from backing up too close to the lined edge of the facility. A deposit ramp or chute that can be used during the

discharge will prevent wear on the liner and stop erosion along the sidewalls of the berm is also required during periods when trucks are used to off load effluent into the lagoon.
- Records of hazardous wastes transferred off site were available for review. An inventory of hazardous materials on site and those ready for shipment off site should also be readily available for review during period of Inspection and at all times.

Milne Inlet Camp (Port)

- A skeleton crew of two men were on station and moving snow (opening camp) during the period of Inspection.
- The site was mainly inactive other than that activity.
- Hazardous wastes were noted to be in lined containment and packaged for shipment
- The 5 million liter tank constructed in 2012 was found approx one quarter full. It is unclear how full is transferred from the tank as it was understood during the inspection that the transfer and pumping stations had not been commissioned at the time of the inspection.
- Spill kits were noted at the transfer area and are to be kept accessible at all times.
- The bladder farm was found to have 6 bladders of fuel with a number of other bladders containing contact water or a mixture of fuel and water awaiting treatment. A great deal of snow was found in the containment area at the time of the inspection.
- Water for use at the camp was brought over from Mary River camp so no usage records were required.
- It was identified that because of the reduced levels of activity the incinerator was used on alternating weeks and that wastes were stored in the sea-can containing the Incinerator until such time as a sufficient quantity of waste has been stockpiled for disposal.

Non-Compliance: Issues identified during the inspection and/or review of relevant material

Issues with a known or anticipated human health impacts;
- No significant findings.

Issues where there is a known or anticipated environmental impairment;
- Monitoring of fuel storage and transfer areas should be completed on a daily basis.

Issues where there is a known or suspected violation of a requirement of the Water License;
- None.

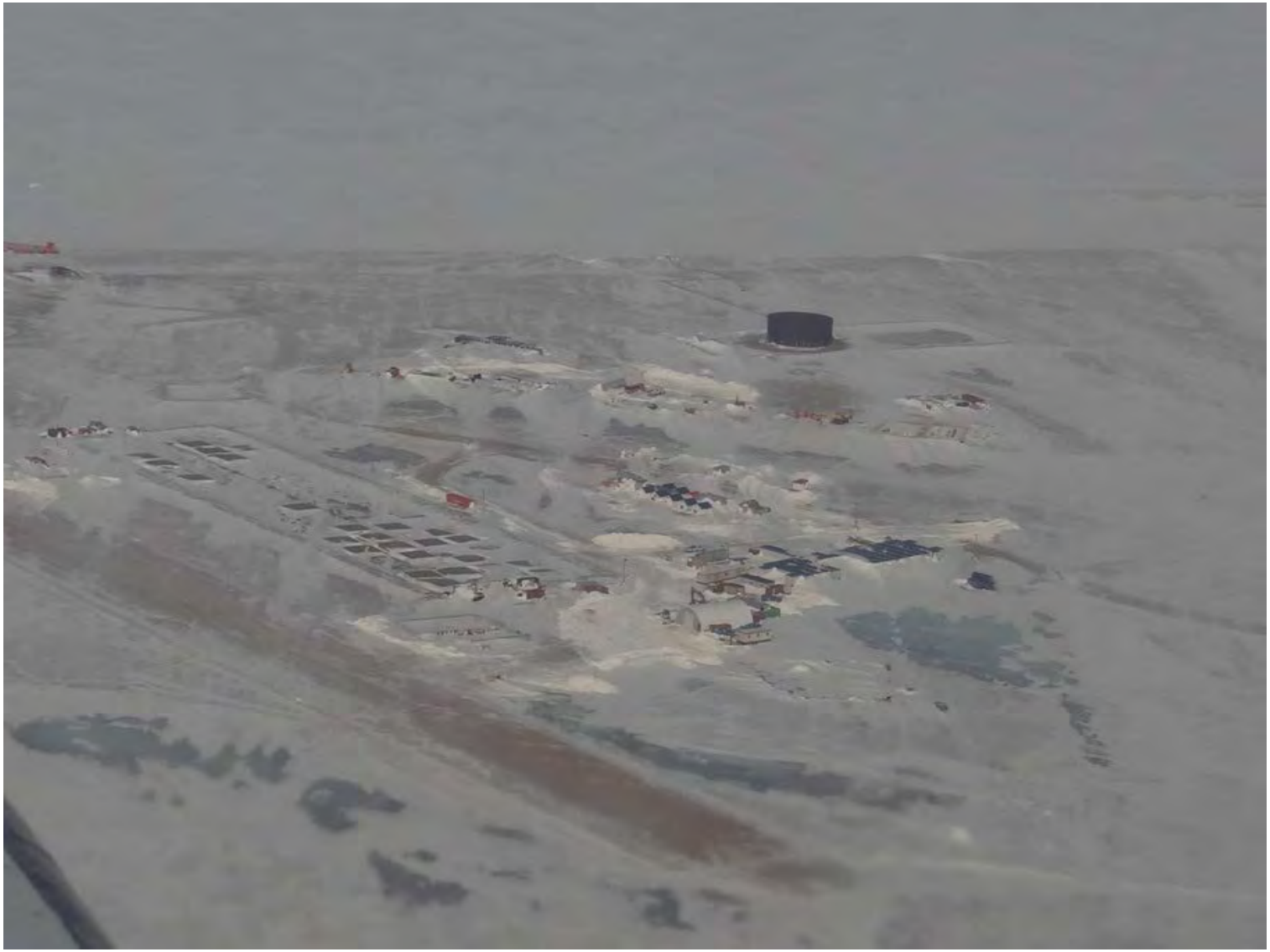
Baffinland Iron Mines Corp was found to be working diligently on clearing snow and ramping up activities for the 2013 field season.

A. Keim	**Original signed – Sent by E-Mail**
Inspector's Name	**Inspector's Signature**

Cc:
Erik Allain - Manager Field Operations Section- AANDC - NRO
Phyllis Beaulieu – Manager licensing – Nunavut Water Board

IQALUIT#686367 - v1

May 2013 Water License Inspection 2BB-MRY1114



Milne Inlet May 4th, 2013

Milne Inlet Waste Water Polishing Pond – Truck Drop

Single new 5M liter tank containing fuel at time of inspection- Milne Inlet

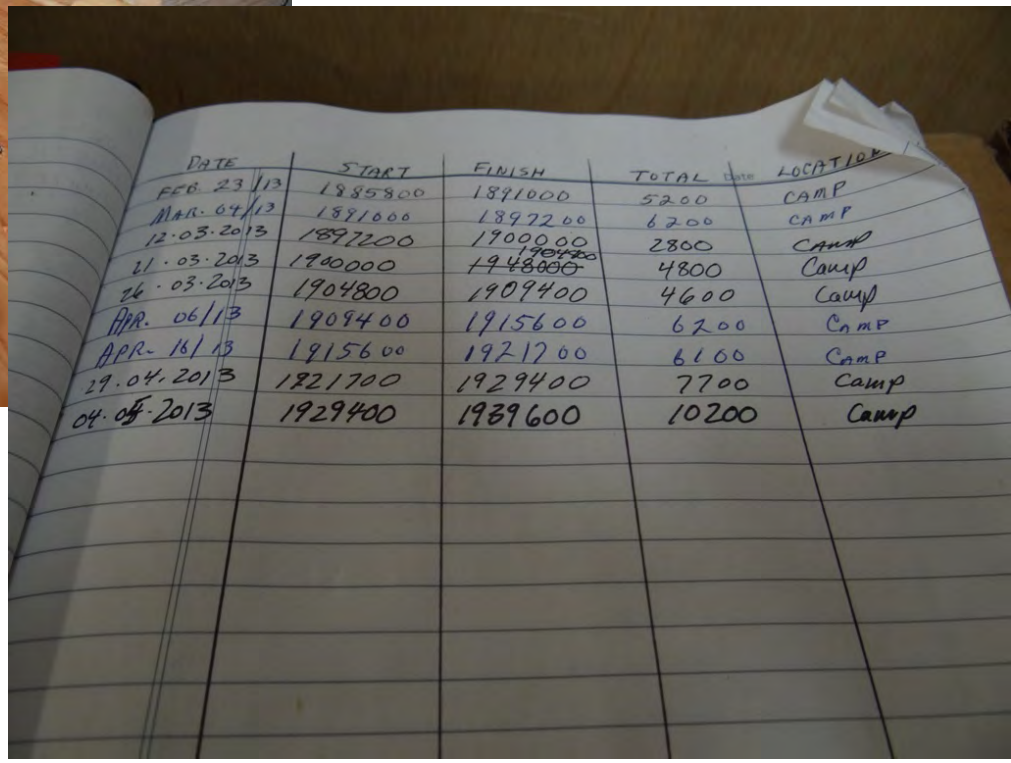
Fuel Pump Station (not commissioned) locked out
Milne Inlet

Haz-materials storage area - Milne Inlet

Milne Inlet Bladder farm

Milne Inlet site

Mary River –May 2013

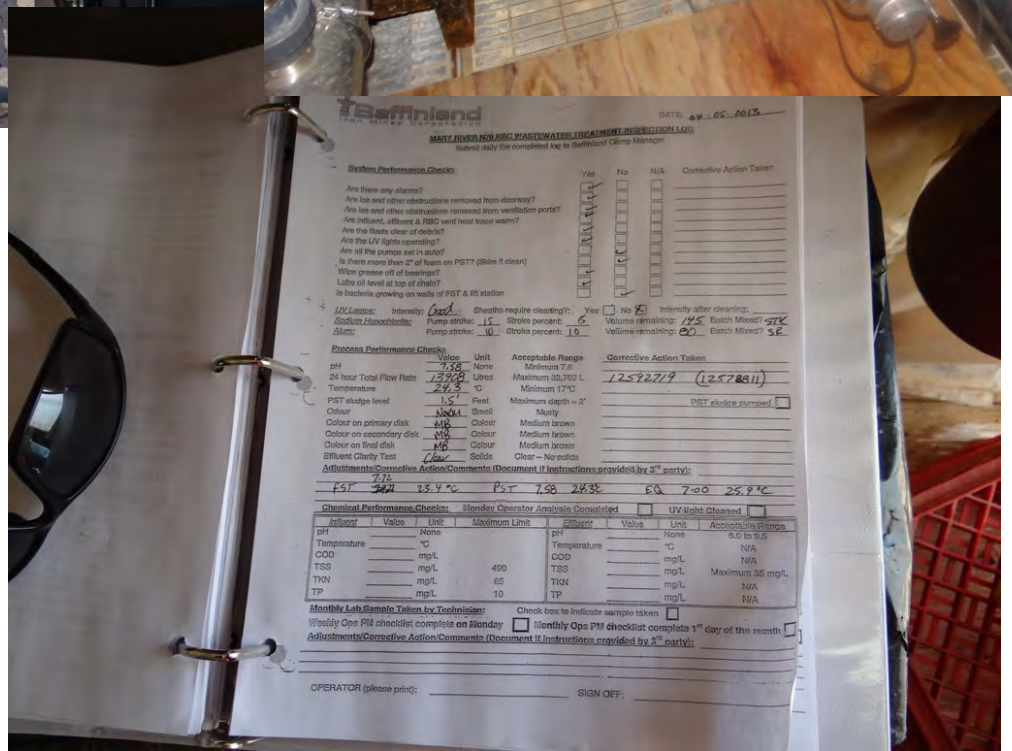


DATE	START	FINISH	TOTAL	LOCATION
FEB. 23/13	1885800	1891000	5200	CAMP
MAR. 04/13	1891000	1897200	6200	CAMP
12.03.2013	1897200	1900000	2800	CAMP
21.03.2013	1900000	~~1948000~~ 1904800	4800	Camp
26.03.2013	1904800	1909400	4600	Camp
APR. 06/13	1909400	1915600	6200	Camp
APR. 18/13	1915600	1921700	6100	Camp
29.04.2013	1921700	1929400	7700	Camp
04.05.2013	1929400	1939600	10200	Camp

Raw Water Treatment System and usage records – Mary River camp

Mary River Solid Waste Management Area

Mechanic Garage with Secondary Containment at storage locations - Mary River Camp



Tasmanland

DATE: 04 - 05 - 2015

MARY RIVER NTS RBC WASTEWATER TREATMENT INSPECTION LOG

Submit daily the completed log to Tasmanland Camp Manager

System Performance Checks:

	Yes	No	N/A	Corrective Action Taken
Are there any alarms?				
Are ice and other obstructions removed from doorway?				
Are ice and other obstructions removed from ventilation ports?				
Are influent, effluent & RBC vent heat trace warm?				
Are the floats clear of debris?				
Are the UV lights operating?				
Are all the pumps set in auto?				
Is there more than 2" of foam on PST? (Skim if clean)				
Wipe grease off of bearings?				
Lube oil level at top of chain?				
Is bacteria growing on walls of PST & lift station				

UV Lamps: Intensity: Good Sheaths require cleaning?: Yes ☐ No ☒ Intensity after cleaning:

Sodium Hypochlorite: Pump stroke: 15 Stroke percent: 15 Volume remaining: 145 Batch Mixed? 27K

Alum: Pump stroke: 10 Stroke percent: 10 Volume remaining: 80 Batch Mixed? 5E

Process Performance Checks:

	Value	Unit	Acceptable Range	Corrective Action Taken
pH	7.58	None	Minimum 7.6	
24 hour Total Flow Rate	13908	Litres	Maximum 33,750 L	12592719 (12578811)
Temperature	24.3	°C	Minimum 17°C	
PST sludge level	1.5'	Feet	Maximum depth = 2'	PST sludge pumped ☐
Odour	None	Smell	Musty	
Colour on primary disk	MB	Colour	Medium brown	
Colour on secondary disk	MB	Colour	Medium brown	
Colour on final disk	MB	Colour	Medium brown	
Effluent Clarity Test	Clear	Solids	Clear – No solids	

Adjustments/Corrective Action/Comments (Document if instructions provided by 3rd party):

7.72
PST ~~7.72~~ 23.4 °C PST 7.58 24.3C EQ 7:00 25.9 °C

Chemical Performance Checks: Monday Operator Analysis Completed ☐ UV light Cleaned ☐

Influent	Value	Unit	Maximum Limit
pH		None	
Temperature		°C	
COD		mg/L	
TSS		mg/L	490
TKN		mg/L	65
TP		mg/L	10

Effluent	Value	Unit	Acceptable Range
pH		None	6.0 to 9.5
Temperature		°C	N/A
COD		mg/L	N/A
TSS		mg/L	Maximum 35 mg/L
TKN		mg/L	N/A
TP		mg/L	N/A

Monthly Lab Sample Taken by Technician: Check box to indicate sample taken ☐

Weekly Ops PM checklist complete on Monday ☐ Monthly Ops PM checklist complete 1st day of the month ☐

Adjustments/Corrective Action/Comments (Document if instructions provided by 3rd party):

OPERATOR (please print): _____ SIGN OFF: _____

Mary River STP with UV and completed logs

Mary River Haz Mat Lockers with Up-to date labeling and notifications

Kinked and damaged hose at Mary River Fuel Storage

Mary River Waste Water Polishing Pond #3 – Truck deposit location

Inspection Report

License #: **2BB-MRY1114**

Inspector: **A. Keim**

CIDMS # **739752**

Client	Baffinland Iron Mines		
Mailing Address	James Millard, M.Sc., P.Geo. Senior Environmental Superintendent Baffinland Iron Mines Corporation Suite 1016, 120 Adelaide Street West Toronto, ON M5H 1T1		
Inspection site location	Mary River Project – Mary River Camp/ Milne Inlet Camp/ Steensby Camp		
Contact name	Jim Millard	Title	Senior Environmental Superintendent
Last inspection date	July 14, 2007	August 8th, 2008	July 14, 2009
	July 11, 2011	March 20, 2012	August 1&2 , 2012
	May 4&5, 2013		
Inspection start date	August 15-17, 2013		
Region	Qikiqtani		

AANDC Nunavut Regional Office
P.O. Box 2200
Iqaluit, Nunavut X0A 0H0

Submitted by E-Mail
Our File: 2AM-MRY1325
2BB-MRY1114
8BC-MRY1314
Your File:_____
CIDM # 739752

September 11, 2013

James Millard, M.Sc., P.Geo.
Senior Environmental Superintendent
Baffinland Iron Mines Corporation
Suite 1016, 120 Adelaide Street West
Toronto, ON M5H 1T1

RE: Water Licence Inspection Report – Mary River Project – Mary River Camp, Milne Inlet Camp and Steensby Inlet Camp August 15 though 17 2013.

The following inspection report is generated on the findings of a compliance inspection carried out on the Mary River camp and facilities generally located at Latitude 71 18'30" N and Longitude 79 23'30" W, the Milne Inlet Camp and facilities generally located at Latitude 71 52 56.0 N and Longitude 80 54 23.0 W and the Steensby Inlet Camp and facilities generally located at Latitude 70.29280 N and Longitude 78.48245 W in the Qikiqtani Region of the Nunavut Territory.

The inspection was conducted to determine compliance with the terms and conditions of the Water Licenses for mining and milling operations including (2BB-MRY1114) and (2AM-MRY1325) issued to Baffinland Iron Mines Corp. by the Nunavut Water Board (NWB). Additionally, special consideration was given to the associated construction activities that were on-going at Milne Inlet Camp under the authority of newly issued Water license (8BC-MRY1314).

The report references the applicable parts of the three Water Licenses as applies during the Inspection. During the writing of this report a compliance review was undertaken of the documents, plans and manuals filed by the Licensee and located on the Nunavut Water Board's FTP site.

The Inspector would like to also thank Mr. Trever Myers, Environmental Supervisor and Mr. Jim Mallard-Environmental Manager both for taking the time to assist and accompany Inspectors during the inspection.

With respect to the current authorizations;

- 2AM-MRY1325 was approved by the Minister of Aboriginal Affairs and Northern Development Canada on June 10th, 2013
- 2BB-MRY1114 was renewed for an additional 4 years by the Nunavut Water Board on April 5 2011
- 2BE-MRY- Application withdrawn from consideration of the board by Baffinland on March 30, 2012
- 8BC-MRY1314 – was approved by the Nunavut water Board on May 24, 2013.

The Inspection was conducted between August 17th and 19th 2013. Activities associated with the project were centered on the unloading and transportation of freight between Milne Inlet and Mary River camp and the on-going construction activities occurring at Milne Inlet Camp.

Activities noted at Mary River Camp were as follows;

- Quarry construction/ Opening (new location)
- General maintenance on the Milne Inlet Tote Road for transit between the two camps
- General Maintenance on Mary River camp
- Ramp up of Camp and site activity at the Mary River Camp site to facilitate increased staff presence on site.
- New pad construction for new camp
- Hazwaste consolidation for shipment off site

At the time of the Inspection no mining or exploration activities were on-going. Work was focused on the development of the site.

Issues and concerns from the last inspection were addressed as follows;

- Water treatment system; the unit is designed to be run as two units running concurrent or parallel to each other. Demand necessitates the operation of the secondary or slave unit. The unit is not designed as a redundant system.
- Minor spills at fuel bladder for the gen system have been cleaned up and the hose replaced
- Spill kits are to be accessible at all times
- Exterior signage (Waste Management Area) was replaced.

No major instances of Non-compliance were noted at the Mary River Camp (Mine site) Facilities. The Licensee is reminded that the policing and management of the solid waste facility is to be maintained as a high priority. During the Inspection a battery and other wildlife attractants were identified within the facility.

As noted previously in the May Inspection report, the 2012 Annual report had been filed in accordance with the issued license. Included in the list of submissions with this report were as follows;

- A chronological record of submissions to the Inspector and the Nunavut Water Board.
- An up-dated Abandonment and Reclamation plan (Appendix F)
- An Up-dated and renamed Spill Contingency plan now called the Environmental Response and Spill Contingency Plan (Appendix F2)
- A Surface Water and Aquatic Ecosystem management Plan (Appendix F3)
- A Fresh Water Supply, Sewage and Waste Water Management Plan (Appendix F4)
- A Comprehensive Environmental Monitoring Plan (Appendix F5)

.

Activities and issues noted at Steensby Camp were as follows:

- Geotechnical investigation of surrounding area including ground geophysics, Mag and gravity surveys were on-going
- 20 Geologists were on site in addition to camp and support staff (35 total)
- The source for water for the camp remains 3 mile lake. Water is pumped from the lake to tanks on site where it is treated (UV and filters) then used for camp activities.
- Camp operations included the disposal of waste in a duel fired incinerator.

- Construction of a new greywater sump had been undertaken in 2012. The sump was found to have overtopped at some point in the past. Basic maintenance work was required to ensure the containment of greywater.
- No shipments of hazardous waste from the steensby camp had been undertaken at the time of the inspection.
- Waste stream management on site requires a more concerted effort toward enforcing the segregation of aerosols and other hazardous wastes from entering the incineration stream.
- 150 barrels of contact water from within the containment area require proper management and treatment on site.
- The camp was found in good condition and being well maintained. Minor issues such as the wrapping of fuel connectors with absorbent pads and the policing of fuel lines to remain within the confines of the secondary containment would prevent the majority of minor spills.
- Human waste is collected in 45 gallon drums. It is expected this will be transported off site as hazardous materials in the coming year.

No major issues of noncompliance were identified during the period of Inspection. Housekeeping and waste stream management (education) should be the focus of a concerted effort by camp management to prevent accidents and hazardous wastes from being diverted from proper disposal.

Following the inspection at Steensby inlet the Inspectors returned to Mary River. Upon return to camp the Inspector and Trevor Myers were able to grab a vehicle and travel to Milne Inlet Tote Road to Km 69.

The road was found to need work in a number of locations but was found to be in sufficient repair to facilitate the transport of materials from Milne inlet to Mary River. The roadway however will require major work to be used as a haulage road from the mine site to the port at Milne inlet. This will include the widening of bridge crossings, a resurfacing and compacting of the roadway and the installation of a number of larger culverts. This work is expected to begin in 2013.

Activities noted at Milne Inlet (Port)

- Construction and site preparation activities were found to be on-going throughout the site during the period of the Inspection.
- Two large pads has been constructed to facilitate the construction of both a temporary construction camp as well as that of more permanent infrastructure including;
    - an additional 5 million litre fuel tank
    - construction of two 10 million litre tanks,
    - pad construction for the installation of three prefabricated 10 thousand litre tanks for the storage of jet fuel
    - a waste water treatment facility,
    - offices and other associated facilities'
    - a construction garage and maintenance area
    - construction of an additional waste water polishing pond (lagoon)
    - a larger more permanent camp with arctic corridor

      .
- The opening of the Q1 Quarry site had begun and crushing of materials for construction was on-going during the inspection. No blasting activities were undertaken during the period of inspection.
- Two large lay down areas for the storage of materials off loaded from the ships had been completed at the time of the inspection. It was noted that ore, possibly left over from the bulk

sample and stored on site at Milne inlet had been used in the construction of one of the pads. This was not included in any plans reviewed by the inspector.
- The incineration area (newly relocated) found on site was found to contain a large backlog of combustible waste and other waste. It appears that the ship had off loaded this material at the camp for incineration and disposal. The one unit was found to be overwhelmed and additional storage for the waste materials was required to prevent it from being wind blown and acting as a wildlife attractant.
- The bladder farm was being decommissioned during the period of inspection. Piping was being removed and only four bladders containing fuel remained within the facility. Plans to land farm the facility were being worked out with the expectation that the work would begin. It is unclear if this work has begun yet or not.
- Hazardous wastes were noted to still be on site and awaiting shipment.
- On-going monitoring and water quality monitoring was being conducted at sites off the pad and down gradient on a regular basis. These results are to be included in the annual report.

Noted during the inspection were the following issues;

- The current incinerator is not sufficient to handle all produced wastes. Extra storage (sea-cans) was to be installed adjacent to the incinerator area to secure kitchen and other paper wastes. Policing of the waste management stream is also to be a high priority during this period of transition and construction.
- The Water treatment system at the new temporary camp was not found to be operating as designed and the UV system was off line. This was addressed with the staff on site and parts were found to be on-order and expected in the near term.
- Dust suppression measures at the crushing unit were not in operation. This was to be addressed and monitoring was on-going. The results of which are to be included in the annual report.
- The use of crushed ore to construct the pad within 30 meters of water was of surprise to the inspector. It is unclear what effect the oxidation of the ore will have on the beachfront. This is to be monitored by the licensee.

Non-Compliance: Issues identified during the inspection and/or review of relevant material

Issues with a known or anticipated human health impacts;
- No significant findings.

Issues where there is a known or anticipated environmental impairment;
- Monitoring of fuel storage and transfer areas is to be be completed on a daily basis.
- Dust suppression efforts are to be maintained past the period of construction and into development. Monitoring results are to be provided to both the Nunavut Water Board and the Inspector on a regular basis.
- Water treatment systems are to be maintained in working order at all times.
- Solid Waste Management during the period of construction is to be maintained and policing of sites for final disposal such as the Land fill and Incineration units is to be done on a regular basis to prevent reduce the occurrences of hazardous and or dangerous materials being deposited there. Educational materials should be posted.

Issues where there is a known or suspected violation of a requirement of the Water License;
- None.

A. Keim
Inspector's Name

Original signed – Sent by E-Mail
Inspector's Signature

Cc:
Erik Allain - Manager Field Operations Section- AANDC - NRO
Phyllis Beaulieu – Manager licensing – Nunavut Water Board

Technical Memorandum

To: Memo to File

From: Jim Millard

cc:

Date: March 25, 2014

Re: Response to AANDC Inspections 2013

May 4 to 5, 2013 Inspection

There were no non-compliances or major issues associated with this inspection. Minor inspection items and Baffinland responses as follows:

AANDC Inspection Item No. 1: Potable water treatment systems at Mary River camp were found to be running in tandem and not as individual systems thus the Inspector suggested that there was no redundancy in case of failure.

> Baffinland Response: The original supplier and installer of the potable water treatment system (Weatherhaven) were contacted and photographs of the current system were provided. Weatherhaven confirmed that the potable water treatment system was installed and operating properly and that there were no problems with the redundancy of the system. This information was subsequently personally communicated to the Inspector during his August inspection of the site.

AANDC Inspection Item No. 2: All water treatment systems and records, including usage, were found onsite and up-to date. However, it was suggested by the inspector that water usage and waste disposal records be migrated to one standard of volumetric measure to allow ease of use and comparison during the period of inspection.

> Baffinland Response: The totalizer for RBC influent was switched from litres to US gallons which is the common field unit used for most of the equipment and instrumentation.

AANDC Inspection Item No. 3: It was noted that some of the exterior signage to identify the waste disposal and transfer areas were not clear due to winter wear and tear.

> Baffinland Response: Translated signs (Inuktitut) at key locations and waste sorting transfer areas were subsequently reposted within two weeks of the inspection. Photos were provided to the Inspector.

AANDC Inspection Item No. 4: Spill Kits are to be kept readily accessible at all times at fuel transfer areas. Drifting snow at some locations obstructed access somewhat.

Baffinland Response: Efforts are made after heavy winter weather to clear snow as quickly as possible, but sometimes there is a delay in clearing some locations. Efforts and resources are prioritized to ensure spill supplies are readily accessible at all times.

AANDC Inspection Item No. 5: It was noted that the waste water treatment ponds (PWSPs) did not have a truck stop installed to prevent trucks from backing up too close to the lined edge of the facility. It was also noted that the discharge from the truck to the facility did not have an energy dissipater to prevent wear on the liner.

Baffinland Response: A bumper constructed of lumber and a liner (diffuser) was installed on May 7, 2013.

AANDC Inspection Item No. 6: It was noted that records of hazardous wastes transferred off site were available for review. An inventory of hazardous materials on site and those ready for shipment should also be readily available for review during period of Inspection and at all times.

Baffinland Response: A comprehensive hazardous waste inventory was undertaken at the Milne Inlet camp (July 19, 2013), and the Mary River camp (July 22, 2013). A backhaul shipping hazardous waste inventory was also performed on July 28, 2013 by Sanexen (Qikiqtaaluk Environmental). These items were available for review during the August site inspection.

August 15 to 17, 2013 Inspection

Mary River Mine Site: There were no major instances of non-compliance noted at the Mary River Mine Site facilities. One minor item was noted:

AANDC Inspection Item No. 7: During the inspection of the landfill a battery and some minor food waste were observed. The inspector provided a reminder that the policing and management of the solid waste facility is to be maintained as a high priority.

Baffinland Response: Agreed and implemented on an ongoing basis. Measures are in place to minimize these instances, e.g. Waste Sorting Guidelines, Waste Management Plan environmental awareness, tool box meetings, and training / orientation sessions.

Steensby Inlet Exploration Camp: No major issues of noncompliance were identified during the period of Inspection. One item was noted:

AANDC Inspection Item No. 8: Housekeeping and waste stream management (education) should be the focus of a concerted effort by camp management to prevent accidents and hazardous waste from being diverted from proper disposal.

Baffinland Response: Agreed and implemented on an ongoing basis.

Milne Port Site: There were no issues with known or anticipated health impacts. There were no issues where there were known or suspected violations of Water Licence requirements. There were several items brought forward for Baffinland's consideration:

AANDC Inspection Item No. 9: The Water treatment system at the new temporary camp (Matrix) was not operating as designed and the UV system was offline.

Baffinland Response: This was addressed with the staff on site and parts were found to be on order and expected in the near term. The lack of UV capacity was addressed by

increased chlorination during the period. The new parts arrived shortly thereafter and the UV system was fully operational on Sept 8, 2013.

AANDC Inspection Item No. 10: The current incinerator was not sufficient to handle all produced wastes. Extra storage (sea-cans) was to be installed adjacent to the incinerator area to secure kitchen and other paper wastes. Policing of the waste management stream is also high priority during this period of transition and construction.

Baffinland Response: This was addressed by providing extra storage (sea-cans) and transporting part of the backlogged wastes to the Mine Site camp for incineration. The new incinerators are now on line at both the Milne Port and Mary River Mine Site and there are currently no capacity issues. Waste Sorting Guidelines are communicated and implemented across the site and waste management practices are reinforced through regular tool box meetings/training sessions and during site orientation.

AANDC Inspection Item No. 11: The use of crushed ore to construct the pad within 30 meters of water was of surprise to the Inspector. It is unclear what effect the oxidation of the ore will have on the beachfront. This is to be monitored by the licensee.

Baffinland Response: Crushed ore has been stored at this and other locations since 2008. Sampling of drainage downstream of crushed ore has shown no impact to waters and there has been no visible evidence of the onset of oxidation for this material. Monitoring results for waters downstream of crushed ore stockpiles are regularly reported.

AANDC Inspection Item No. 12: Dust suppression measures at the crushing unit were not in operation. This was to be addressed and monitoring was on-going. The results of which are to be included in the annual report.

Baffinland Response: Dust is monitored as a condition of the NIRB Project Certificate No. 005 and the results are presented annually in the NIRB Annual Report.

AANDC Inspection Item No. 13: Solid Waste Management during the period of construction is to be maintained and policing of sites for the final disposal such as the landfill and incinerator units is to be done on a regular basis to prevent/reduce the occurrences of hazardous and or dangerous materials being deposited there. Education materials should be posted.

Baffinland Response: Agreed. Regular audits of the waste stream are performed and education during tool-box meetings is completed for all workers.

November 12 to 14, 2013 Inspection

An inspection report for the visit was not received. It was Baffinland's understanding that the purpose of the November inspection was primarily for the purpose of site orientation. A new Inspector who had not been to site previously was taking over the project file from the previous inspector who was on leave.

APPENDIX E.7.2
QIA INSPECTION REPORTS AND BAFFINLAND RESPONSE

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Qikiqtani Inuit Association

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December 17th, 2013

Erik Madsen
VP, Sustainable Development, HS&E
Baffinland Iron Mines Corporation
2275 Upper Middle Road East, Suite 300
Oakville, ON L6H 0C3

RE: 2013 ENVIRONMENTAL INSPECTION

Mr. Madsen,

The Qikiqtani Inuit Association (QIA) submits this letter to Baffinland Iron Mines Corporation (BIMC) as response to a completed Environmental Inspection. This letter satisfies Schedule E, Item 12 of Commercial Production Lease No.: Q13C301 with regards to reporting conclusions and recommendations to BIMC.

QIA notified BIMC in September 2013 of the intent to conduct an Environmental Inspection of the Mary River Project. Notification of an Environmental Inspection is a requirement of the Commercial Lease Q10C3001. Verbal confirmation of the acceptance of the proposed dates for the Environmental Inspection was received from BIMC. Flight arrangements for the assessors, using BIMC's regular scheduled aircraft to/from Iqaluit, was facilitated by BIMC.

The Environmental Inspection was undertaken Sept 20-22, 2013. QIA contracted ARKTIS Solutions Inc. to act as the landlord's environmental inspector. BIMC staff accompanied QIA's designated environmental inspectors, and provided site access, accommodations and transportation for the duration of the site inspection.

The overall findings from the Environmental Inspection were that the issues identified did not require immediate corrective action, as there was no immediate significant threat to the environment or liability to the land. However, there are environmental concerns that are required to be addressed in the near future, as discussed below.

The borrow areas along the Tote Road have been an ongoing environmental concern to QIA. While QIA acknowledges that additional development along the Tote Road is planned, it remains uncertain as to which areas will be remediated and what the extent of the remediation programs will be. It is therefore recommended that a reclamation program be undertaking by BIMC to address the current and potential liabilities associated with the borrow areas along the Tote Road. It is recommended that a framework for the reclamation program be provided to QIA by March 31, 2014.

The major borrow area located at KM 97.0 along the Tote Road (hereafter referred to as borrow pit #2) requires remedial action in the near future. The area is quite large (8.21 hectares) and appears to have extensively deteriorated permafrost throughout. There is a significant amount of pooled

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water (conservatively in excess of 100 m^3). It was found during the site inspection that borrow pit #2 has been discharging water contained within the borrow area into Camp Lake.

Preliminary findings and issues were communicated to BIMC staff during a close-out meeting with BIMC representatives Trevor Meyer (Environmental Coordinator) and Jim Millard (Environmental Supervisor) in the evening of September 21, 2013.

QIA requests that a plan be developed by BIMC to rehabilitate borrow pit #2 to decrease the environmental liability observed at this location and ensure that BIMC's Water Licence terms and conditions are satisfied. It is recommended that a plan to address the environmental liabilities from borrow pit #2 be provided to QIA by March 31, 2014. The plan shall include required actions to address the uncontrolled release of waste into Camp Lake.

QIA would like to thank BIMC for their efforts to facilitate the 2013 Environmental Inspection.

Sincerely,

{Original Signed By}

Stephen Williamson Bathory
Director, Department of Major Projects

March 28, 2013

Stephen Williamson Bathory
Director, Department of Major Projects
Qikiqtani Inuit Association
P.O. Box 1340
Iqaluit, Nunavut X0A 0H0

Re: Commercial Lease No. Q13C301 (the Lease), Response to December 2013 QIA Inspection Letter

Mr. Bathory:

Baffinland Iron Mines Corporation (Baffinland) received a letter from the Qikiqtani Inuit Association (QIA) on December 17, 2013, that detailed the findings of an Environmental Inspection conducted by QIA Inspectors on September 20-22, 2013 at the Mary River Project site. The letter (see Attachment A), outlines QIA's conclusions and recommendations in regards to the Inspection that was undertaken.

The letter stated in general that, "The overall findings from the Environmental Inspection were that the issues identified did not require immediate corrective action, as there was no immediate significant threat to the environment or liability to the land." Baffinland has been working steadily on preventing and reducing environmental liabilities on site that have been identified in previous QIA inspection reports and we are very pleased with this finding.

However, QIA did point out a key environmental concern related to permafrost issues along the Tote Road and in particular the km 97 borrow area. Specifically two key recommendations have been put forward by QIA:

1. A reclamation program be undertaken by Baffinland to address the current and potential liabilities associated with the roadside borrow areas along the Tote Road; and,
2. A plan be developed to rehabilitate Borrow source at km 97 to decrease the environmental liability observed at this location and ensure that Baffinland's Water Licence terms and conditions are satisfied.

1. Roadside Borrow Reclamation Program

With regard to Recommendation No. 1, Baffinland plans to implement the following program that was originally proposed by EBA Engineering in their 2009 report entitled: *Borrow Site Reclamation Overview,*

Milne Inlet Access Road, Mary River Project, Baffin Island, NU[1]. The report is provided as Attachment B for reference and provides the basis of the framework plan that has been requested by QIA. The plan prioritizes the borrow areas along the Tote Road on the basis of three broad categories or groupings that reflect fundamental reclamation criteria.

- Priority A pits – where thaw-settlement initiated by pit excavation is actively affecting the road integrity and safety,
- Priority B pits – where active thaw settlement and water accumulation is ongoing in unstable terrain within an abandoned pit, and
- Priority C pits – are relatively stable but will need reclamation attention to improve site aesthetics and ensure long-term stability.

The generic recommendations for reclamation of the roadside pits include:

- Strategic placement of new embankment material on and adjacent to the road fill in those areas where on-going thaw is threatening the road as well as the surrounding terrain.
- Placement of new cover or re-grading the surfaces to cover exposed ground ice within pit bases.
- Develop new gravity drainage from those pits where pond formation is affecting permafrost and threatening to initiate erosion that could result in damage to surrounding tundra.

Some of the areas along the Tote Road, particularly the higher risk Priority A sites, located along the road embankment, have been improved or stabilized through the years based on the placement of embankment and cover material to maintain and enhance road safety. Additional cover material has and will be placed as part of the Tote Road upgrades that are currently underway. On the other hand, it is likely that some of the areas surveyed during 2009 have deteriorated and should be assigned a higher risk priority rating based on current conditions. Therefore, it is acknowledged that another technical survey of the Tote Road borrow areas (similar to the one conducted in 2009) is required during the 2014 field season to properly assess current conditions and to reassign priority status.

It should be anticipated that the reclamation effort along the Tote Road should take several years of re-grading, fill placement, monitoring, and adaptation to achieve an acceptable long-term condition. This must be done carefully to minimize the risk that further work within the pits could expose new ground ice. It is Baffinland's opinion that this time frame for road side borrow reclamation is acceptable because the existing environmental risk is currently very low.

2. Progressive Reclamation and Rehabilitation of Borrow Source at Km97

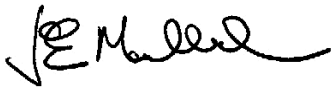
A technical memorandum entitled, "Progressive Reclamation and Rehabilitation of Borrow Source at Km97", has been prepared by Hatch Engineering to address the rehabilitation plans for the Km 97 borrow source and is provided as Attachment C to this letter. This document serves to address both Baffinland's progressive

[1] EBA Engineering Consultants Ltd., 14940 - 123 Avenue, Edmonton, AB

reclamation objectives in addition to QIA's concerns for the area. It also takes into consideration the long term reclamation requirements of QIA and others, as well as Baffinland's near term needs for additional borrow materials, and provides the methodology and proposed time frame for this undertaking. A site drainage plan is included that provides, on a conceptual level, the work that is planned in regard to re-grading and drainage.

We trust that the foregoing addresses QIA's concerns from the September 2013 Inspection. Baffinland looks forward to continuing to work positively and collaboratively with QIA and its Inspectors on these and other issues that arise from time to time. Please do not hesitate to contact the undersigned should you have any comments or concerns regarding the foregoing.

Kind regards,



Jim Millard, M.Sc., P.Geo.
Environmental Manager

cc. Erik Madsen, Michael Anderson, Steven Ranger, Oliver Curran (Baffinland)

Attachments:
A - QIA 2013 Environmental Inspection Letter to Baffinland, dated December 17, 2013.
B - Borrow Site Reclamation Overview, Milne Inlet Access Road, Mary River Project, Baffin Island, NU, report by EBA Engineering Consultants, 2009.
C - Progressive Reclamation and Rehabilitation of Borrow Source at km97, Document H349000-4138-10-220-0001, by Hatch Engineering, 2014.

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Qikiqtani Inuit Association

December 17th, 2013

Erik Madsen
VP, Sustainable Development, HS&E
Baffinland Iron Mines Corporation
2275 Upper Middle Road East, Suite 300
Oakville, ON L6H 0C3

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QIA would like to thank BIMC for their efforts to facilitate the 2013 Environmental Inspection.

Sincerely,

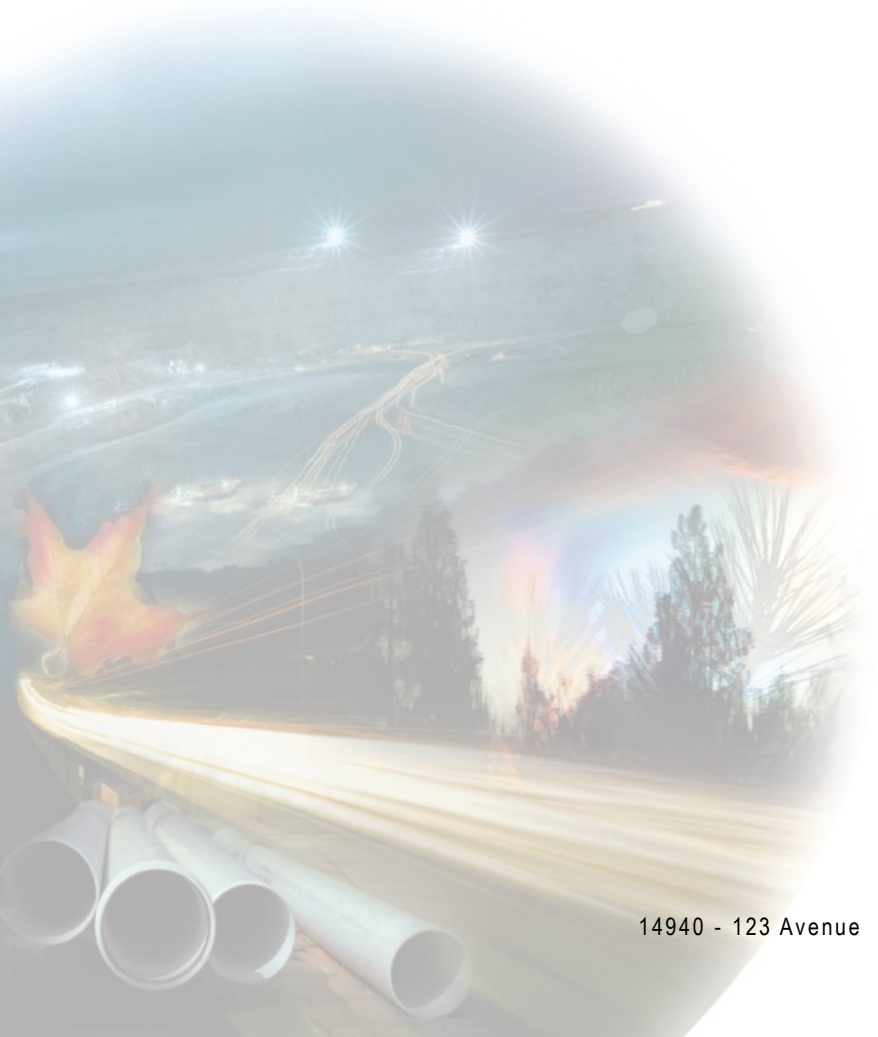
{Original Signed By}

Stephen Williamson Bathory
Director, Department of Major Projects

Baffinland Iron Mines Corporation

ISSUED FOR USE

BORROW SITE RECLAMATION OVERVIEW
MILNE INLET ACCESS ROAD, MARY RIVER PROJECT
BAFFIN ISLAND, NU



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December 2009

EBA Engineering Consultants Ltd.
p. 780.451.2121 • f. 780.454.5688
14940 - 123 Avenue • Edmonton, Alberta T5V 1B4 • CANADA

EXECUTIVE SUMMARY

This report documents a reconnaissance trip by D.W. Hayley, P.Eng., in July 2009 to examine the condition of borrow pits along the 100 km long tote road from Mary River Camp to Milne Inlet on North Baffin Island. The purpose was to develop objectives and practical guidelines for planning reclamation of the pits. Field notes supplemented with a photo library provided the basis for a summary of findings at 81 sites provided in a table in the report.

Two principal issues must guide the reclamation effort:

- Protect ground ice within the permafrost from future thaw that can destabilize both the terrain and the road embankment.
- Establish drainage in those pits that have formed ponds that are judged to be detrimental to terrain stability.

The 81 pits have been grouped into Priorities A, B, and C in the Summary Table. The Priority A pits are those where active thaw of ground ice is affecting not only the pit but also the adjacent road. These pits should be the first to receive attention as they constitute a safety hazard for continued use of the road. Priority B pits are those where active thaw and sinkhole formation is ongoing. These are not currently affecting the road but are trapping surface runoff. The Priority C pits are those where the terrain has been judged to be relatively stable. They will require some site grading and surface dressing, but the timing is not as significant.

The 81 pits are distributed into three groups as follows:

- Priority A: 8 pits (9%)
- Priority B: 25 pits (31%)
- Priority C: 48 pits (60%)

It is estimated that 10 to 15 pits were not documented during the reconnaissance. They can all be considered to fall in the Priority C grouping.

The principle recommendations for reclamation of the pits include:

- Strategic placement of new embankment material on and adjacent to the road fill in those areas where on-going thaw is threatening the road as well as the surrounding terrain.
- Placement of new cover or regarding the surfaces to cover exposed ground ice within pit bases.
- Develop new gravity drainage from those pits where pond formation is affecting permafrost and threatening to initiate erosion that could result in damage to surrounding tundra.

Planning the reclamation effort should anticipate that it may take several years of regrading, fill placement, monitoring, and adaptation to achieve an acceptable long-term condition. This must be done carefully to minimize the risk that further work within the pits could expose new ground ice.

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APPENDICES

1.0 INTRODUCTION

1.1 BACKGROUND

An access road was constructed to connect the Mary River Camp to tidewater at Milne Inlet on Baffin Island from August 2007 to October 2008. The purpose of the road was to provide a route for trucks to haul a bulk sample of the iron ore from the Mary River deposit to a port site at Milne Inlet, a distance of about 100 km. The routing follows an overland cat-train access route established in the 1960s. The road design and construction are described in a comprehensive as-built report by Knight Piésold Consulting, entitled "Milne Inlet Tote Road Construction Summary," dated February 5, 2009.

Baffinland Iron Mines Corporation would like to proceed with progressive reclamation as early as practical. This report provides guidance on reclaiming soil and rock borrow pits that were developed for sources of embankment material along the route. Reclamation of those sites must proceed in a timely manner while the road remains trafficable.

1.2 PURPOSE AND SCOPE

This project was structured to provide a basis for planning reclamation and abandonment of the pits along the tote road. This requires an understanding of the roles that soil conditions, permafrost, ground ice, and water will have on the medium-term and long-term stability of the terrain following reclamation activities. The recommendations were developed from observations during a route reconnaissance in mid-July 2009. They represent experienced judgement of the site conditions at the various pits.

The scope of the study included the following:

- Develop generally accepted criteria for physical reclamation of sites where material was excavated for road construction;
- Identify the primary factors that must be addressed during planning and implementing the borrow pit reclamation program;
- Visit and document conditions at sites along the route;
- Develop concept-level reclamation recommendations; and
- Prepare a report with guidance appropriate for planning the reclamation activities.

The study was limited to those factors that must be addressed to prevent degradation of the landscape and establish physical stability over the long term. The ability of the landscape to return to biological productivity has not been addressed with this study. The paramount consideration when returning arctic sites to productive landscape must always be to first address any ongoing physical degradation from permafrost thaw or erosion by abnormal runoff conditions.

2.0 RECLAMATION OBJECTIVES

2.1 GENERALLY ACCEPTED REQUIREMENTS

There are generally accepted guidelines or practices for reclaiming pits and quarries in an arctic environment. The most universally used guide in Northern Canada was developed for Indian and Northern Affairs Canada (INAC) under the "Arctic Land Use Research Program" by MacLaren Plansearch Ltd. (1989), entitled "Environmental Guidelines, Pits and Quarries". The document has been used extensively for planning pit development and reclamation in the Mackenzie Valley and elsewhere throughout the Northwest Territories.

INAC has been working on a new guide for the Canadian arctic, currently in draft form, entitled, "Northern Land Use Guidelines, Pits and Quarries", October 2008 (Draft), which is available for review by practitioners. These new guidelines are less specific than the original guide and somewhat more process oriented. The section on reclamation provides information on when it may be acceptable to leave a lake within a pit, how to use topsoil as cover material, and how to promote revegetation of stripped surfaces. It also clearly identifies the need to ensure long-term pit drainage.

The Mary River tote road pits currently have many sites without established drainage. Ponds have formed at a number of sites that have no obvious means for establishing gravity drainage. Some of those ponds may be permanent fixtures on the landscape. Topsoil is thin or non-existent so its replacement coupled with revegetation is not a practical (or even a possible) option for the pits in this region. The overarching issues for planning the reclamation program will be establishing pit drainage without initiating new degradation of the permafrost and stabilizing ice-rich permafrost soils that are now thawing and resulting in ever-increasing sinkholes.

2.2 REQUIREMENTS OF THE LANDOWNER

Most or all of the land crossed by the tote road is within Inuit Owned Lands as granted by the Nunavut Land Claims. The Inuit Owned Lands in this region are administered by the Qikiqtani Inuit Association (QIA), Department of Lands and Resources. The QIA have developed a statement of reclamation objectives that is currently in DRAFT form for consideration entitled: "Abandonment and Reclamation Policy" for Inuit Owned Lands. That draft policy, Version 3, 2008, has a list of reclamation goals and obligations to be met by the land user. For the purposes of this study, the writer has extracted those that would clearly apply to the tote road borrow pits developed by Baffinland on QIA land as follows:

- Reclamation should achieve a site that is physically, chemically, and biologically stable upon closure.
- Reclamation should result in a site that is aesthetically and environmentally compatible with the surrounding undisturbed landscape.
- Land users should employ international best practices for arctic conditions as well as federal and territorial legislation, regulations, and guidelines.

- Land users may be required to undertake post-activity monitoring.

The writer has an extensive background with road construction on permafrost terrain, including planning construction material source development and reclamation practices in arctic regions of Canada, Alaska, Russia, and Svalbard (Norway). That experience base has been used to interpret and apply the criteria and guidance identified in the above documents to provide practical guidance for pit reclamation on the tote road.

2.3 THE ROLE OF OBSERVATION AND MONITORING

Terrain stability can seldom be achieved on disturbed permafrost terrain in a single season. Two or more staged seasons are usually required to complete reclamation of those pits where thaw of ground ice is most prevalent. This will require that site observations and simple monitoring of terrain response to reclamation efforts be included in any reclamation plan. Monitoring can comprise a systematic set of observations of the pits twice per year (early summer and late summer) with some limited surveying to check site grading where it is important to prevent pond formation. The site observations and monitoring data will provide a basis for optimizing reclamation efforts for that year.

3.0 BORROW PIT ASSESSMENT

3.1 ROUTE RECONNAISSANCE PROCESSES

Pit observations were obtained from July 20 to 23, 2009. The writer worked together with Jeff Bush, of Baffinland Iron Mines, to observe and make notes at 81 sites where material was removed from the tundra for road grade construction. Mr. Bush provided information on the history of the road construction and details on its performance and maintenance issues. The initial phase was an aerial reconnaissance by helicopter followed by two days of ground reconnaissance by truck. Excellent weather throughout the reconnaissance period provided the opportunity to collect a clear photographic record to supplement the site observations. All the sites and photographs have been tagged using handheld GPS for accurate location on maps included in this report. Most sites are included in our inventory of 81 locations. Those that are not included can be considered of minor consequence and require the minimum of reclamation work as described later in this report.

Road construction was initially carried out by excavation of fill material from three regions where pit development permits were obtained off the 30 m wide permitted right-of-way (ROW). These sites were at each end and at the midpoint and are generally known as Mary River Pit, Mid Point Pit, and Milne Pit. When long haul distance was adversely affecting construction productivity, material was excavated from the active layer soils at random locations along the route corridor. These sites were confined to the ROW width; therefore, in many locations they are contiguous with the edge of the road embankment. The active layer soils were excavated in summer for embankment construction at more than 80 locations. This left the underlying permafrost soils exposed to thaw over a substantial cumulative surface area that constitutes the route ROW.

The sites have been identified by kilometre post following the survey and map sheets included in the as-constructed report prepared by Knight Piésold Consulting (February 2009). The route chainage begins at Milne Inlet (km 0), which is the northern terminus, and progresses south to the trial pit at KP 109. The Mary River Camp and airstrip is located at KP 100. Each soil borrow site was tagged using handheld GPS. The site numbers begin near the camp as Waypoint No. 8 (km 98.3) and terminate near Milne Inlet at Waypoint No. 87 (km 2.9). The waypoint numbering system is opposite to the chainage as the ground reconnaissance was conducted by vehicle working from the Mary River Camp. A final site, Waypoint No. 88 (KP 104.4), is located on the road between the Mary River Camp and the bulk sample mine. The 81 sites where notes were made and photos were taken were transcribed onto a map set showing the alignment provided by Knight Piésold, and this map set is included in Appendix A. The site waypoints were converted to road chainage following the original alignment convention in the Summary Table at the end of the text. Those site chainages matched the chainage signage in place on the tote road at the time of the reconnaissance.

3.2 OVERVIEW OF RECLAMATION ISSUES

3.2.1 Permafrost and Ground Ice

The Mary River Camp is located in North Central Baffin Island. The closest community is Pond Inlet, on the coast about 150 km north of the camp. The normal mean annual air temperature reported for Pond Inlet is -15ºC (1971–2000 Canadian Climate Normals). The cold climate sustains continuous permafrost throughout Northern Baffin Island with ground temperatures anticipated to be -8ºC to -10ºC along the route. The tote road routing follows glacial valleys that have been infilled with granular material that varies in texture from silty sand to sandy gravel with cobbles and some boulders. Most of the deposits are either post-glacial river terraces or proglacial lacustrine basins. The lake basin segments are table-top flat with finer grained silt and fine sand prevalent. The terrace-like features are poorly sorted (dirty) gravels. The active layer is expected to be thin in the lake sediments (less than 0.5 m) whereas the higher, well-drained terraces could support an active layer of 1.5 m or more. No definitive information is available to confirm those estimates of active layer depth.

Ground ice occurs throughout the region in the upper permafrost soils as predominantly:

- segregated ice (horizontal lenses),
- wedge ice (vertical crevasses of ice), or
- massive ice (tabular bodies).

The wedge ice is the most striking feature in the region of naturally well-drained granular uplands. These show up in aerial oblique photos, such as Photo 1,[1] as polygonal patterned

[1] All photos referenced within the text are included in the attached Photographs section.

ground comprising a series of orthogonal cracks that are the surface expression of ice wedges that occur to depths up to 3 m into the permafrost. These ice wedge features formed over a period of 8,000 or so following deglaciation by perennial rapid thermal contraction followed by water infiltration and frost heave expansion. They can be up to 1 m wide at the top of permafrost and taper with depth in a carrot-like shape. They are a common feature of granular permafrost soils as these frozen soils behave in a brittle fashion when subjected to rapid drop in air temperature leading up to winter.

Wedge ice that is exposed at the surface within the pits after the thawed active layer soils have been removed in summer will begin to thaw from the top down, resulting in a linear depression such as shown in Photo 2. The thaw-depression will typically trap water that now becomes mobile, running along the top of the ice. These features commonly extend under the road embankment. The thaw initiating within the adjacent pit will feed water into the ice wedge under the road embankment resulting in thermal erosion that frequently leaves a transverse void below the road. When this happens below a road that is in service, the expanding void can precipitate catastrophic failure of the embankment, which is a substantial concern to safety of any operations over the road. This mechanism of wedge ice feeding water into cavities that extend under the road is the cause of a number of imminent road collapses that were observed during the route reconnaissance such as the site shown in Photo 3.

Segregated ice occurs as thin lenses in all the finer grained silty soils. It is most prominent in soils of glaciolacustrine origin. The ground ice distribution is erratic, but it is commonly found with greater concentrations in naturally wet basins. When these soils are exposed within the pit bottom, the consequences are sinkhole depressions that soon become water-filled, interrupting any natural surface drainage. An example of a pit floor affected by melt out of segregated ice is shown in Photo 4. Pit backslope soils with segregated ice exposed will slough or run downslope during summer thaw. That was not a common observation during the reconnaissance; most of the relatively steep backslopes were noted as stable.

Massive ice was identified at only one pit location (km 63.7). An exposure of the remains of massive ice is shown in Photo 5. Massive ice is generally large tabular bodies of ground ice. They have been attributed to either regions of groundwater discharge or buried ancient glacial ice. The ice feature in Photo 5 is in a pit that is adjacent to a natural drainage channel within a gravel deposit (alluvial terrace). The ice could be from either source. Massive ice is anticipated to be more prevalent along the ROW than suggested by the single location where it was actually observed. The sinkholes in the pit at km 97.5, shown in Photo 6, are characteristic of melt-out of massive ice.

Both massive ice and wedge ice must be protected from retrogressive thaw by replacing the stripped active layer soils with an appropriate new cover to arrest further thaw and settlement that can carry on for decades.

3.2.2 Runoff Management

The silty and sandy texture of the soils along the route makes them particularly susceptible to erosion and downslope transport by surface water. The short intense freshet period each spring occurs when the active layer soils are mostly frozen, thus the proportion that runs off is very high (often expressed as a runoff coefficient near unity). Emphasis should be placed on ensuring that soil transport by erosion and sedimentation does not affect undisturbed tundra that lies downslope from the borrow pits. Managing runoff from the disturbed areas within each pit must therefore be an important part of the reclamation plan.

The route reconnaissance identified those pits that are poorly drained or are on slopes where rapid release of outflow could affect the surrounding undisturbed tundra. That may be from trapped surface water, melting ground ice, or high gradient that can initiate and sustain erosion.

3.3 SITE SUMMARY AND GROUPING

A summary of the conditions noted at each of the 81 sites is included at the end of the report in Table 1. The sites have been grouped into three broad categories that reflect the reclamation criteria discussed in Section 2.2:

- Priority A pits – where thaw-settlement initiated by pit excavation is actively affecting the road integrity and safety,
- Priority B pits – where active thaw settlement and water accumulation is ongoing in unstable terrain within an abandoned pit, and
- Priority C pits – are relatively stable but will need reclamation attention to improve site aesthetics and ensure long-term stability.

The distribution of site types is as follows:

- 8 Priority A (9%),
- 25 Priority B (31%), and
- 48 Priority C (60%)

Perhaps as many as 10 to 15 sites are not on the list. They are generally small, shallow depressions where limited material was removed. They can be considered as Priority C.

A detailed photographic record from the route reconnaissance was prepared and is included as a DVD appendix to the report. The photos taken during the aerial reconnaissance phase range from numbers DWH 557 to 674, and the ground reconnaissance photos range from DWH 675 to 734. The photo locations by number are shown on the route maps, Appendix A. The geographic locations of the photos are included in their jpeg file information. The photos have been linked to the various sites in the Summary Table. These constitute a useful reference of the condition of the pits at the time of the reconnaissance.

4.0 RECLAMATION METHODS

The Summary Table includes a brief comment for each site on where the reclamation focus should be and is followed by more detailed comments on suggested processes to follow. The reclamation process should be structured around the basic principles of:

- Restoring stability to actively thawing ground ice by replacing some of the cover material removed during excavation;
- Developing drainage that will limit standing water that can exacerbate thaw within the pit;
- Caring for natural runoff from the pits in a manner that will reduce the risk of erosion and sedimentation over undisturbed tundra; and
- Improving site topography to encourage natural revegetation and enhance site aesthetics.

The sites identified as Priority C are the least sensitive and can generally be reclaimed by site grading and dressing of the slopes. A typical Priority C site is shown in Photo 7 (attached). The Priority A and B sites are judged as not currently stable and therefore will require attention directed to the ongoing thaw of permafrost and surface water management. The following discussion provides guidance for planning reclamation that that will address these objectives.

4.1 RESTORE SURFACE STABILITY

The Priority A pits are experiencing ground ice melt out that is affecting the adjacent road embankment. Past experience has shown that the consequences can be a serious safety hazard. It is recommended that the road embankment be upgraded at these sites on a first priority basis. The upgrading will require strategic placement of granular cover over the thawing soil with the ultimate purpose of drawing the permafrost back up into the fill. The steps for reclamation should include the following:

- Construction of side berms a minimum of 3 m wide on the road shoulders where active cracking and settlement is observed. The berms should be a minimum of 1.5 m thick and also to an elevation above any possibility of being overtopped by ponded water in the future. It is also preferable for them to be at an elevation 1 to 1.5 m below the final top of road fill at the location.
- Add material to raise the embankment height. Suggested final fill height increases at the various sites is included in Table 1. The height increase should be a minimum of 1 m, and in some cases, 1.5 m to 2 m is suggested.
- Improve drainage such that water does not pond at the toe of the embankment. In some cases this may require filling sinkholes and ice wedge melt-out features with imported gravel.

An alternative to berm construction for sites where the thaw has not yet progressed under the road embankment but is affecting the sideslopes is to widen the grade and flatten the sideslopes. The current road shoulder should be widened 0.5 m to 1 m and the slope flattened to 4 H to 1V. The Summary Table provides guidance on those sites where slope flattening is an option. They include many of the Priority B sites. Where slope flattening is applied, consideration should be given to the extent that water can continue to pond at the toe of the slope. One of the primary benefits to be gained from slope flattening is to push the risk of ponded water further from the embankment slope.

Some Type A and B sites have developed substantial sinkholes within their pit bottoms. Where these have been observed, regrading the surface to fill the sinkholes has been recommended. In some cases, this may require importing fill from another nearby site that is still active and can confidently produce material without exposing new wedge ice. Those sites are identified in the Summary Table.

4.2 DRAINAGE IMPROVEMENTS AND EROSION PREVENTION

Ponded water within the borrow pits retards winter freeze-back of the active layer and will result in retrogressive thickening of the active layer. Once this process starts, it is difficult to reverse. Shallow ponding (less than 0.5 m deep) that is short-lived following freshet is not a particular concern. Those ponds that are retained throughout the summer and continue to deepen with time will be counter-productive to the reclamation efforts.

The Summary Table identifies a number of options for improving site drainage at specific pits. In most cases, there is an obvious routing for trapped surface water from the pit to a nearby stream or onto the tundra. In some cases, it will be necessary to install a new culvert under the road embankment. Some pits are identified in the table where additional field work will be required to determine the drainage improvement options for those sites. This will probably involve site surveys to establish the natural topographic grades or if there are options that involve minor ditching.

Substantial ditch excavation into undisturbed active layer soils should be avoided wherever practical. Where new ditching is the only practical option, care should be taken to determine the nature of soils and ground ice that will remain exposed following excavation.

In cases where surface water will be directed to undisturbed tundra, it must be dissipated rather than channelled to avoid local erosion. Dissipation can be achieved by strategic use of cobbles and boulders to dissipate energy just before the water exits the pit area.

4.3 SURFACE GRADING

All the pits will require surface grading that will range from filling sinkholes in the Priority A and B pits to simply dressing the current surface in most Priority C pits. Obvious ridges that can impede surface drainage should be removed and final surface contour developed to ensure drainage. The surface should not be left completely smooth. It is common practice at the end of surface grading to track the surface with tractor grouser bar ruts. These will

trap fines and dissipate energy from runoff. The shallow grooves left in this manner will also improve the possibility for long-term natural revegetation by providing seed traps.

The backslopes on the pits are remarkably stable, typically like those in Photo 8. Those steep slopes greater than 2 m in height should be graded to a final slope of 3 H to 1V. It is preferable to flatten the slopes by mounding new fill at the toe rather than cutting further into undisturbed tundra. The steeper pit slopes observed were generally of a height less than 2 m and were not visibly active. These shallow cut slopes that are currently stable are better left to seek their own long-term condition rather than risk further disturbance to the underlying permafrost.

5.0 CONCLUSIONS

The focus of this project has been to develop general guidelines for developing a practical and acceptable plan for reclamation of the borrow pits. This plan can form the basis for estimating construction effort and developing a schedule. The site observations have established that there is a clear link between some borrow pit locations adjacent to the road and thaw-settlement observed on the road embankment. In some cases, tundra disturbance caused by pit excavation is affecting the road integrity and its safety. It is therefore necessary to deal with those Priority A pits and the adjacent road in a timely manner.

The construction material demand for the next few years of road operations before decommissioning should be established. The demand can be satisfied from a few select pits. Those pits that will remain in service until reclamation and abandonment of the road should be carefully evaluated and a plan prepared for their future use and their ultimate reclamation. Several of the pits can effectively provide material for maintenance purposes and have been identified in the Summary Table.

The photo library and documentation in this report provide a basis for monitoring changes and adapting the reclamation process in a step-wise manner. The Priority A pits should be addressed first with attention to the Priority B pits as early as practical. The Priority C pits will not change significantly if left for a few years. It is suggested that a number of the Priority B pits be selected for the first stage of reclamation during the summer of 2010. That should include drainage improvements and strategic placement of granular cover in those locations experiencing active thaw. These measures can then be observed over the following year and adjustments to the process made to minimize use of new material for reclamation. Where new gravel cover is necessary for protection of the permafrost, care must be taken to ensure it is harvested at a location that does not contribute to further degradation of the permafrost.

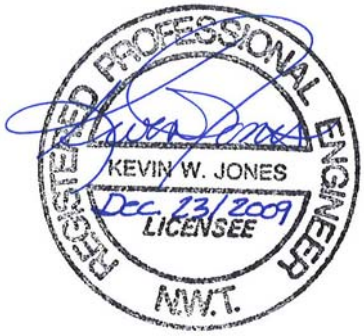
6.0 LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of Baffinland Iron Mines Corporation and their agents. EBA does not accept any responsibility for the accuracy of any of the data, the analysis, or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than Baffinland Iron Mines Corporation, or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user. Use of this report is subject to the terms and conditions stated in EBA's Services Agreement. EBA's General Conditions are provided in Appendix C of this report.

7.0 CLOSURE

We trust this report meets your present requirements. Should you have any questions or comments, please contact the undersigned at your convenience.

EBA Engineering Consultants Ltd.



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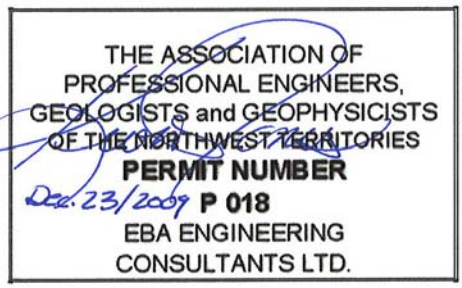

TABLE

TABLE 1: SUMMARY OF PIT OBSERVATIONS AND CLOSURE RECOMMENDATIONS

Site WP No.	Km Post	General Location Comments	Pit Water	Erosion Potential	Ground Ice Features	Active Layer Stability	Reclamation Focus	Priority	Ground Photos	Aerial Oblique Photos	Closure Comments
8	98.3	Off ROW permitted	Minor ponding	Low	Abundant wedge ice	Fair	Drainage improvements	**C**		557, 558	This pit is within off ROW permitted and should be regraded and closed with future material taken from Area 1.1
9	97.9	Off ROW permitted	Minor ponding		Extensive wedge ice	Fair	Regrading surface and slope	**B**		559, 560	This pit within permit area should be reclaimed. Pad and flatten south slope of road to limit further thaw of wedges and erosion. Improve drainage without further impact on natural tundra wedge ice lying to the south of disturbed area.
10	97.5	Off ROW permitted	Major ponding	Low	Massive ice	Unstable, extensive thaw occuring	Pump out ponds, berm road sideslope on south side such that no water can pond at toe. Regrade pit bottom	**B**	675	561	Pit is still within quarry permit area but should be reclaimed soon. Extensive thaw settlement is occuring. Future materials should be taken from source 11.
11	97.3	Off ROW permitted	Major ponding	Low	Wedge ice	Moderately stable	Improve natural drainage and develop a plan for an ongoing pit at this location	**C**	676	562	This is currently the best source of gravel in the vicinity of Mary River Camp. It is permitted for development off the ROW, and the material is relatively well-graded alluvial gravel. This pit has ongoing value for the development. A pit development plan should be prepared that will allow efficient stockpiling of the material in a manner that deals with surface water and thaw generated water. The plan should include site reclamation.
12	93.2		Runoff impounded	Severe	Unknown	Unknown	Culvert needed	**A**	677		The road crosses a natural valley at this site, and water is trapped against the upstream road embankment. The pond must be drained by culvert installation to prevent thaw and collapse of the embankment and risk of significant downstream erosion. The disturbance from scavenging active layer material on ROW is minor at this site.
13	92.7		Runoff impounded	Moderate	Unknown	Unknown	Culvert replacement/repairs needed	**A**			This site has a drainage interruption issue that needs attention. Not a soil borrow site.
14	89.8		Substantial	Moderate	Unknown	Unstable	Pit directly adjacent to south toe of road embankment. Ponding threatens to undermine road	**B**	678		The active layer was pushed up to form the embankment at this site. Substantial ponding is present in disturbed area. Site needs to be regraded and drainage established to the south where a new culvert can be installed that will lead to a natural drainage course.
15	87.8		Moderate	Moderate	Substantial segregated ice throughout silty material	Unstable	Improve drainage along the south embankment sideslope convey ponded water to the existing culverts	**B**		567	Material exposed at this site is predominantly silt. Thaw-subsidence will continue. The strategy for reclamation must be to improve drainage using existing culverts and continue to regrade the surface until the active layer stabilizes. Keep ponded water from accumulating against the toe of the embankment. The exposed silt at this site is very mobile; thus, erosion protection measures may be required when improving site grading.
16	86.2		Moderate	Severe	Minor	Stable	Long-term drainage improvements	**B**	679		This is a deep pit pond that has established on the south side of the road. Soils in this area are controlled by a weak carbonate sandstone that readily decomposes into fine uniform sand. The pond is currently functioning as an effective sedimentation pond. Water is clear and the pond seems to be stable in a region of minor thaw-subsidence. It is recommended that the pond remain and that a new and higher culvert be placed through the road to allow the surface water to drain into the creek and subsiquently the lake. The road embankment should be raised a minimun of 1.5 m at this location to protect the permafrost and provide cover for the new culvert.
17	75.0		Not practical	Low	Not apparent	Stable	Surface dressing and erosion protection	**C**	681, 682	580	This is a long section where the active layer soils have been pushed up from both sides to form the embankment. South (left) side is dry and stable — surface dressing only required. The North (right) side has a deep pond (Photo 681). The surrounding terrain is flat thus little oportunity for natural drainage. The ponds are not affecting the embankment, and ground ice seems minimal. The ponds can be left following site grading with some armour placed on the adjacent sideslope to prevent erosion and dusting.
18	74.7			High	Not apparent	Stable	Protect outlet at north end from erosion	**B**	683		Sandy active layer soils have been removed on ROW for embankment construction. Minor thaw subsidence or ponding within pit floor. Outlet for water at north end flows downhill into a creek. Substantial risk of erosion on that sandy slope during freshet. Recommend armouring the outlet with coarse materials and cross berm for erosion protection. Dress pit floor.
19	73.8		Uncertain	Moderate	Substantial wedge ice	Unstable	Protection of road sideslope	**B**		581, 582	This site is locally very ice rich. Water ponded along road shoulder is a threat to the road. Drainage improvement options are not obvious and should be reviewed further in the field. If ponds cannot be drained, construct a berm to an elevation above water level that will push water back 3 m from embankment slope.
20	73.4		No	Low	Not apparent	Stable	Dress pit floor	**C**			Small active layer pit. Dry and stable. Dress the surface.
21	73.1		No	Low	Not apparent	Stable	Potential future use	**C**			Top of hill, small quarry in rock. Could be a source of materials for road repair and dressing or filling sink holes in nearby pits. Can be easily reclaimed by surface grading.
22	72.4		Drain and fill all ponds within 3 m of the toe of embankment	Moderate	Wedge ice, possibly massive ice	Active sinkhole formation	Road embankment safety	**A**	684, 685, 686, 687	584	The pit on the north (left) side has become a large sink hole that is actively undermining the sideslope and crest of the embankment. Wedge ice appears to extend under the road, and there is a potential for water to flow through any wedge cavities. Active cracking is occuring well into the driving lane. This is a priority site for repairs. Substantial risk of a road surface collapse exists. The sinkhole pond should be either drained or pumped and the road grade raised. A berm 3 m wide should be constructed in areas of active embankment sloughing. The site should be frequently observed when the road is used for haul traffic.
23	71.8		Regrade and fill	Low	Extensive, distributed	Sinkholes active in pit floor	Regrade and fill	**B**	691		This site has active sinkholes below surrounding terrain. Some water trapped. May require imported fill from other sources to regrade the pit floor.
24	68.5	Communication Tower		Low	Not apparent	Stable	Flatten embankment slope by filling out into pond displacing water	**C**			Small water-filled pothole left following material excavation. No obvious natural drainage potential. Complete reclamation would require infilling. Nearby material sources are not obvous.
25	66.7		Clean ditch along toe of slope	Low	Not apparent	Stable	Regrade surface	**C**		585	Coluvial soils scavenged from hillside above road for embankment. Site is stable requires cleanup and dressing with improvements to drainage along toe of slope.

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Site WP No.	Km Post	General Location Comments	Pit Water	Erosion Potential	Ground Ice Features	Active Layer Stability	Reclamation Focus	Priority	Ground Photos	Aerial Oblique Photos	Closure Comments
26	65.2	Active Pit	Well drained	Low	Not apparent	Stable	Regrade surface	**C**	692	586	This pit remains active with reasonable construction material. Drainage is currently good, but further excavation within ROW will probably initiate ponding. Should material continue to be removed, a pit development and reclamation plan should be prepared.
27	64.7		Poorly drained	Low	Not apparent	Moderate	Fill and regrade	**C**			This is a small pothole filled with water. Site should be regraded and fill added to improve drainage.
28	63.9	Active Pit	Dry	Low	Not apparent	Stable	Dress surface	**C**			Both sides of road. Naturally well-drained silty gravel. No sinkholes. Grade surface at closure.
29	63.7			Severe	Massive ground oce observed in pit. Wedge ice under road.	Unstable, extensive thaw	Rebuild road grade	**A**	693, 694, 695, 696, 697, 698	587	This is the most ice rich site noted. Remnants of massive ice were found in large thaw depression on south side of road. Ice wedges are actively melting under road sideslope Cracks and depressions extend to the shoulder. To reduce risk of road collapse, the grade should be raised at least 1 m through this area and berms a minimum 3 m wide constructed on the south sideslope. Final reclamation of this site will require further assessment of the best method for ensuring drainage from the sink hole without risking siltation of the creek valley immediately to the south.
30	63.1		Dry	Low	Not apparent	Stable	Regrade	**C**	703	593, 653	River terrace. Active layer gravel removed over a large area. Site is dry and naturally well drained. Regrade surface for reclamation.
31	62.5	Midway Pit, Off ROW permitted	Minor ponding	Low	Wedge ice on south-facing slope	Stable	Regrade	**C**	706	590, 653	The active layer has been stripped over a substantial surface area. Gravel is well graded and free draining. The site can potentially produce more gravel by progressive stripping as it thaws or by drill and blast. A pit development plan including reclamation planning should be developed if borrow material harvesting is continued at this location.
32	56.9R		Moderate	High	Substantial wedge ice	Unstable	Improve site drainage	**B**	710	594, 595, 649	Pit excavated in ice-rich sandy gravel. Active thermokarst and ponding. Regrading to fill ponds required. Develop drainage to the east along north side of road. Construct a coarse boulder apron at outfall onto tundra.
33	56.7L		Severe	Moderate	Not visible	Unknown	Drainage enhancement	**B**		594, 595, 649	Pit water is intended to drain to a small culvert under road at west end of pit. Continued settlement has left invert of culvert too high. Consider draining along north (left) toe of road grade to natural draw about 100 m south and placing a new culvert through road at that location. Consult Photo 649.
34	55.8		Minor	Low	Not apparent	Unknown	Grading	**C**			Regrade and improve drainage.
35	55.4	Risk of road collapse	None	Low	Wedge ice	Unstable	Protecting road embankment	**A**	711, 712	596, 597, 648	A small excavation on the upslope side of the embankment has allowed water to penetrate into Wedge Ice initiating thermal erosion. The road grade was actively collapsing into thaw depressions at the time of the visit. There is a high safety risk of total collapse. The road must be bermed on both sides for a distance of 3 to 4 m and the embankment raised to accommodate settlements that have occured. The sideslopes should be dressed along with disturbed areas. The site should be monitored during periods of high road use until stability of the permafrost is assured.
36	53.1		Minor	Low	Not apparent	Stable	Protecting road embankment	**C**			Small pothole pit beside road. Material stockpile. The shoulders of the road should be dressed and slopes flattened.
37	52.6	Road collapse	Dry	Low	Wedge	Unstable	Protecting road embankment	**A**	713, 714	598	Active sinkhole on immediate north side of embankment has extended under the road resulting in grade collapse about 1/2 m. Selective excavation of the road fill and underlying ice at this site is recommended followed by rebuilding grade with compacted material. Raise the final grade 1 m or more above current elevation and flatten sideslopes.
38			Dry	Low	Not apparent	Stable	Grading	**C**			Dress the slopes and bottom.
39				Low	Wedge ice extending under road	Unstable	Stabalize road surface, dress sideslopes and fill sinkholes	**B**			Sinkhole under road at north end, cracking onto road surface. Build road grade up, dress disturbed area, and flatten embankment sideslopes.
40		Hole in Road		Low	Wedge ice extending under road	Unstable	Ensure safety of road	**A**	715, 716, 717	645	Wedge Ice that extends under the road has thawed resulting in collapse. Road grade dropped about 1 m. Sinkholes in pit allow standing water adjacent to sideslope. Raise the road grade about 1 m at this location, and construct side berms to protect permafrost and push any free water 3 m minimum away from toe of slope. Regrade the abandoned pit and upgrade the site drainage.
41	50.6L		Minor	Low	Localized wedge ice	Moderately stable	Regrading	**C**			Regrade and improve drainage from sinkholes.
42	50.3L		Mostly dry	Low	Ice wedges, south end	Sinkholes south end	Regrading	**C**			Regrade to fill and cover sinkholes at south end.
43	50.0R		Dry	Low	Not apparent	Stable	Dress surfaces	**C**			Long pit where active layer soils have been pushed up to make embankment.
44	46.7L		Minor	Low	Not apparent	Stable	Dress surfaces	**C**			Pothole pit, some water. Dress slopes and improve drainage.
45	46.1		Dry	Low	Not apparent	Stable	Dress slopes	**C**			This is a confined but deep pit, currently dry. The backslopes are steep and may require minor cleanup and dressing.
46	44.0		Dry	Low	Not visible	Moderately stable	Repair grade	**A**	718, 719		This road cut exposed ground ice that is actively thawing. The road grade should be built up at this location about 1/2 m.
47	42.2R		Partial	Low	Not visible	Moderate	Regrade	**C**		603, 604	Small pit with one large sinkhole. Regrade and fill sinkhole — not affecting road.
48	38.0R		Dry	Low	Not visible	Stable	Regrade	**C**			Dry pit on ridge. Regrade to dress surfaces.
49	37.5R		Dry	Low	Not visible	Stable	Dress surface	**C**		605	Linear pit from pushup. Well drained. Dress the surface.
50	37.2R		Dry	Low	Not visible	Stable	Dress surface	**C**			Similar to 49.
51	36.5 L&R		Ponding on left	Low	Wedge Ice	Moderate	Improve drainage and regrade	**B**		606	Active layer removed along road on both sides. Well developed ice wedge cracks evident across pits and continuing under embankment. Beginning to affect road at north end. Stockpiles remain in left pit. Further removal of surface soils at this location not recommentded without a pit development plan. Reclamation should grade pit surface, infill ice wedge cracks and and flatten embankment sideslopes in regions showing distress. Improve drainage.
52	36.2R		Dry	Low	Not apparent	Stable	Regrade	**C**			A relatively large pit but dry and stable bottom. Dress slopes and bottom.
53	35.5		Dry	Low	Not visible	Moderately stable	Regrade and fill sinkholes	**C**			Long, linear pit with a few sinkholes. Regrade and fill sinkholes.
54	35.2		Dry	Low	Not apparent	Stable	Regrade	**C**			Dress all surfaces.

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Site WP No.	Km Post	General Location Comments	Pit Water	Erosion Potential	Ground Ice Features	Active Layer Stability	Reclamation Focus	Priority	Ground Photos	Aerial Oblique Photos	Closure Comments
55	34.0		Minor ponding	Low	Minor wedge ice	Stable	Regrade	**C**	720		Regrade to fill wedge cracks and dress surface.
56	33.8R		Dry	Low	Not apparent	Stable	Regrade	**C**			Small square pit. Dress all surfaces.
57	33.5R		Partial	Low	Not apparent	Moderate	Partial infill and regrade	**C**			Three small pits, two dry and one with water. Regrade or import fill to flatten or berm embankment sideslope beside water-filled pit. Grade surface.
58	32.4R		Partial	Low	Not apparent	Moderate	Regrade	**C**	721		Pushup pit. Rough bottom. Grade surface, improve drainage. Defined pit on left about 300 m further south is dry and needs no work.
59	30.6R		Dry	Low	Not apparent	Stable	Dress surfaces	**C**			High, well-drained side borrow site. Dress bottom and slopes.
60	30.5R		Dry	Low	Not apparent	Stable	Dress surfaces	**C**			Similar to Site 59.
61	30.2R		Dry	Low	Not apparent	Stable	Dress surfaces	**C**			Similar to Sites 59 and 60.
62	29.1L		Minor ponding	Low	Not apparent		Regrade	**C**			Near vertical slope on sidehill pit. Slope pit back at 3H:1V and add some shoulder to road. Improve drainage.
63	27.5R		Minor ponding	Low	Not apparent	Stable	Regrade vertical slope	**C**	722		Pit has a near verticle slope 2 to 3 m high. Slope back to 3H:1V and dress pit bottom to improve drainage away from road embankment.
64	27.2L&R		Major ponding	Low	Not apparent	Stable	Regrade backslope, develop drainage plan	**B**		682	Deep pits on both road shoulders, both flooded. Slope sides to 3H:1V and develop a drainage plan. It may be practical to ditch to the creek about 100 m to the north.
65	26.3L&R		Minor	Low	Not apparent	Stable	Dress surfaces	**C**	723, 724		Pushup pits on both sides. Well drained. Dress slopes and ensure future drainage.
66	24.1L&R		Minor	Low	Not apparent	Stable	Dress surfaces	**C**			Pushup pits both sides. Currently self-draining to tundra. Not obvious erosion or sinkholes. Grade sideslope into pond lying to the left side.
67	23.7L		dry	Low	Not apparent	Stable	Dress surfaces	**C**			Well drained pit on top of natural rise. Dress bottom and slopes.
68	22.3R		Minor ponding	Low	Massive ice	Unstable	Fill and Cover Sinkholes	**B**	726, 727, 728	616	Melt out of massive ice actively developing sinkholes at toe of embankment sideslope. A berm should be built on sideslope and sinkholes infilled at 2 locations. Regrade to improve drainage to the northwest.
69	23.4R	Out of sequence — returned to inspect this site	Minor ponding	Moderate	Segregated ice	Unstable	Control drainage and limit sediment transport	**C**			Pit cut into side of knob. Thaw of icy soils is producing meltwater and sediment. Selective use of a boulder rip-rap blanket is recommended. Use rip-rap to control and filter drainage that is being dispersed onto tundra.
70	21.7L		Water-filled pothole pit beside road	Low	Unknown	Unstable	Water-filled pit	**C**		641	Pothole immediately beside embankment sideslope. Drain and install culvert under road. May require widening shoulder and partial infilling to maintain long-term drainage.
71	21.1R		Water-filled wedge cracks	Moderate	Substantial wedge ice	Unstable	Prevent further ice wedge thaw	**B**	729, 730	618, 617, 641	Active layer removed from top of hill, exposing substantial wedge ice. Substantial melt out and continued activity. Water collecting in wedge cracks. Develop drainage and fill expanding wedge cracks. Berm the sideslope to prevent further thaw under road embankment.
72	20.3L		Water-filled pit	Moderate	Unknown	Moderate	Develop pit drainage	**B**			A 2 m deep pit with water. No obvious opportunities to develop drainage. Survey and determine options to drain while minimizing further cuts. May require berming along road to prevent thaw from undercutting embankment sideslopes.
73	18.8R		Large water-filled pit	Moderate	Not apparent	Moderate	Develop pit drainage	**B**		619	Large pit pond immediately adjacent to road. Appears to be deep water. Currently no drainage. Can be drained by installing a culvert under the road. Flatten sideslopes into pit to push water further from road shoulder.
74	16.9L&R		Linear pits both sides with water	Moderate	Not apparent	Moderate	Develop pit drainage	**B**			Long, linear pits both sides. Left side has larger pond. No thaw features apparent. Assess drainage options. Flatten embankment sideslopes where water is at the toe of slope.
75	15.3R		Some water	Low	Not apparent	Stable	Dress surfaces	**C**			Long pit, some water, no active subsidence, dress surfaces.
76	14.5L		Dry	Low	Not apparent	Stable	Dress surfaces	**C**			Dry, well-drained pit floor. Stockpile of sandy gravel present. Dress surfaces.
77	13.8L		Pond	Low	Not apparent	Moderate	Pothole pit	**C**			Some refilling may be required in pothole pit beside road.
78	13.5L		One pond to north	Low	Not apparent	Moderate	Large area to dress	**C**		623	Shallow pit on top of rise. Pond in north end that can be drained to the north. Grade and dress surfaces.
79	13.1L&R		Wet bottom	Low	Segregated ice	Unstable	Large surface area	**B**		624	Pit in silty sand, abundant ground ice. Active thaw in pit floor. Surface will need to be regraded to cover exposed icy sediments. Several visits may be necessary to stabiilize the new active layer.
80	10.0L		Water-filled wedge cracks	Low	Wedge ice	Unstable	Active sinkholes in wedge cracks	**B**	732, 733, 734	636	Extensive melt out of ice wedges resulting in water-filled troughs. Need to drain and fill sinkholes. Material should be imported as the entire pit is underlain by wedge ice and further removal of active layer material will exacerbate reclamation.
81	9.7R		Extensive pond	Moderate	Wedge ice	Unstable	Wedge cracks flooded in pit bottom	**B**		636	Flat bottom pit with no drainage. Develop drainage and fill wedge cracks evident below water level. Dress and grade surfaces.
82	9.4L`		Dry	Low	Segregated ice	Unstable	Sinkholes	**C**		635	Sidehill cut into bank beside road. Backfill and regrade with rip-rap quality material. Allow future drainage from cover.
83	8.0L&R		Left pit flooded, right pit wet	Moderate	Wedge ice	Unstable	Road shoulder unstable, develop drainage	**B**		634	Deep pits (about 3 m) no drainage. Ice wedge cracks and sinkholes. Backfill sinkholes and regrade steep slopes. Rebuild and flatten road sideslopes. Regrade base and improve drainage.
84	6.9R		Flooded	Moderate	Wedge ice	Moderate	Develop drainage	**C**		627	Broad flooded pit. Develop drainage. Grade and dress pond edges and road sideslopes.
85	3.8R	Milne Inlet permitted pit	Dry	Low	Minor wedge ice	Stable	Silty sand susceptible to dusting	**B**		630	This is the main permitted pit for development at Milne Inlet. The site is a dry and naturally well-drained river terrace. The material is fine grained (silty) and may be susceptible to generating dust. Small dune-like features evident on surface. If the site is retained for future use, a pit plan should be prepared. In order to control dust, it may be necessary to provide ridges of coarse material at closure that will trap wind-blown sand.
86	3.1R&L	Milne Inlet permitted pit	Minor pond on left, right is dry	Low	Not apparent	Stable	Regrade to protect from dusting	**B**			Small pits, silty sand poor construction material. Grade and work cover to provide a coarser cap.
87	2.9R	Within permit	Localized ponding	Low	Not apparent	Stable	Regrade to protect from dusting	**B**		631	Large exposed pit; silty sand may need a coarser cover to protect from dusting.
Return to MR Camp and check pit on mine road (88)											
88	104.4L	Mine road, above camp	Generally dry	Low	Not apparent	Stable	Develop a pit plan	**C**		667	Substantial volumes of reasonable quality material may remain in this pit. A pit development plan is recommended in order to keep it open. Reclamation will comprise regrading and control of runoff to ensure the stream to the north is not affected by runoff and deposition of silt or fine sand.

PHOTOGRAPHS

Photo 1 (DWH 559)
Priority B pit at km 97.9 (WP 9) just north of Mary River Camp lies on a gravel terrace with well established Ice Wedge polygons. Melt out within the pit has initiated thaw and ponding.

Photo 2 (DWH 728)
Pit at km 22.3 (WP 68) linear sinkhole from thaw of wedge ice about to affect road shoulder.

Photo 3 (DWH 596)
Road collapse at km 55.4 (WP 35) initiated by thermal erosion from water running through ice wedge exposed in adjacent pit.

Photo 4 (DWH 691)
Pit at km 71.8 (WP 23) typical sinkholes in pit bottom from thaw of segregated ice common in fine-grained lacustrine soils.

Photo 5 (DWH 697)
Pit at km 63.7 (WP 29) exposure of massive ice remaining in pit wall.

Photo 6 (DWH 561)
Pit at km 97.5 (WP 10) typical sinkhole formation from thaw of massive ice.

Photo 7 (DWH 721)
Pit at km 32.4 (WP 58) typical Priority C pit in thaw stable soils that only requires regrading.

Photo 8 (DWH 722)
Pit at km 27.5 (WP 63) vertical cut slope 2 to 3 m high. The thaw-stable soils at this site are stable at this slope. The slope can be graded back to 3:1 by cut and fill.

APPENDIX A

APPENDIX A MAP SET

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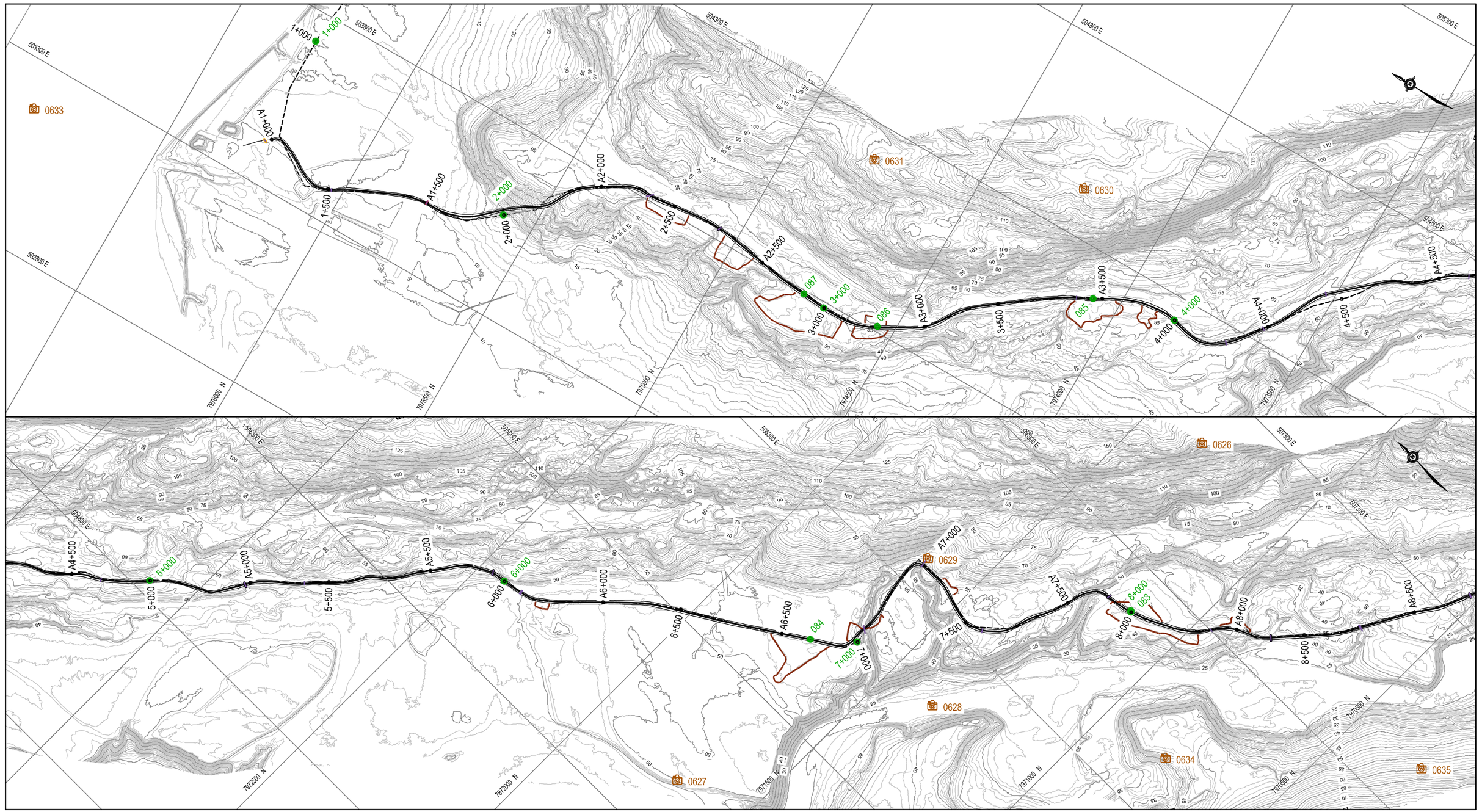

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PLAN - PHOTO LOCATIONS
SHEET 1 OF 14

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Figure 1

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Figure 2

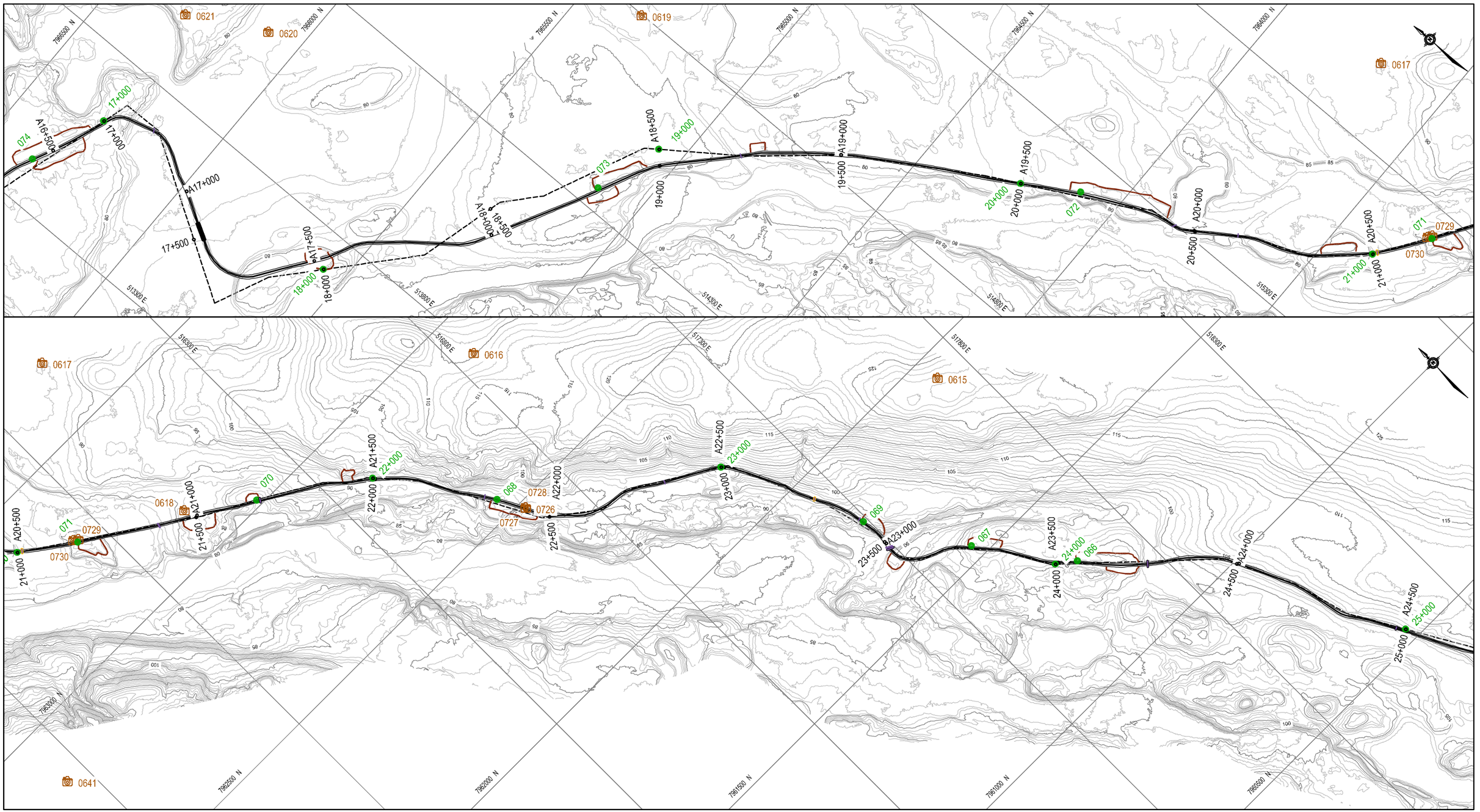

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Figure 3

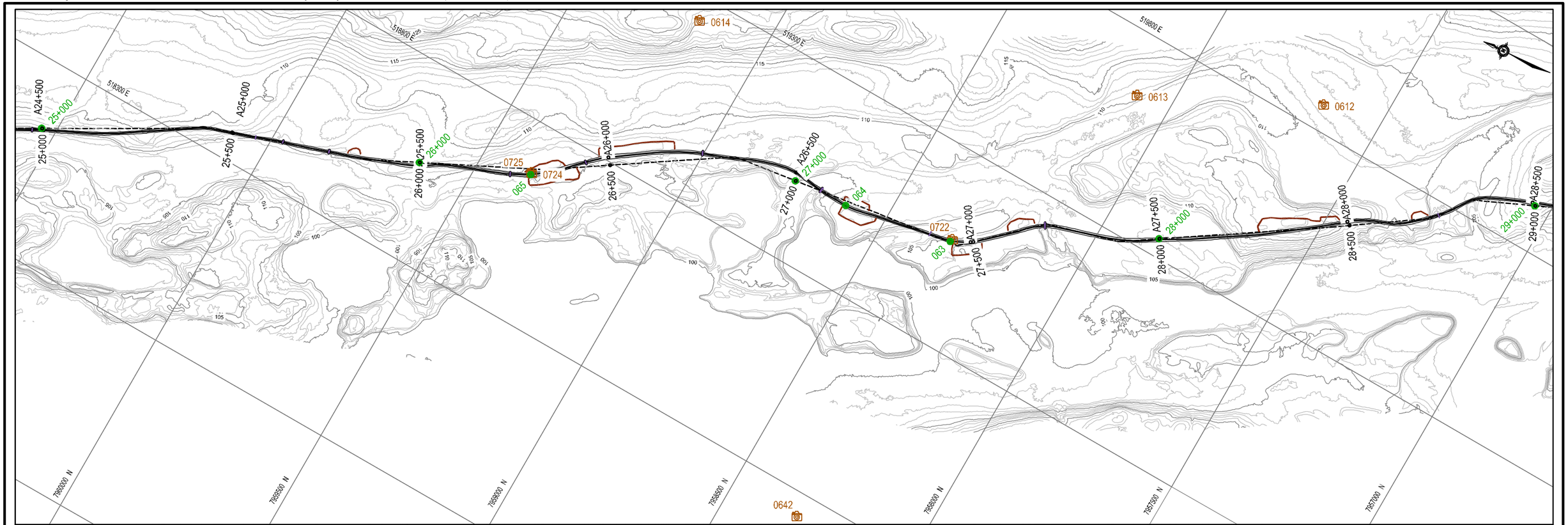

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Figure 4

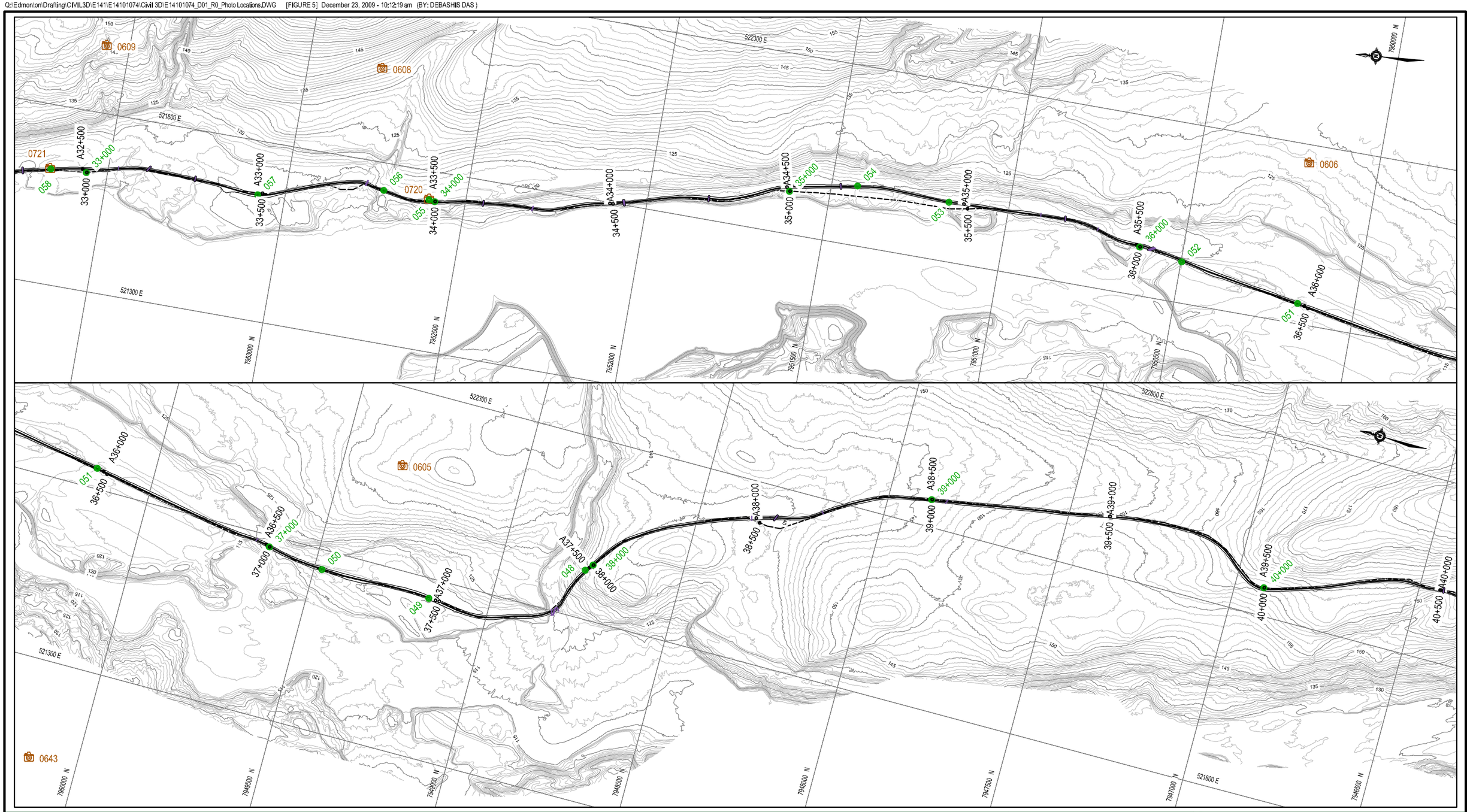

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Figure 5

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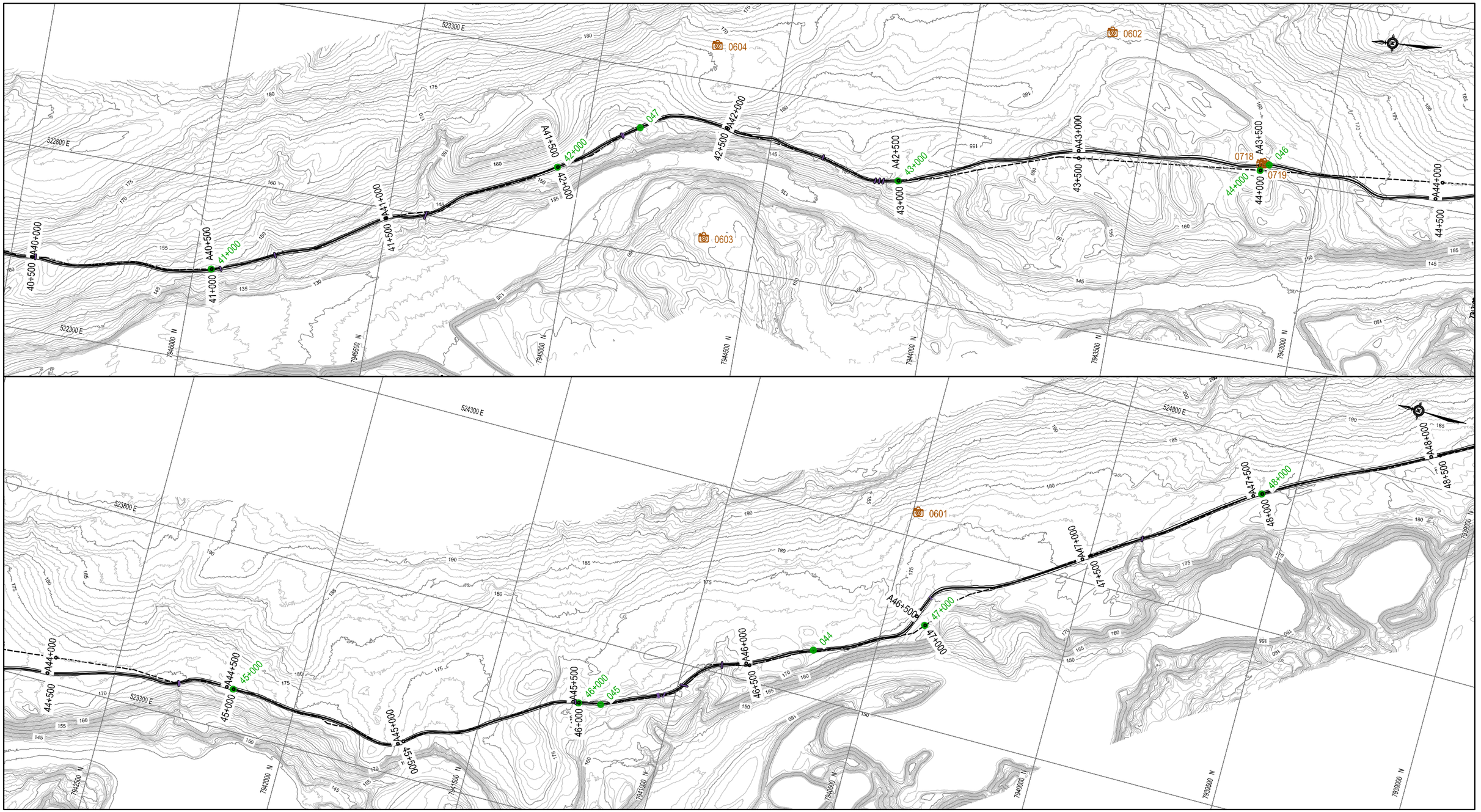

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Figure 6

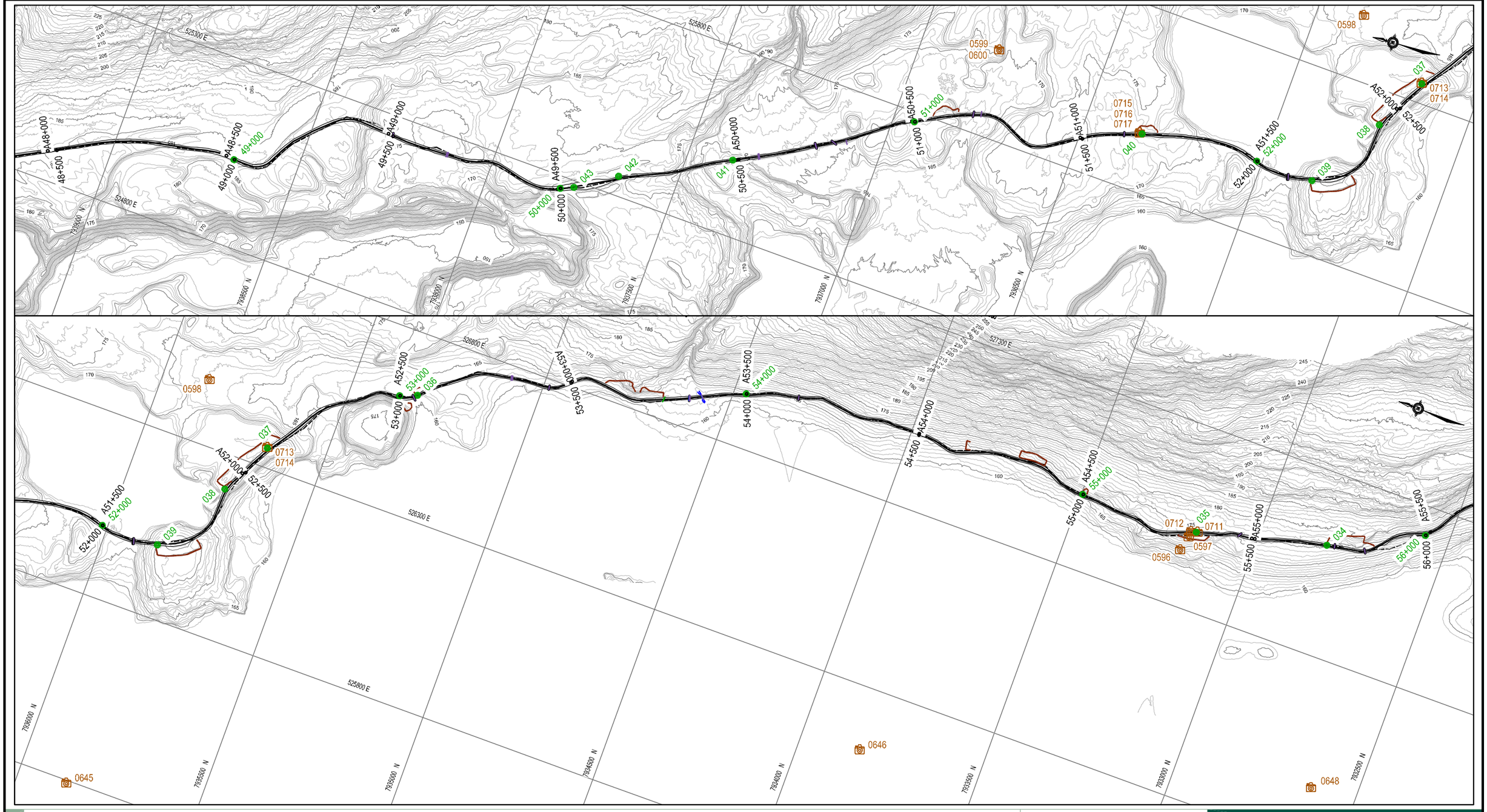

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Figure 7

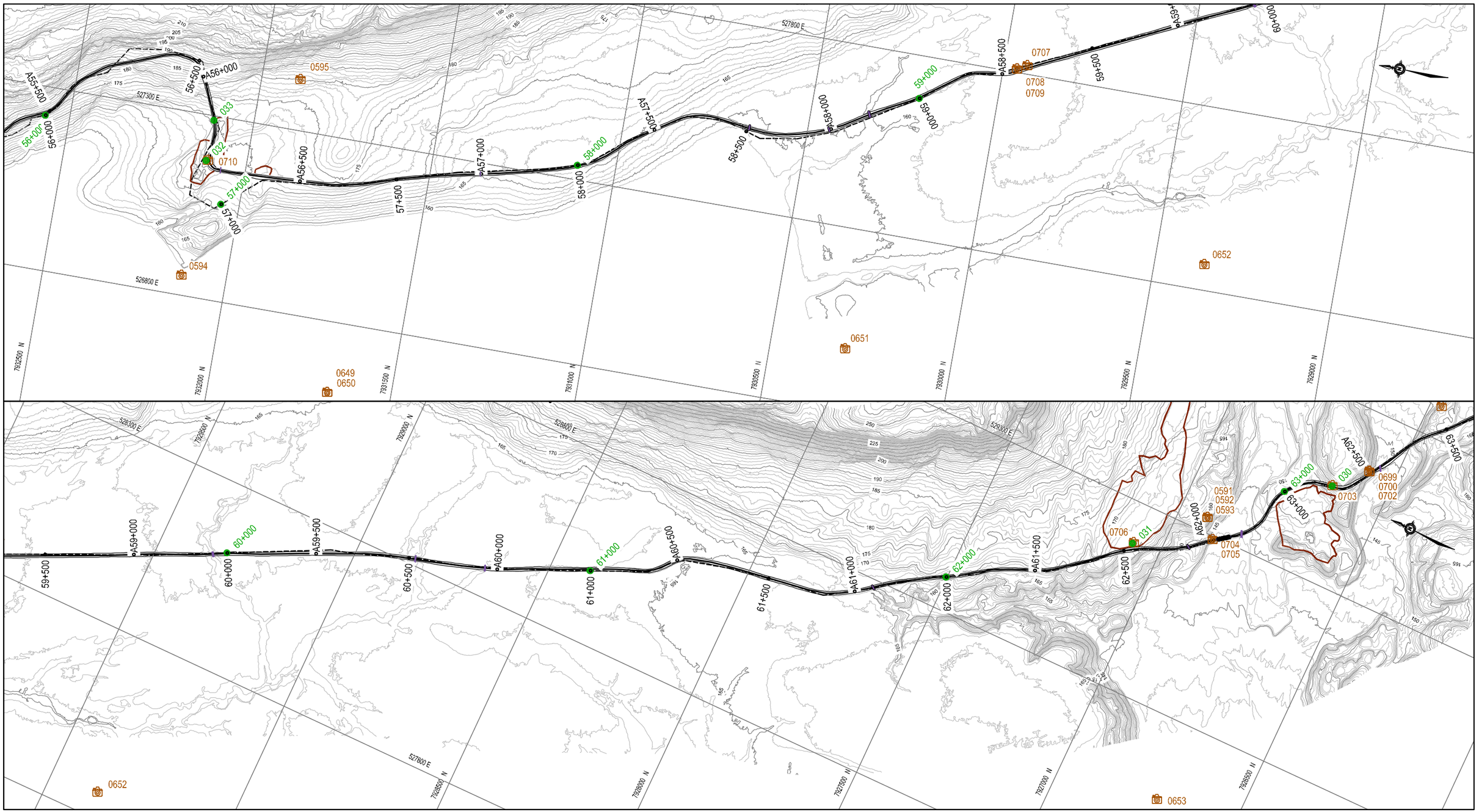

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Figure 8

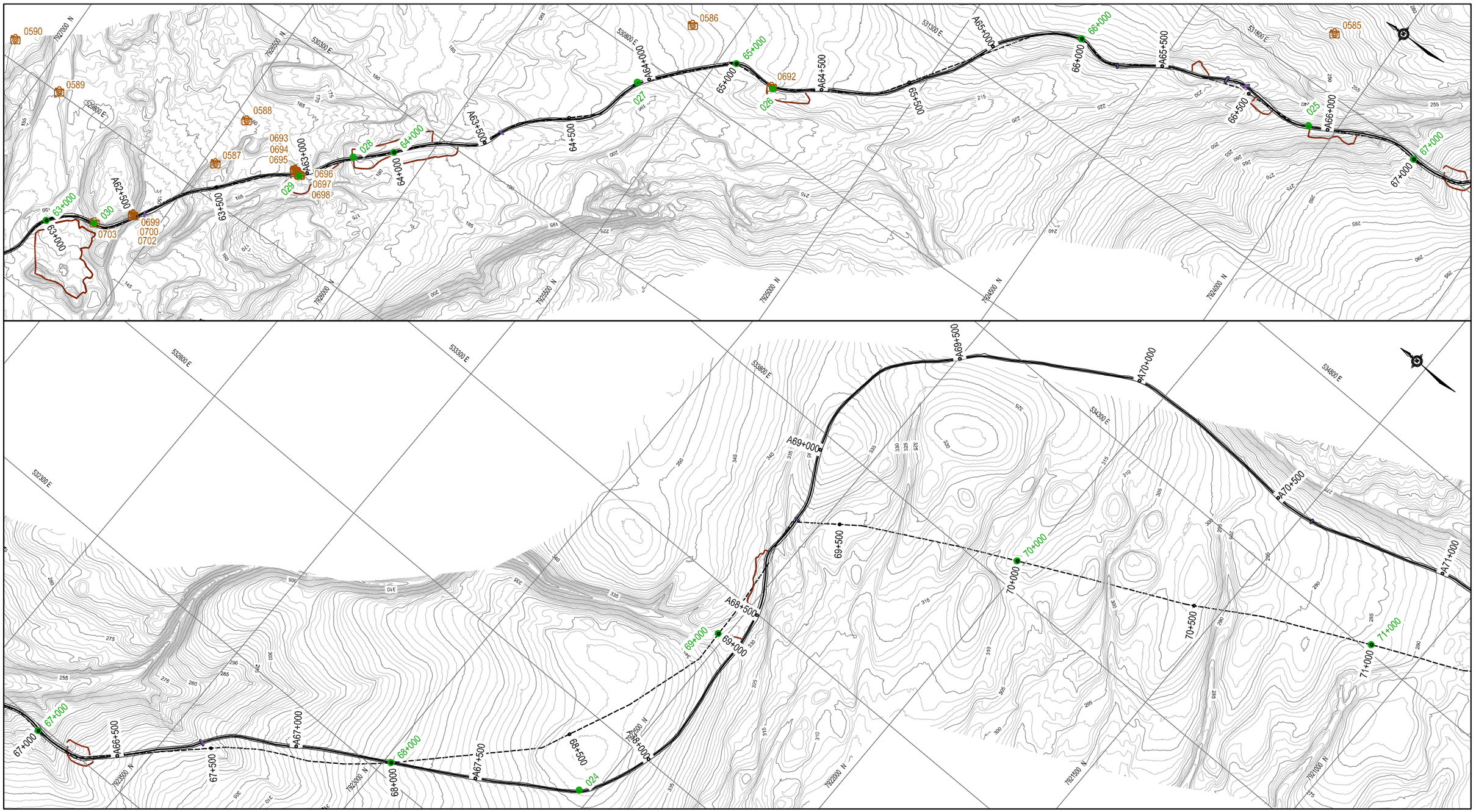

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Figure 9

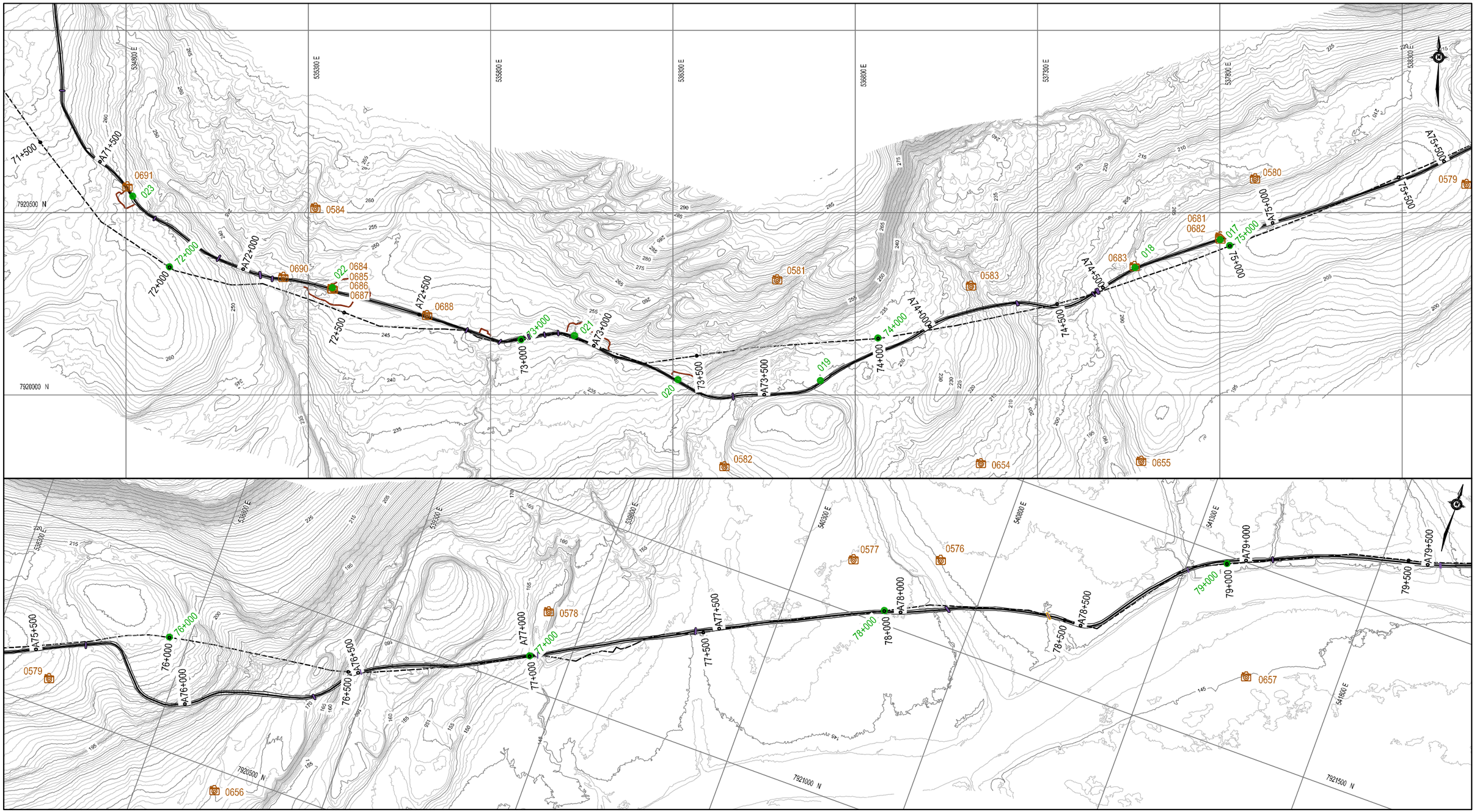

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Figure 10

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Figure 11

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Figure 12

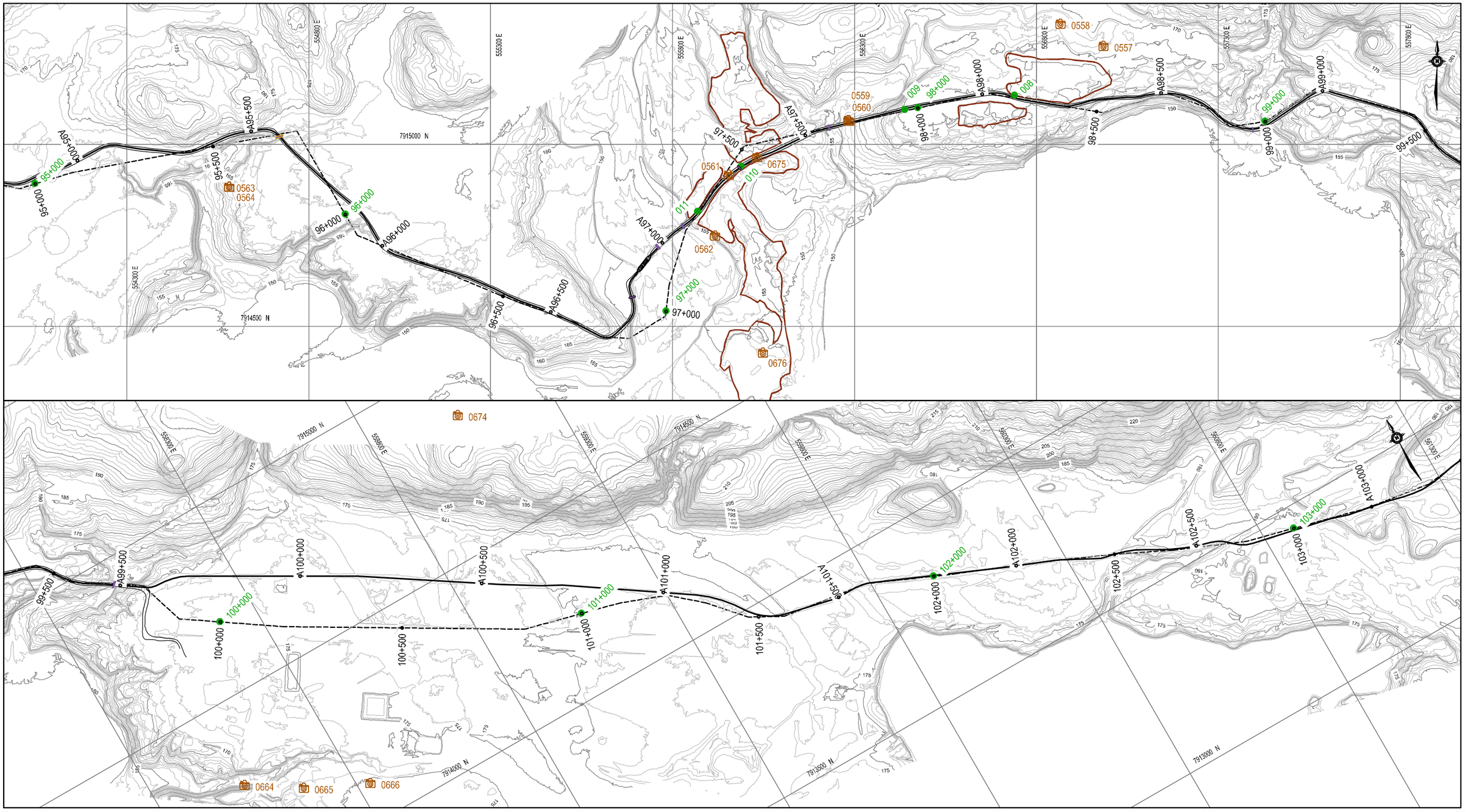

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Figure 13

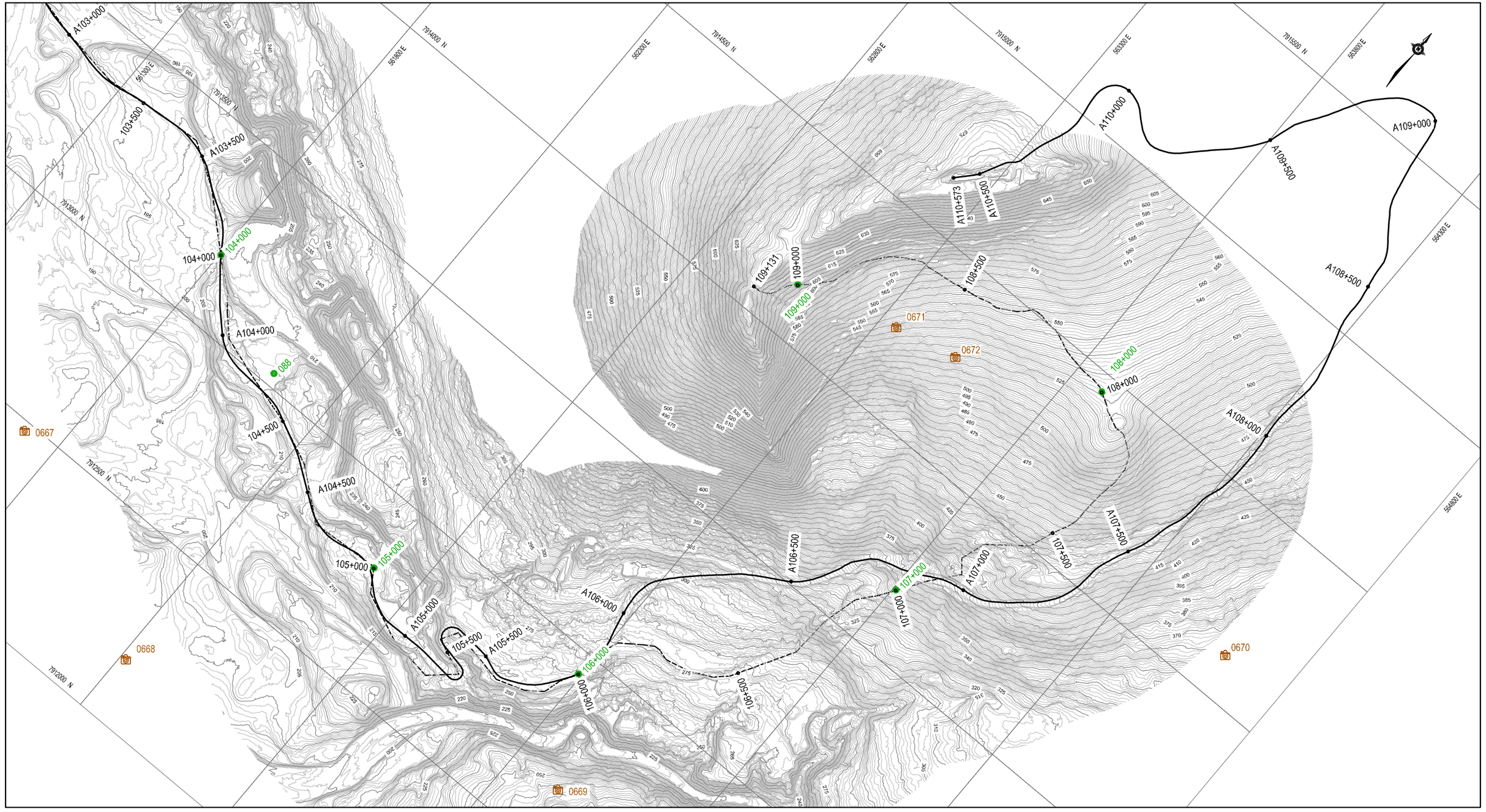

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Figure 14

APPENDIX B

APPENDIX B PHOTOGRAPHS (DVD)

APPENDIX C

APPENDIX C GEOTECHNICAL REPORT GENERAL CONDITIONS

GEOTECHNICAL REPORT – GENERAL CONDITIONS

This report incorporates and is subject to these "General Conditions".

1.0 USE OF REPORT AND OWNERSHIP

This geotechnical report pertains to a specific site, a specific development and a specific scope of work. It is not applicable to any other sites nor should it be relied upon for types of development other than that to which it refers. Any variation from the site or development would necessitate a supplementary geotechnical assessment.

This report and the recommendations contained in it are intended for the sole use of EBA's Client. EBA does not accept any responsibility for the accuracy of any of the data, the analyses or the recommendations contained or referenced in the report when the report is used or relied upon by any party other than EBA's Client unless otherwise authorized in writing by EBA. Any unauthorized use of the report is at the sole risk of the user.

This report is subject to copyright and shall not be reproduced either wholly or in part without the prior, written permission of EBA. Additional copies of the report, if required, may be obtained upon request.

2.0 ALTERNATE REPORT FORMAT

Where EBA submits both electronic file and hard copy versions of reports, drawings and other project-related documents and deliverables (collectively termed EBA's instruments of professional service), only the signed and/or sealed versions shall be considered final and legally binding. The original signed and/or sealed version archived by EBA shall be deemed to be the original for the Project.

Both electronic file and hard copy versions of EBA's instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except EBA. EBA's instruments of professional service will be used only and exactly as submitted by EBA.

Electronic files submitted by EBA have been prepared and submitted using specific software and hardware systems. EBA makes no representation about the compatibility of these files with the Client's current or future software and hardware systems.

3.0 ENVIRONMENTAL AND REGULATORY ISSUES

Unless stipulated in the report, EBA has not been retained to investigate, address or consider and has not investigated, addressed or considered any environmental or regulatory issues associated with development on the subject site.

4.0 NATURE AND EXACTNESS OF SOIL AND ROCK DESCRIPTIONS

Classification and identification of soils and rocks are based upon commonly accepted systems and methods employed in professional geotechnical practice. This report contains descriptions of the systems and methods used. Where deviations from the system or method prevail, they are specifically mentioned.

Classification and identification of geological units are judgmental in nature as to both type and condition. EBA does not warrant conditions represented herein as exact, but infers accuracy only to the extent that is common in practice.

Where subsurface conditions encountered during development are different from those described in this report, qualified geotechnical personnel should revisit the site and review recommendations in light of the actual conditions encountered.

5.0 LOGS OF TESTHOLES

The testhole logs are a compilation of conditions and classification of soils and rocks as obtained from field observations and laboratory testing of selected samples. Soil and rock zones have been interpreted. Change from one geological zone to the other, indicated on the logs as a distinct line, can be, in fact, transitional. The extent of transition is interpretive. Any circumstance which requires precise definition of soil or rock zone transition elevations may require further investigation and review.

6.0 STRATIGRAPHIC AND GEOLOGICAL INFORMATION

The stratigraphic and geological information indicated on drawings contained in this report are inferred from logs of test holes and/or soil/rock exposures. Stratigraphy is known only at the locations of the test hole or exposure. Actual geology and stratigraphy between test holes and/or exposures may vary from that shown on these drawings. Natural variations in geological conditions are inherent and are a function of the historic environment. EBA does not represent the conditions illustrated as exact but recognizes that variations will exist. Where knowledge of more precise locations of geological units is necessary, additional investigation and review may be necessary.

7.0 SURFACE WATER AND GROUNDWATER CONDITIONS

Surface and groundwater conditions mentioned in this report are those observed at the times recorded in the report. These conditions vary with geological detail between observation sites; annual, seasonal and special meteorologic conditions; and with development activity. Interpretation of water conditions from observations and records is judgemental and constitutes an evaluation of circumstances as influenced by geology, meteorology and development activity. Deviations from these observations may occur during the course of development activities.

8.0 PROTECTION OF EXPOSED GROUND

Excavation and construction operations expose geological materials to climatic elements (freeze/thaw, wet/dry) and/or mechanical disturbance which can cause severe deterioration. Unless otherwise specifically indicated in this report, the walls and floors of excavations must be protected from the elements, particularly moisture, desiccation, frost action and construction traffic.

9.0 SUPPORT OF ADJACENT GROUND AND STRUCTURES

Unless otherwise specifically advised, support of ground and structures adjacent to the anticipated construction and preservation of adjacent ground and structures from the adverse impact of construction activity is required.

10.0 INFLUENCE OF CONSTRUCTION ACTIVITY

There is a direct correlation between construction activity and structural performance of adjacent buildings and other installations. The influence of all anticipated construction activities should be considered by the contractor, owner, architect and prime engineer in consultation with a geotechnical engineer when the final design and construction techniques are known.

11.0 OBSERVATIONS DURING CONSTRUCTION

Because of the nature of geological deposits, the judgmental nature of geotechnical engineering, as well as the potential of adverse circumstances arising from construction activity, observations during site preparation, excavation and construction should be carried out by a geotechnical engineer. These observations may then serve as the basis for confirmation and/or alteration of geotechnical recommendations or design guidelines presented herein.

12.0 DRAINAGE SYSTEMS

Where temporary or permanent drainage systems are installed within or around a structure, the systems which will be installed must protect the structure from loss of ground due to internal erosion and must be designed so as to assure continued performance of the drains. Specific design detail of such systems should be developed or reviewed by the geotechnical engineer. Unless otherwise specified, it is a condition of this report that effective temporary and permanent drainage systems are required and that they must be considered in relation to project purpose and function.

13.0 BEARING CAPACITY

Design bearing capacities, loads and allowable stresses quoted in this report relate to a specific soil or rock type and condition. Construction activity and environmental circumstances can materially change the condition of soil or rock. The elevation at which a soil or rock type occurs is variable. It is a requirement of this report that structural elements be founded in and/or upon geological materials of the type and in the condition assumed. Sufficient observations should be made by qualified geotechnical personnel during construction to assure that the soil and/or rock conditions assumed in this report in fact exist at the site.

14.0 SAMPLES

EBA will retain all soil and rock samples for 30 days after this report is issued. Further storage or transfer of samples can be made at the Client's expense upon written request, otherwise samples will be discarded.

Project Memo

H349000

26 March 2014

TO: Jim Millard

FROM: Joel Gregorios

cc: Erik Madsen
Stephen Ranger
Michael Anderson
Shawn Tucker

Sabbir Hassan
Tessa Mackay
Steve Perry

Baffinland Iron Mines Corporation
Mary River Project

Progressive Reclamation & Rehabilitation of Borrow Source at Km97

1. Introduction and Purpose

This technical memorandum is to address the reclamation and rehabilitation for the borrow source at km 97 of the Milne Inlet Tote Road (Km97 Borrow Source). Km97 Borrow Source is situated approximately 5km from the Mary River Mine Site, along the Tote Road from Milne Port to the Mary River Mine Site. This has been a borrow site for the construction and maintenance of the Tote Road for the previous eight (8) years.

Baffinland Iron Mines Corporation (Baffinland) is committed to progressive reclamation of the Mary River Project (the Project) site. Select borrow areas along the Tote Road have been identified as a potential environmental concern for both Baffinland and the Qikiqtani Inuit Association (QIA)[1]. This technical memorandum serves to address Baffinland's progressive reclamation objectives and strategy for Km97 Borrow Source considering concerns identified during QIA's 2013 Environmental Inspection.

Note, this technical memorandum is limited to the factors that need to be addressed to prevent degradation of the landscape and to establish physical stability long term. The return of biological productivity of the area is not in the scope of this technical memorandum as Baffinland is of the position that the key to returning arctic sites to productive landscapes must always be to first address any ongoing physical degradation from permafrost thaw or erosion by abnormal runoff conditions and then focus on strategies for return of biological productivity if required.

1.1 Objectives

The primary objectives in planning the reclamation and rehabilitation of Km97 Borrow Source is to establish pit drainage without initiating new degradation of the permafrost and to stabilize ice-rich permafrost soils that if thawed would result in ongoing and unstable depressions of pooled water.

[1] 2013 Mary River Project Environmental Inspection Report, Qikiqtani Inuit Association, 17 December, 2013

1.2 Interim Abandonment and Reclamation Plan Objectives

As per the Interim Abandonment and Reclamation Plan (BAF-PH1-830-P16-0012) and the approved Preliminary Mine Closure and Reclamation Plan (H337697-0000-07-126-0014) for the Mary River Project, the primary goals relevant to the reclamation and rehabilitation of Km97 Borrow Source include:

- Provide for the long term physical and chemical stability of the area so as to protect the public health and safety and ecosystem integrity.
- Promote and enhance natural re-vegetation and recovery of disturbed areas that is compatible with the surrounding natural environment and allow for the future use by people and wildlife.
- Implement reclamation in a progressive, on-going manner during the life of the Project and restore sites as soon as an area is no longer required to limit the need for long term maintenance and monitoring.

To meet these goals both the Interim Abandonment and Reclamation Plan (BAF-PH1-830-P16-0012) and the approved Preliminary Mine Closure and Reclamation Plan (H337697-0000-07-126-0014) for the Project specifically state[2] the following closure objectives to measure the effectiveness of the progressive reclamation for areas that impact watercourse(s) and drainage patterns as in the case of Km97 Borrow Source:

- Dismantle and remove/dispose of as much of the system as possible and restore natural drainage patterns.
- Stabilize and protect from erosion and failure for the long term.
- Achieve approved water quality limits.

1.3 Requirements of the Landowner

Km97 Borrow Source is located on Inuit Owned Lands that are managed by the Inuit Association in the region, the QIA. As such, Km97 Borrow Source is subject to the guiding principles for reclamation of Inuit Owned Land developed by the QIA. The QIA reclamation principles applicable to Km97 Borrow Source, that the strategies presented within this technical memorandum address, include:

- Reclamation should be planned and executed so as to achieve a site which is physically, chemically, and biologically stable upon closure.
- Reclamation should result in a site which is aesthetically and environmentally compatible with the surrounding undisturbed landscape.
- Site-specific reclamation requirements should be consistent with the locally valued ecosystem components and regional planning objectives, including land use plans.
- Land use operations should be planned and conducted in a manner that minimizes reclamation requirements at closure.

[2] See: Section 11, Interim Abandonment and Reclamation Plan (BAF-PH1-830-P16-0012) , Section 11, Preliminary Mine Closure and Reclamation Plan (H337697-0000-07-126-0014)

- Land users may be required to undertake in post-activity monitoring to confirm reclamation objectives have been achieved.

1.4 Success Criteria of Km97 Borrow Source Progressive Reclamation and Rehabilitation

Based on the objectives and principles stated in section 1.2 and section 1.3, Baffinland proposes that the Km97 Borrow Source will be considered reclaimed and rehabilitated when the site is:

- Physically stable and showing no further signs of ongoing permafrost degradation.
- Free draining through the use of swales and site grading, to prevent pooling/ponding of surface water.
- Consistently achieving water quality results within water quality limits as per table 1 (Part D item 16 of the NWB Type A Water Licence, 2AM-MRY1325).

2. Current Site Conditions

The borrow source area forming the basis of this technical memorandum is the portion of Km97 Borrow Source south of the Milne Inlet Tote Road and west of Camp Lake that has been accessed historically to provide material for the Milne Inlet Tote Road maintenance and material for construction of various lay down areas at the Mary River Mine Site. The area is approximately 8.21 ha with stockpile areas as well as areas of ponding and suspected permafrost degradation. Based on visual observations (see Photo 3-1) there is a large area of pooled water on the site. There is some evidence that shows that the water from Km97 Borrow Source discharged in an uncontrolled manner for a brief period during the 2013 freshet. The discharge pathway was overland to Camp Lake.

Ponded water within borrow pits insulates the local material which in turn retards winter freeze-back of the active layer. This results in retrogressive thickening of the active layer. Shallow ponding (less than 0.5m deep) that is short-lived following the freshet does occur at Km97 Borrow Source, although this is not deemed a present concern as it does not impact long term stability of the site. If ponding is observed as remaining persistent throughout the open water season and depressions deepen with time, then specific strategies to address reclamation and rehabilitation of these depressions will be developed as these conditions are counter-productive to concerted reclamation efforts.

Photo 3-1: Km97 Borrow Source: Typical depression formation from thaw of massive ice

3. Methodology

A drainage and rehabilitation plan for Km97 Borrow Source has been developed and is presented in drawing H349000-4138-10-015-0007. The conceptual approach for the drainage and rehabilitation plan is to divert water away from the site at the top and bottom of the existing slope so that accumulated surface water does not remain stagnant and allowed to pool or pond. In this effort, the following main steps will be taken:

- Develop the drainage such that standing water is limited to avoid thawing action within the pit.
- Grade Km97 Borrow Source area such that surface water runoff does not increase the risk of erosion and sedimentation over the undisturbed tundra.
- Encourage natural re-vegetation to enhance site aesthetics.

3.1 Drainage Improvements and Erosion Prevention

In order to prevent ongoing permafrost degradation, erosion, and improve the drainage at Km97 Borrow Source, the following steps will be taken:

- Assess the condition of the Milne Inlet Tote Road and borrow area at Km97 Borrow Source during/after freshet and collect additional survey data as required.
- Based on additional data and assessment, make appropriate changes to the drainage design as required and grade the slopes of the toes to ensure long term stability.
- Create diversion swales at the top and bottom of the site to divert surface water flow from the borrow site, and/or capture overland runoff from Km97 Borrow Source and discharge

to a nearby lake or water body in a controlled manner such that the quality of the discharge can be monitored and that the area remains well-drained. These diversion swales will be sized to have enough flow capacity and constructed in a manner that does not further degrade permafrost ground.

- Where there is evidence of ponding, remove the degraded material from within the depression, replace with suitable ice free native fill and/or run of quarry (if required) material and re-grade.
- Route any trapped surface water away from the pit to a nearby water body or diversion swale.
- Place swales to divert surface water away from areas that may be susceptible to permafrost degradation.
- Determine the nature of soils and ground ice that will remain exposed following excavation if new swales are needed – to ensure suitability of the newly exposed material.
- Swales will be lined with rip rap and rip rap lined aprons will be constructed for energy dissipation to encourage sediment deposition and limit erosion.
- Use only suitable ice free native material and/or run of quarry (if required) for fill and grade Km97 Borrow Source so that the site drains free, as appropriate.
- Additional rip rap shall be placed in locations that require additional flow velocity reduction to prevent soil erosion and downstream sediment deposition. Rip rap will also be placed at discharge locations so that the overland drainage can enter into Camp Lake in a controlled and stable manner.

3.2 Surface Grading

Once the activities outlined in section 3.1 are conducted the rehabilitation efforts of Km97 Borrow Source will focus on surface grading and removal of any obvious ridges/highpoints that impede surface drainage to develop the final surface contour that ensures drainage as designed. The final grading may be different to that shown in drawing H349000-4138-10-015-0007, but will not alter the intent of the designed drainage paths. At the end of surface grading, the surface will be scarified with tractor grouser bar ruts or similar to encourage natural re-vegetation by trapping of fines, pollen and seeds while also dissipating energy from runoff.

4. Timeframe for Rehabilitation

Terrain stability can seldom be achieved on disturbed permafrost terrain in a single summer season. Two or more staged seasons are expected to be required to complete reclamation of those pits where thaw of ground is most prevalent, such as Km97 Borrow Source. This schedule requires that site observations and monitoring of terrain response to reclamation efforts be also considered in reclamation planning. Monitoring will comprise a systematic set of observations of the Km97 Borrow Source area twice per year (anticipated to occur in early

summer and later summer) with limited surveying, as required, to confirm where grading required to prevent pond formation. It is intended that the site observations and monitoring data will provide a basis for optimizing reclamation efforts moving forward.

An initial survey was completed in March 2014 to establish low points and areas of focus for the reclamation and rehabilitation plan of Km97 Borrow Source. Based on this initial survey and historic information, it is expected that the initial work to re-grade the site will occur in the early summer of 2014. Once completed, the site will be observed throughout the remaining summer season to assess the effectiveness of the initial work and decide what further work is required in subsequent years to advance the rehabilitation of the area and reach the reclamation objectives.

Monitoring of the site should continue for a full summer season after the water quality results confirm conformance with the Mary River Type A Water Licence (2AM-MRY1325) requirements.

5. Closure

We trust this technical memo meets your present requirements. Should you have any questions or comments, please contact the undersigned at your convenience.

Prepared by:

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Reviewed by:

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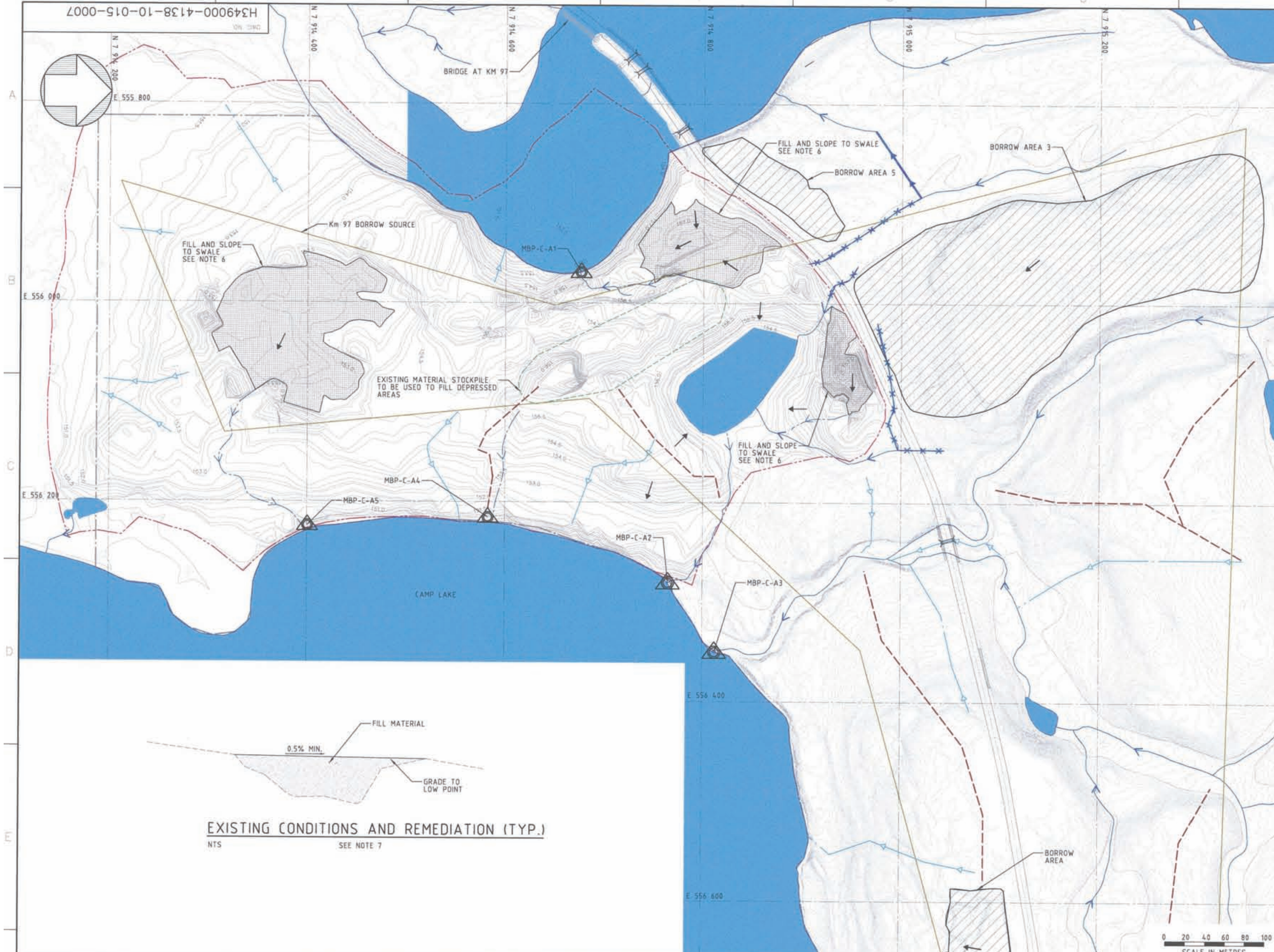
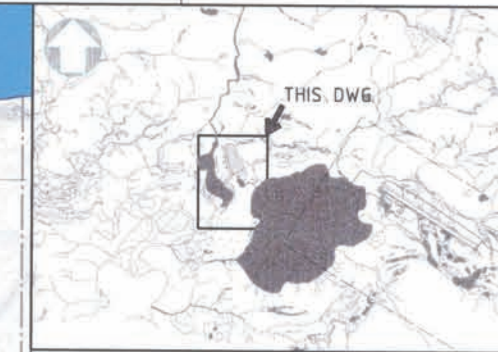
Hatch Ltd.
+1 905 403 4200 x7934
SHassan@hatch.ca

Joel Gregorios

TM:tm
Attachment(s)/Enclosure :
Drawing: H349000-4138-10-015-0007

H349000-4138-10-015-0007





KEY PLAN

LEGEND

- FILL AND GRADE DEPRESSIONS
- EXISTING WATERBODY
- PROPOSED FOOTPRINT OF BORROW AREA #3 and #2
- MARCH 2014 SURVEY LIMIT
- BOUNDARY
- EXISTING MATERIAL STOCKPILE
- EXISTING BOUNDARIES FOR BORROW AREAS AND ROCK QUARRY LOCATIONS
- CENTERLINE OF SWALE
- EXISTING STREAM
- OVERLAND FLOW PATH
- EXISTING DRAINAGE TO BE DIVERTED/ABANDONED
- SURFACE DRAINAGE DIVERSION
- INTERNAL SURFACE DRAINAGE
- RIDGE LINE (HIGH POINT)
- EXISTING CULVERT (LOCATION APPROXIMATE)
- PROPOSED ROAD/UTILITY BERM
- EXISTING ROAD
- PROPOSED WATER QUALITY MONITORING LOCATION

NOTES:

1. TOPOGRAPHY PROVIDED BY TERRAPOINT CANADA INC.
2. COORDINATE GRID IS SHOWN IN UTM (NAD83)E 17 AND IS IN METRES.
3. CONTOURS ARE IN METRES. CONTOUR INTERVAL IS METRE.
4. ALL DIMENSIONS AND ELEVATIONS ARE IN METRES UNLESS NOTED OTHERWISE.
5. ALL LOW AREAS OR DEPRESSIONS SHALL BE FILLED AND GRADED TO DRAIN AREAS TO DISCHARGE LOCATIONS.
6. FINAL FILL EXTENTS, ELEVATIONS AND SURFACE SLOPES SHALL BE ADJUSTED IN THE FIELD.
7. REMOVE TOP LAYER OF SOIL INSIDE THE DEPRESSED AREA. FILL AND GRADE WITH ICE FREE SUITABLE NATIVE MATERIAL AND/OR RUN OF QUARRY (IF REQUIRED) TO ENSURE DRAINAGE MOVES SURFACE WATER TO NEAREST WATER BODY OR SWALE.

DRAWING NO.	DRAWING TITLE
REFERENCE DRAWINGS	

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date 27 MAR 14
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

REGISTERED PROFESSIONAL ENGINEER
M. M. S. HASSAN
LICENSEE
NT/NU

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

REV.	ISSUE FOR	AUTH. BY	DATE
A	PERMITTING	SH / GJ	2014-03-27
ISSUE AUTHORIZATION			

HATCH

DESIGNED BY G. JUBINVILLE DATE 2014-03-27	DRAWN BY G. JUBINVILLE DATE 2014-03-27
CHECKED A. MOHEBKHANI DATE 2014-03-27	DISCIP. ENGR. S. HASSAN DATE 2014-03-27
PROJ. DES. COORD. T. THERTELL DATE 2014-03-27	PROJ. ENGR. CLELAND DATE 2014-03-27
PROJ. MGR. S. PERRY DATE 2014-03-27	

Baffinland

MARY RIVER PROJECT

MINE SITE
KILOMETER 97 BORROW SOURCE AREA
DRAINAGE AND REHABILITATION PLAN

SCALE	DWG. NO.	REV.
1:2000	H349000-4138-10-015-0007	A

ORIGINAL SHEET SIZE: ISO A1 (841 x 594)

APPENDIX E.7.3
WSCC INSPECTION REPORTS AND BAFFINLAND RESPONSE

20131028

email michael.anderson@baffinland.com

Michael Anderson
Vice President Operations
Baffinland Iron Mines Corporation
120 Adelaide Street West - Suite 1016
Toronto ON M5H 1T1

Dear Mr. Anderson:

Further to the **Mine Health and Safety Act article 26** attached is my 20131028 Mary River project inspection report.

As per **MHSA article**

28. please post a copy of this inspection report in a conspicuous location, and

29. advise the chief inspector within 30 days of the remedial measures taken and the remedial measures still to be taken in respect of the inspection report.

32.(1) A person who is adversely affected by a decision or order issued by an inspector may appeal the decision or order, in writing, to the chief inspector within 30 days after its issue.

The WSCC is committed to service excellence. If you have any questions or concerns about this inspection report, please feel free to contact my supervisor Peter Bengts or myself. His phone number is 867 669 4412 or email peter.bengts@wscc.nt.ca.

Sincerely
Workers' Safety and Compensation Commission of the NWT and NU
Mine Safety

Martin van Rooy
Engineer/Mines Inspector

cc OHSC c/o brian.larson@ baffinland.com

WSCC Workers' Safety & Compensation Commission | ᐃᖅᑲᓇᐃᔭᖅᑎᓄᑦ ᐊᑦᑕᓇᖅᑐᓂᒃ ᐊᒻᒪ ᓇᓪᓚᐅᒃᑯᒫᓂᒃ ᖃᐅᔨᓴᖅᑎᑦ

REPORT OF AN INSPECTOR OF MINES

Issued pursuant to Section 26(2) of the *Mine Health and Safety Act*

Mine:	Mary River project	Location:	~950 km NW of Iqaluit
Operator:	Baffinland Iron Mines Corp.	Lat. 71-19'N	Long. 79-24'W
Manager:	Michael Anderson	Inspection Date:	20131022 and 23
Address:	120 Adelaide Street West - Suite 1016 - Toronto ON M5H 1T1		

Jeff Fuller (WSCC's electrical consultant) and Martin van Rooy (engineer/mine inspector for NWT and NU) conducted an electrical inspection on October 22 and 23, 2013 of Baffinland's Milne Inlet and Mary River power plant and associated electrical rooms. Mr. Fuller's report *"Baffinland Iron Mines – Mary River and Milne Inlet Electrical Inspection By: Jeff Fuller – J.A. FULLER ENGINEERING LTD Insp. Date: Oct. 22 – 23, 2013"* is attached for reference.

Dwayne Chyz, James Cleland, Pat Driscoll, Dan Dubreuil, Steve Gogo, Aateff Hussaini, Brian Larson Dylan O'Connell, Mike Peters, Michel Roy, Darren Stehr, Tim Thertell and Shawn Tucker accompanied Jeff Fuller and Martin van Rooy for all or parts of this inspection

Noticed at Milne Inlet two supervisors were working without a current St John Ambulance Standard first aid with CPR certification or an equivalent 16-hour first aid qualification. These men were told they could not supervise until they had passed their St John Ambulance first aid course or an equivalent 16-hour first aid course. Their work was shutdown until a qualified supervisor arrived from Mary River.

1 Please ensure before a supervisor is dispatched to site they have a current St John Ambulance standard first aid with CPR or equivalent 16-hour first aid certification and the person may not supervise until they have their first aid qualifications.

MHSA art 10.(3) *In addition to the duties imposed under subsections (1) and (2), the manager shall*
(c) when appointing a supervisor or surveyor, appoint a person possessing the prescribed qualifications;
(d) ensure that an employee is under the daily supervision of a person possessing the prescribed qualifications;

MHSR sect 8.51. *At a mine*
(a) all persons engaged in supervision,
(b) all persons engaged in mine rescue,

Date of Report 20131028 **Inspector** [signature]

WSCC Workers' Safety & Compensation Commission | ᐃᖃᓇᐃᔭᕐᑎᓄᑦ ᐊᑦᑕᓇᖅᑐᓂᒃ ᐊᒻᒪ ᓇᓪᓕᐅᒃᑯᒫᓂᒃ ᖃᐅᔨᓴᖅᑎ

REPORT OF AN INSPECTOR OF MINES

Issued pursuant to Section 26(2) of the *Mine Health and Safety Act*

(c) all persons who are members of fire response teams,
(d) one-fifth of the total number of the employees underground, and
(e) one-tenth of the total number of employees on the surface,
shall be trained in first aid and hold a current and valid certificate at least equivalent to the St. John Ambulance Standard First Aid certificate, and shall be trained in cardiac pulmonary resuscitation or to such other level as may be agreed to by the chief inspector.

Noticed there are about 200 people stationed at Milne Inlet and about 150 at Mary River. These sites are about a two-hour drive apart however, there is no emergency response system in place at each location to handle an emergency on site or on the road between these sites.

2 Please ensure some 60 people are trained as emergency responders at each of the Milne Inlet and Mary River sites in order to provide at least 20-trained emergency responders readily available at each site, to attend to any emergency that may occur on site or on the road between the sites.

MHSA art 10.(3) *In addition to the duties imposed under subsections (1) and (2), the manager shall (h) establish and maintain a mine rescue program as required under the regulations;*

MHSR sect 8.55. *The manager shall ensure that a sufficient number of employees are trained and certified in mine rescue.*

MHSR sect 8.56. *The manager shall ensure that*
(a) a sufficient number of qualified persons are trained as mine rescue team members;
(b) a sufficient number of qualified persons who are trained as mine rescue team members are readily available at the mine when persons are normally at work in the mine; and
(c) at least two teams, or such other number of teams as may be required by the chief inspector, are readily available to get to the mine when persons are normally at work in the mine.

MHSR sect 8.57. *Where an inspector is of the opinion that the number of employees trained and certified in mine rescue at a mine is insufficient, the inspector may order more to be trained*

MHSR sect 12.03.(1) *The manager shall ensure that the following training in fire fighting is carried out under the direction of a qualified person:*
(c) the manager shall ensure that a suitable number of employees are trained in fire fighting

Date of Report 20131028 **Inspector** [signature]

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Box 669 • Iqaluit, NU X0A 0H0 • Telephone: (867) 979-8500 • Toll Free: 1-877-404-4407 • Fax: (867) 979-8501 • Toll Free Fax: 1-866-979-8501
wscc.nt.ca • wscc.nu.ca

techniques and those employees shall attend at least 20 hours of training annually.

Noticed the new equipment parked at the Milne Inlet and Mary River site.

3 Please submit an up-to-date equipment list of all the equipment on site including the certification and or recertification of all cranes, manlifts and other non-destructive testing of load bearing components on the equipment.

MHSR sect 10.128.(2) *A new or used crane, shovel, dragline, boom truck or similar type of equipment that uses a rope or cable to raise, lower or swing a load or materials during its work cycle shall not be put into service unless*
(a) a certificate has been obtained from the manufacturer or from a professional engineer competent in the design of hoisting equipment, certifying
(i) the maximum load capacity and maximum operating speed of the hoisting or lifting system, and
(ii) that all critical load-bearing components of the complete assembly and accessories have been inspected and non-destructively tested; and
(b) all the commissioning tests have been successfully completed.

Noticed the grounding / bonding at Milne Inlet and Mary River power generation and E-houses is not in accordance with the data provided by Baffinland to WSCC for reviewed and acceptance of the design criteria.

4 Please update the documentation to reflect the changes made in the field and demonstrate its compliance with the previously reviewed and accepted design criteria.

MHSR sect 13.01.(1) *The electrical system and electrical equipment at a mine shall be*
(a) designed in accordance with good engineering practice; and
(b) constructed in accordance with a design and plans that have been certified by a professional engineer.

Noticed the main ground connection to the E-houses at Milne Inlet and Mary River are not connected according to the engineering specification. Each E-house was to have four stainless steel ground pads pre-

Date of Report 2013 10 28 **Inspector** [signature]

connected to the internal ground bus however, this has not been done and consequently there is no provision for connecting the grounding/bonding network to the building frame or to the main ground bus / switchgear ground bus.

5 Please design this grounding detail and connect it to the E-houses internal ground bus.

MHSR sect 13.01.(1) *The electrical system and electrical equipment at a mine shall be*
(a) designed in accordance with good engineering practice; and
(b) constructed in accordance with a design and plans that have been certified by a professional engineer.

Noticed the 4160/600V transformers
a) in E-house #1 and #2 at Milne Inlet, do not have the required 150mm clearance for ventilation as required by CEC 26-248 (1); and
b) in E-house #1 at Milne Inlet and Mary River these units do not have ready access to their nameplate and to parts requiring maintenance (primary taps) as required by CEC 2-118

6 Please review these deficiencies with the manufacturer(s) and submit the corrective action that will be taken and the time to bring these installations into compliance.

MHSR sect 13.01.(2) *Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA-M421-93, Use of Electricity in Mines.*

Noticed the cable tray grounding/bonding conductors in E-House #1 and #2 at Milne Inlet and Mary River are not installed in accordance with the accepted grounding design criteria and cable tray standard.

7 Please install the grounding/bonding conductors in all cable trays in accordance with the accepted grounding design criteria and cable tray standard.

MHSR sect 13.01.(1) *The electrical system and electrical equipment at a mine shall be*
(a) designed in accordance with good engineering practice; and
(b) constructed in accordance with a design and plans that have been certified by a professional engineer.

Date of Report 2013/02/28 **Inspector** [signature]

WSCC Workers' Safety & Compensation Commission | ᐃᖅᑲᓇᐃᔭᖅᑎᓄᑦ ᐊᑦᑕᓇᖅᑐᓂᒃ ᐊᒻᒪ ᓇᓪᓕᐅᒃᑯᒪᓂᒃ ᖃᐅᔨᓴᖅᑎᑦ

REPORT OF AN INSPECTOR OF MINES

Issued pursuant to Section 26(2) of the *Mine Health and Safety Act*

Noticed in Milne Inlet's E-House #1 and #2 mechanical connectors are used for ground connections instead of compression type connectors

8 Please replace the mechanical connectors with compression type connectors and ensure connections to the bus are made with compression lugs Refer to CEC 10-806

MHSR sect 13.01.(2) *Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA-M421-93, Use of Electricity in Mines.*

Noticed in the E-houses the bare copper grounding wire installed in the aluminum cable trays using Blackburn GTC-23 copper alloy tower grounding clamps. The Blackburn information does not state that these connectors are suitable for use with aluminum cable tray.

9 Please replace the Blackburn GTC-23 connectors unless it can be demonstrated that they are suitable for use in contact with the aluminum cable tray.

MHSR sect 13.01.(1) *The electrical system and electrical equipment at a mine shall be*
(a) designed in accordance with good engineering practice; and
(b) constructed in accordance with a design and plans that have been certified by a professional engineer.

Noticed there are no visible external bonding conductors at the Milne Inlet generators connecting them directly to their frames.

10 Please provide an external bonding conductor connected directly to the generator frame; by-passing any vibration isolators; and ensure these are sized in accordance with CEC 10-814 (1) and Table 16

MHSR sect 13.01.(2) *Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA-M421-93, Use of Electricity in Mines*

Date of Report 2013 10 28 **Inspector** [signature]

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REPORT OF AN INSPECTOR OF MINES

Issued pursuant to Section 26(2) of the *Mine Health and Safety Act*

Noticed the ring lugs attached to horizontal flat bus in the 4160V switchgear in E-House #1 and #2 at Milne and Mary River, appear to have been bent from a straight lug to a 90° lug. It is not clear if these lugs were manufactured with a right angle or were field modified by the manufacturer.

11 Please check with the manufactured and verify these lugs are manufactured as 90° lugs or are approved for field modification in this manner. If approval is not available, replace the lugs in an approved manner Refer to CEC 2-024.

MHSR sect 13.01.(2) *Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA-M421-93, Use of Electricity in Mines*

Noticed at Milne Inlet there are no test labels on the protective relays in E-house #2.

12 Please ensure these relays have been tested in accordance with CSA Standard M421 and have their test labels affixed

MHSR sect 13.01.(2) *Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA-M421-93, Use of Electricity in Mines*

Noticed in the sewage treatment plant at Milne Inlet and Mary River a loop of bare copper wire coiled up beside the lighting transformer.

13 Please ensure the grounding system is connected to the main ground grid and remove this ground conductor wire if it is redundant or determine its intended use and install it.

MHSR sect 13.01.(1) *The electrical system and electrical equipment at a mine shall be*
(a) designed in accordance with good engineering practice; and
(b) constructed in accordance with a design and plans that have been certified by a professional engineer.

Date of Report 2013/028

Inspector [signature]

REPORT OF AN INSPECTOR OF MINES

Issued pursuant to Section 26(2) of the *Mine Health and Safety Act*

Noticed the emergency lights in the E-houses in Milne Inlet and Mary River are missing or not working and the fire suppression systems are not completed.

14 Please check the emergency light installations and ensure these and the fire suppression systems are working.

MHSR sect 9.56.(1) *The manager shall ensure that there is a separate and independent emergency source of illumination at all places on the surface where a hazard could be caused by a failure of the normal lighting system.*

(2) *The emergency lighting system referred to in subsection (1) shall*
(a) turn on automatically when the normal lighting fails;
(b) provide illumination of at least 50 lux to allow employees to initiate emergency shutdown procedures and to leave their work areas safely; and
(c) be tested as frequently as necessary to ensure that it will function when required.

Noticed the cable trays are placed on the ground between the generator buildings and the E-houses #1 and #2 s at Milne Inlet, obstructing the clear access required by the power system operators and maintenance personnel.

15 Please review this installation and provide clear and unobstructed access for a person to travel between the generators and the E-houses Refer to CEC 2-312.

MHSR sect 1.90. *Where workers are required to work, operate, maintain or service equipment, a safe means of access shall be provided as required by section 1.89.*

As previously noted inspection reports September 20, 2011... the fresh water submersible pumps serviced from the Mary River pump house are not equipped with shielded portable power cables with ground fault protection and ground conductor monitoring as required by CSA Standard M421 sub-clause 4.4.1.4

16 Please remove these pumps from service on or before August 15, 2014 or replace the unshielded G-GC submersible pump power cables with their ground check conductors cut-off with shielded power

Date of Report 2013:10:28 **Inspector** [signature]

REPORT OF AN INSPECTOR OF MINES

Issued pursuant to Section 26(2) of the *Mine Health and Safety Act*

cables complete with the ground conductor monitoring installed all as per CSA Standard M421 sub-clause 4.4.1.4. In the interim, access to these submersible pump cables between the pump house and the pond must be restricted with barricades and posted signs warning Danger 600V. These pumps must be locked-out and tagged before entering this restricted area. See also CEC 26-956(2)(b).

MHSR sect 13.01.(2) *Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA-M421-93, Use of Electricity in Mines*

Noticed there are no cable supports for these existing fresh water submersible pumps where the portable power cables leave the pump control panel.

17 Please provide support in the form of Kellems grips or equivalent to prevent strain on the connectors as per CEC 4-040(5) and 12-3022

MHSR sect 13.01.(1) *The electrical system and electrical equipment at a mine shall be*
(a) designed in accordance with good engineering practice; and
(b) constructed in accordance with a design and plans that have been certified by a professional engineer.

Date of Report 2013 10 28 **Inspector** [signature]

REPORT OF AN INSPECTOR OF MINES

Issued pursuant to Section 26(2) of the *Mine Health and Safety Act*

Baffinland Iron Mines – Mary River and Milne Inlet Electrical Inspection

By: Jeff Fuller – J.A. FULLER ENGINEERING LTD Insp. Date: Oct. 22 – 23, 2013

General Comment

Grounding / bonding is not in accordance with the cable schedule provided. The engineer must update the documentation to reflect the changes and demonstrate compliance with the previously reviewed and accepted design criteria. Refer to the Mine Health and Safety Regulations 13.01(1)(b).

1. Milne Inlet

1.1. Power Generation E-House #1

1.1.1. Main grounds not connected. According to the Hatch specification the E-houses were to have been equipped with four stainless steel ground pads pre-connected to the internal ground bus. This has not been done and consequently there is neither a provision for connection of the grounding/bonding network to the building frame nor to the main ground bus / switchgear ground bus. This detail must be provided by the engineer. Refer to the Mine Health and Safety Regulations 13.01(1)(b).

1.1.2. 4160/600V transformer does not have the required 150mm clearance for ventilation as required by CEC 26-248 (1). It should be noted that these transformers have a 150C temperature rise and therefore have no extra thermal capacity and will run extremely hot.

1.1.3. 4160/600V transformer does not have ready access to the nameplate and to parts requiring maintenance (primary taps) as required by CEC 2-118.

1.1.4. Mechanical connectors used for ground connections. Replace with compression type connectors. Make connections to bus with compression lugs. Refer to CEC 10-806 (1).

1.1.5. Supply grounding/bonding conductors in all trays in accordance with Hatch grounding design criteria and cable tray standard.

1.1.6. Ring lugs attached to horizontal flat bus in the 4160V switchgear appear to have been bent to 90°. Obtain evidence that these lugs were manufactured this way or are approved for field modification in this manner. If such approvals are not available replace the lugs in an approved manner. Refer to CEC 2-024.

Date of Report 2013 10 28 **Inspector** [signature]

REPORT OF AN INSPECTOR OF MINES

Issued pursuant to Section 26(2) of the *Mine Health and Safety Act*

1.2. Power Generation E-House #2

1.2.1. Main grounds not connected. According to the Hatch specification the E-houses were to have been equipped with four stainless steel ground pads pre-connected to the internal ground bus. This has not been done and consequently there is neither a provision for connection of the grounding/bonding network to the building frame nor to the main ground bus / switchgear ground bus. This detail must be provided by the engineer. Refer to the Mine Health and Safety Regulations 13.01(1)(b).

1.2.2. 4160/600V transformer does not have the required 150mm clearance for ventilation as required by CEC 26-248 (1).

1.2.3. Mechanical connectors used for ground connections. Replace with compression type connectors. Make connections to bus with compression lugs. Refer to CEC 10-806 (1).

1.2.4. Supply grounding/bonding conductors in all trays in accordance with Hatch grounding design criteria and cable tray standard.

1.2.5. Ring lugs attached to horizontal flat bus in the 4160V switchgear appear to have been bent to 90°. Obtain evidence that these lugs were manufactured this way or are approved for field modification in this manner. If such approvals are not available replace the lugs in an approved manner. Refer to CEC 2-024.

1.2.6. There are no test labels on the protective relays. Ensure that relays have been tested in accordance with CSA Standard M421 and have labels affixed.

1.3. Generators

1.3.1. Provide an external bonding conductor connected directly to the generator frame by-passing any vibration isolators and sized in accordance with CEC 10-814 (1) and Table 16.

1.3.2. Cable trays run along the ground obstruct the access required by power system operators and maintenance personnel between the generators and the switchgear. As a minimum install suitable walkways providing clear unobstructed passage between E-houses and generators. Refer to CEC 2-312.

1.3.3. Earth resistance testing is required by CSA Standard M421 4.6.4 which states that the station exemption allowed under the CEC 36-306 does not apply in permafrost conditions. An agreement was reached with Hatch whereby a station exemption would be allowed providing all energized parts and conductors are enclosed in grounded metal and the ground

Date of Report 20131028 **Inspector** [signature]

fault potential does not exceed 100 volts. A letter certified by a P.Eng. stating that these conditions have been met and requesting a station exemption as per the CEC 36-306 is required. Since perimeter loops are not installed around buildings the letter should also state that the requirements of 36-308 (3) are met. That is that touch and step potentials will not exceed the tolerable values specified in Table 52.

1.4. E-Houses

1.4.1. Emergency lights are not functional.

1.4.2. Bare copper grounds are installed in aluminum trays using Blackburn GTC-23 copper alloy tower grounding clamps. A note in the Cooper B-Line cable tray manual states, "A bare copper equipment grounding conductor should not be placed in an aluminum cable tray due to the potential for electrolytic corrosion of the aluminum cable tray in a moist environment. For such installations it is best to use an insulated conductor and to remove the insulation where bonding connections are made to the cable tray, raceways, equipment enclosures, etc. with tin or zinc plated connectors." The Blackburn connectors do not state that they are suitable for use with aluminum. Other types of Blackburn connectors do have dual copper / aluminum ratings. Replace the Blackburn GTC-23 connectors unless it can be demonstrated that they are suitable for use in contact with aluminum. We strongly urge that consideration be given to replacing the bare copper grounds in aluminum tray with insulated or tinned copper. Please apply this note to any areas utilizing aluminum tray.

1.4.3. Main grounds not connected. According to the Hatch specification the E-houses were to have been equipped with four stainless steel ground pads pre-connected to the internal ground bus. This has not been done and consequently there is neither a provision for connection of the grounding/bonding network to the building frame nor to the main ground bus / switchgear ground bus. This detail must be provided by the engineer. Refer to the Mine Health and Safety Regulations 13.01(1)(b).

1.5. Sewage Treatment Plant

1.5.1. A loop of bare copper wire is coiled up beside the lighting transformer. It is not obvious what the intended use for this wire was. Determine what the intended use of this ground

Date of Report 2013/10 28 **Inspector** [signature]

REPORT OF AN INSPECTOR OF MINES

Issued pursuant to Section 26(2) of the *Mine Health and Safety Act*

conductor is and install it. If it has been made redundant by another ground conductor installation remove it. Ensure that the grounding system is connected to the main ground grid.

2. Mary River
   - 2.1. Power Generation E-House #1
     - 2.1.1. Main grounds not connected. According to the Hatch specification the E-houses were to have been equipped with four stainless steel ground pads pre-connected to the internal ground bus. This has not been done and consequently there is neither a provision for connection of the grounding/bonding network to the building frame nor to the main ground bus / switchgear ground bus. This detail must be provided by the engineer. Refer to the Mine Health and Safety Regulations 13.01(1)(b).
     - 2.1.2. 4160/600V transformer does not have ready access to the nameplate and to parts requiring maintenance (primary taps) as required by CEC 2-118.
     - 2.1.3. Supply grounding/bonding conductors in all trays in accordance with Hatch grounding design criteria and cable tray standard.
     - 2.1.4. Ring lugs attached to horizontal flat bus in the 4160V switchgear appear to have been bent to 90°. Obtain evidence that these lugs were manufactured this way or are approved for field modification in this manner. If such approvals are not available replace the lugs in an approved manner. Refer to CEC 2-024.
   - 2.2. Power Generation E-House #2
     - 2.2.1. Main grounds not connected. According to the Hatch specification the E-houses were to have been equipped with four stainless steel ground pads pre-connected to the internal ground bus. This has not been done and consequently there is neither a provision for connection of the grounding/bonding network to the building frame nor to the main ground bus / switchgear ground bus. This detail must be provided by the engineer. Refer to the Mine Health and Safety Regulations 13.01(1)(b).
     - 2.2.2. Supply grounding/bonding conductors in all trays in accordance with Hatch grounding design criteria and cable tray standard.

Date of Report 2013/0/28 **Inspector** [signature]

REPORT OF AN INSPECTOR OF MINES

Issued pursuant to Section 26(2) of the *Mine Health and Safety Act*

2.2.3. Ring lugs attached to horizontal flat bus in the 4160V switchgear appear to have been bent to 90°. Obtain evidence that these lugs were manufactured this way or are approved for field modification in this manner. If such approvals are not available replace the lugs in an approved manner. Refer to CEC 2-024.

2.3. <u>E-houses</u>

2.3.1. Emergency lights are not functional.

2.3.2. Main grounds not connected. According to the Hatch specification the E-houses were to have been equipped with four stainless steel ground pads pre-connected to the internal ground bus. This has not been done and consequently there is neither a provision for connection of the grounding/bonding network to the building frame nor to the main ground bus / switchgear ground bus. This detail must be provided by the engineer. Refer to the Mine Health and Safety Regulations 13.01(1)(b).

2.4. <u>Sewage Treatment Plant</u>

2.4.1. A loop of bare copper wire is coiled up beside the lighting transformer. It is not obvious what the intended use for this wire was. Determine what the intended use of this ground conductor is and install it. If it has been made redundant by another ground conductor installation remove it. Ensure that the grounding system is connected to the main ground grid.

2.5. <u>Camp Lake Pump House</u>

2.5.1. Portable power cable is unshielded G-GC. Replace with shielded cable as per CSA Standard M421 sub-clause 4.4.1.4.

2.5.2. Ground check conductors are cut off flush with cable connectors. Provide ground conductor monitoring as per CSA Standard M421 sub-clause 4.4.1.4.

2.5.3. There is no cable support where the portable power cable leaves the pump control panel. Provide support in the form of Kellems grips or equivalent to prevent strain on the connectors as per CEC 4-040(5) and 12-3022.

NOTE – It was agreed that completion of items 2.5.1 and 2.5.2 could be deferred until Aug. 15, 2014 providing that, in the interim, access is restricted between the pump house and the pond with signage warning of Danger 600V – Lock and tag both pumps before entering this area. See also

Date of Report 2013 10 28 **Inspector** [signature]

REPORT OF AN INSPECTOR OF MINES

Issued pursuant to Section 26(2) of the *Mine Health and Safety Act*

CEC 26-956(2)(b).

Inspections were conducted in the company of various persons named below and Mr. Martin van Rooy, Engineer / Mine Inspector.

Brian Larson	Dwayne Chyz	Mike Peters
Dan Dubreuil	Pat Driscoll	Steve Gogo
Dylan O'Connell – ADCO	Darren Stehr – ADCO Supt.	Michel Roy – Cummins
Tim Thertell – Hatch Layout coord.	James Cleland – Hatch	Aateff Hussaini – Hatch

Date of Report 2013 10 28 **Inspector**

Baffinland

November 18, 2013

Mr. Martin Van Rooy
Mine Inspector
Worker's Compensation Board
Nunavut
PO Box 669
Iqaluit, Nunavut
XOA 0H0

Dear Martin,

In follow-up to your October 28, 2013 inspection report, please find below responses to each of the electrical related inspection findings. A separate submission will be made for the remaining inspection items before the required 30 day period.

Baffinland would like to proceed with an electrical energization inspection at Milne Inlet on or about the 26th of November 2013, and as such would greatly appreciate any comments you may have with regards to these responses to your observations made on October 28, 2013. We will advise you of the progress and schedule a review visit at your convenience.

Noticed the grounding / bonding at Milne Inlet and Mary River power generation and E-houses is not in accordance with the data provided by Baffinland to WSCC for review and acceptance of the design criteria.

4. Please update the documentation to reflect the changes made in the field and demonstrate its compliance with the previously reviewed and accepted design criteria.

Response:

Design documentation has been updated to reflect changes made in the field and is provided as an attachment to this response. Baffinland have also attached Requests for Station Exemption for Milne Inlet and Mary River, certified by a P.Eng, which states that the ground fault potential does not exceed 100 volts, and that the requirements of 36-308(3) are met.

Noticed the main grounding connection to the E-houses at Milne Inlet and Mary River are not connected according to the engineering specification. Each E-house was to have four stainless steel ground pads pre-connected to the internal ground bus however, this has not been done

and consequently there is no provision for connecting the grounding/bonding network to the building frame or to the main ground bus / switchgear ground bus.

5. Please design this grounding detail and connect it to the E-houses internal ground bus.

Response:

Grounding "whips" have been installed to the building ground bar at Milne Inlet. The design drawings have been updated to reflect this detail as shown on H349000-2530-70-094-0001 (Power Generation Gensets and E-Houses) and H349000-1000-70-041-1220 (Power Distribution E-Houses). The Mary River construction will follow this updated design documentation.

Noticed the 4160/600V transformers

a) *In E-house #1 and #2 at Milne Inlet, do not have the required 150 mm clearance for ventilation as required by CEC 26-248 (1); and*
b) *In E-house #1 at Milne Inlet and Mary River these units do not have ready access to their nameplate and to parts requiring maintenance (primary taps) as required by CEC 2-118.*

6. Please review these deficiencies with the manufacturer(s) and submit the corrective action that will be taken at the time to bring these installations into compliance.

Response:

The transformers in question will be relocated under Cummins supervision to obtain the requisite code clearances and maintenance access. This will be done progressively over the next few weeks to bring at least one unit at each site into compliance to permit commissioning of the power generation islands (whilst the second unit remains de-energized and locked-out pending relocation).

We have attached an application for Deviation as per CEC-020 for the Milne Inlet E-house #2 since if the transformer is moved to provide the noted clearance it will encroach on required clearance to the black start generator as per CEC 02-308. Should this deviation not be accepted the transformer will be left in its original position, de-energized and locked out until a viable solution is identified.

Noticed the cable tray grounding/bonding conductors in E-house #1 and #2 at Milne Inlet and Mary River are not installed in accordance with the accepted grounding design and cable tray standard.

7. ***Please install the grounding/bonding conductors in all cable trays in accordance with the accepted grounding design criteria and cable tray standard.***

Response:

The grounding/bonding conductors in cable trays will be completed at Milne Inlet by November 19, 2013 and Mary River by November 26 in accordance with the grounding design criteria and cable tray standard.

Noticed in Milne Inlet's E-House #1 and #2 mechanical connectors are used for ground connections instead of compression type connectors

8. ***Please replace the mechanical connectors with compression type connectors and ensure connections to the bus are made with compression lugs Refer to CEC 10-806.***

Response:

The mechanical connections were supplemented with crimped (compression) connections.

Noticed in the E-houses the bare copper grounding wire installed in the aluminum cable trays using Blackburn GTC-23 copper alloy tower grounding clamps. The Blackburn information does not state that these connectors are suitable for use with aluminum cable tray.

9. ***Please replace the Blackburn GTC-23 connectors unless it can be demonstrated that they are suitable for use in contact with the aluminium cable tray.***

Response:

Tin-plated connectors suitable for use in aluminum cable trays are on order and due for installation by November 19 at Milne Inlet and December 3 at Mary River.

Noticed there are no visible external bonding conductors at the Milne Inlet generators connecting them directly to their frames.

10. ***Please provide an external bonding conductor connected directly to the generator frame; by-passing any vibration isolators; and ensure these are sized in accordance with CEC 10-814 (1) and Table 16***

Response:

4/0 copper bonding conductors were in fact factory installed at both Milne Inlet and Mary River but were missed during the inspection visit. Nonetheless, field verification is in progress and will be completed by November 12, 2013 and November 19, 2013 at Milne Inlet and Mary River respectively.

Noticed the ring lugs attached to the horizontal flat bus in the 4160V switchgear in E-House #1 and #2 at Milne and Mary River, appear to have been bent from a straight lug to a 90° lug. It is not clear if these lugs were manufactured with a right angle or were field modified by the manufacturer.

11. Please check with the manufacturer and verify these lugs were manufactured as 90° lugs or are approved for field modification in this manner. If approval is not available, replace the lugs in an approved manner Refer to CEC 2-204.

Response:

Verbal confirmation was received from Eaton/Cummins that 90 degree lugs are readily available and there was no reason to field modify. While it is possible to peel back the taping to confirm the P/N on the lug we do not believe this is warranted based on the information from Easton/Cummins.

Noticed at Milne Inlet there are no test labels on the protective relays in E-house #2

12. Please ensure these relays have been tested in accordance with CSA Standard M421 and have their test labels affixed.

Response:

Relays in Milne Inlet E-House #2 were factory tested as documented by Eaton. Eaton will provide test labels for installation by Cummins technicians. There were no deficiencies in test labels at Mary River.

Noticed in the sewage treatment plan at Milne Inlet and Mary River a loop of bare copper wire coiled up beside the lighting transformer.

13. Please ensure the grounding system is connected to the main ground grid and remove this ground conductor wire if it is redundant or determine its intended use and install it.

Response:

The ground conductor wire was deemed redundant and was removed following the inspection.

Noticed the emergency lights in the E-houses in Milne Inlet and Mary River are missing or not working and the fire suppression systems are not completed.

14. Please check the emergency light installations and ensure these and the fire suppression systems are working.

Response:

The emergency light battery connection at Milne Inlet are scheduled to be completed on November 12, 2013 while those at Mary River will be connected by November 26, 2013. Fire suppression is planned to be completed by November 26, 2013 (Milne Inlet) and December 3, 2013 (Mary River).

Noticed the cable trays are placed on the ground between the generator buildings and the E-houses #1 and #2 at Milne Inlet, obstructing the clear access required by the power system operators and maintenance personnel.

15. Please review this installation and provide clear and unobstructed access for a person to travel between the generators and the E-houses Refer to CEC 2-312.

Response:

We will build stairs and walkways to provide access by operators and maintenance personnel.

As previously noted inspection reports September 20,2011…the fresh water submersible pumps serviced from the Mary River pump house are not equipped with shielded portable power cables with ground fault protection and ground conductor monitoring as required by CSA Standard M421 sub-clause 4.4.1.4.

16. Please remove these pumps from service on or before August 15, 2014 or replace the unshielded G—GC submersible pump power cables with their ground check conductors cut-off with shielded power cables complete with the ground conductor monitoring installed all as per CSA Standard M421 sub clause 4.4.1.4. In the interim, access to these submersible pump cables between the pump house and the pond must be restricted with barricades and posted signs warning Danger 600 V. These pumps must be locked-out and tagged before entering this restricted area. See also CEC 26-956(2)(b).

Response:

These pumps will be removed from service or power cables replaced by August 15, 2014.

Noticed there are no cable supports for these existing fresh water submersible pumps where the portable power cables leave the pump control panel.

17. ***Please provide support in the form of Kellems grips or equivalent to prevent strain on the connectors as per CEC 4-040(5) and 12-3022.***

Response:

Kellems grips or equivalent form of cable supports will be installed if the pumps are not removed from service by August 14, 2014.

Should you have any questions regarding this submission please contact Bikash Paul at Bikash.paul@baffinland.com or Michael Anderson by phone at 416.814.3163 or email at Michael.Anderson@Baffinland.com.

Best Regards,

Erik Madsen
Vice President
Sustainable Development, Health, Safety and Environment

Attachments:

- Milne Inlet - Electrical Grounding Design Documentation
- Milne Inlet - Station Exemption Report
- Mary River - Station Exemption Report
- Milne Inlet – Deviation Request

cc. Michael Anderson (BIM)
Bikash Paul (BIM)
Brian Perkins (Hatch)
Glen Hein (BIM)

Baffinland Iron Mines Corporation
Mary River Project

Electrical Grounding Design Rationale

REGISTERED PROFESSIONAL ENGINEER
B.K. PERKINS
LICENSEE
2013-10-17
NT/NU

2011-10-17	0	Approved for Use	B. Perkins	A. Hussaini	S. Perry	D. Matthews
DATE	REV.	STATUS	PREPARED BY	CHECKED BY	APPROVED BY	APPROVED BY
			HATCH			CLIENT

Table of Contents

1. Introduction

This document presents the electrical grounding system design rationale for the Mary River Project - Early Revenue Phase (ERP).

The Project is uncharacteristic of typical electrical installations for the following reasons:

1. It is not connected to a utility supply – i.e. it is a standalone islanded system.
2. The prevalence of permafrost and/or bedrock soil conditions.

The document surveys applicable technical codes and literature to illicit an acceptable approach to grounding for the project.

2. Objectives

The objectives of grounding and bonding as described in Section 10 of CSA C22.1 Canadian Electrical Code (CEC) are:

1. To protect life from the danger of electric shock, and property from damage by bonding to ground non-current carrying metal systems.
2. To limit the voltage on a circuit when it is exposed to higher voltages than that for which it is designed.
3. In general to limit ac circuit voltages-to-ground to 150 V or less on circuits supplying interior wiring systems.
4. To facilitate the operation of electrical apparatus and systems.
5. To limit the voltage on a circuit that might occur through exposure to lightning.

3. Code Requirements

3.1 CEC Section 10

Section 10 of the CEC [1] covers the protection of electrical installations by grounding and bonding. It addresses system and circuit grounding, grounding connections for systems and circuits, conductor enclosure grounding, equipment bonding, methods of grounding, bonding methods, grounding electrodes, grounding and bonding conductors, grounding and bonding conductor connections, lightning arresters and installation of neutral grounding devices.

Though the above appears to define comprehensive requirements for grounding, it only addresses grounding and bonding requirements at the service entrance and load side of a typical installation – i.e. from the secondary of a unit substation transformer through the point of utilization.

However, it does not address general requirements on the source side of a typical installation – i.e. from the primary side of a unit substation transformer to the point of generation. It stands to reason that the above covers the majority of electrical installations that falls outside the jurisdiction of the supply authority (i.e. utility) generally operating at voltages of 750 V or less.

3.2 CEC Section 36

As the primary side of a unit substation transformer is typically medium voltage, it falls under Section 36 of the CEC (High-voltage installations) which applies to installations operating at voltages in excess of 750 V. This section supplements or amends the applicable general requirements of Section 10. It addresses wiring methods, control and protective equipment as well as grounding and bonding of high-voltage installations.

Though not explicitly stated, this section is oriented towards indoor and outdoor stations and imposes specific requirements for ground potential rise (GPR) as well as step and touch potential. Note that the GPR is defined as the maximum voltage that a station ground-grid can attain relative to a distant grounding point assumed to be at the potential of remote earth. Generally GPR is only a consideration in systems that utilize an earth return for ground fault currents. The maximum permitted ground potential rise per this section of the CEC is 5000 V.

3.3 CEC Section 74

This section of the CEC covers airport installation including series lighting systems. It mandates that series lighting circuits shall be protected by a minimum #8 AWG soft copper wire counterpoise installed in the same trench as the lighting cable circuits. The code gives additional requirements regarding its connection to various system components including ground electrodes.

3.4 CSA M421 Section 4.5

CSA M421 Use of electricity in mines [2] is to be used in conjunction with the CEC for electrical work and electrical equipment operating in mines. It should be emphasized that this standard is only applicable to the mine proper and does not generally apply to supporting infrastructure (which are generally no different from other industrial facilities). Nonetheless, the requirements of Section 4.5 of this standard are adopted for the primary and secondary distribution systems.

Section 4.5 addresses general requirements for electrical protection and control in mines. Of particular relevance is clause 4.5.6 which addresses ground-fault protection. It states that when ground-fault protection is applied, the supply shall be grounded through a neutral-grounding device that limits ground-fault voltages to 100 V or less. Annex A provides a simple model for the determination of the ground-fault voltage as a function of the prospective ground-fault current. Note that ground-fault voltage should not be confused with ground potential rise (GPR).

3.5 CSA M421 Section 4.6

Section 4.6 addresses general requirements for grounding in mines. Of particular relevance is clause 4.6.4 which addresses grounding in permafrost conditions. It mandates that when system grounds are being installed in permafrost conditions, careful study and soil resistivity testing of the area shall be undertaken to ensure that the lowest ground resistance can be obtained. It also suggests the following:

1. The use of chemical rods can assist in reducing ground resistance.
2. Backfill materials such as bentonite can assist a regular drilled-in ground rod to maintain conductivity along the entire length of the embedded rod to ground.
3. Extra-long (deep) drilled-in ground rods can be necessary to reduce the ground resistance to an acceptable value.
4. Oversized ground cable connecting the ground rods to the equipment or structures protected can be necessary. All joints should be engineered for lowest resistance (e.g. welded).

3.6 CSA B72 Section 6

CSA B72 Installation Code for Lightning Protection Systems [3] covers the protection of buildings from lightning buildings including structures with explosive or highly flammable contents. In addition to defining requirements for air terminals and down conductors, requirements for grounding of these installations are also defined. Specifically Section 6 of the standard addresses ground electrodes, namely location, maximum resistance, permissible materials, installation, connection and common grounding.

In particular, Paragraph 6.3.1 of the above reads: "The entire lightning protection system, excluding interconnections with metallic parts of bodies, buried metallic conduit or pipe, and other system ground electrodes, shall provide a resistance to ground of less than 50 Ohm when measured at any point between the intercepting system and the ground system. Auxiliary ground electrodes shall be added to obtain this value." Paragraph 11.6 further stipulates that for an installation that protects structures with explosive or highly flammable contents the maximum value is reduced to 10 Ohm. Note that these values are interpreted as resistance to remote ground. For the soil and/or bedrock conditions observed in the Arctic, these values would be very difficult to achieve with conventional ground electrodes.

3.7 CSA B72 Appendix A

CSA B72 Installation Code for Lightning Protection Systems includes a informative appendix discussing the general principals of lighting protection. Paragraphs A4.5 and A4.6 of the Appendix explains that low resistance to remote ground is desirable but not essential. It describes the case of a building resting on bare solid rock where it would be impossible to make a ground connection in the ordinary sense of the term because most rocks are insulating (i.e. of high resistivity). In this case it recommends the use of an extensive wire network (a mat, mesh or grid) laid on the surface of the rock. Though the resistance to remote earth would still be high, the potential distribution around the building – and the

resulting protective effect – would be substantially the same as a building resting on conductive soil.

Finally, the standard does not mandate that every building or facility have a lightning protection system. However, Appendix A of the standard also includes a quantitative risk-based approach for assessing the need for lightning protection.

3.8 Nunavut Good Building Practices Guideline

Though not a standard, this document [4] represents a consolidation of good building practice for arctic installations. Though the document does not address grounding systems per se, it does state the following order of preference for ground electrodes:

1. Municipal piped water system (not applicable to the Mary River site)
2. A connection to a minimum of three steel piles[1]
3. Rod or Ufer electrodes[2]
4. Plate electrodes.

The guideline also suggests avoiding dissimilar metals which may corrode due to galvanic action under certain soil conditions.

4. Technical Papers

4.1 Arctic Electric Power Systems

Ref. [5] titled 'Design Problems for an Electric Power System in an Arctic Region' describes the background for the design of an isolated power system in the Arctic region of Alaska. Among other issues, the paper discusses the grounding of system and equipment and the problems encountered within the context of overhead power distribution using pole lines. Due to the high soil resistivity encountered in permafrost regions it is difficult to engineer a suitably low resistance earth return path for ground fault current resulting in high ground potential rise, step and touch potentials. This also presents problems with ground fault protection of open wire power distribution systems. Though the paper highlights the challenge of developing an effective grounding system in a permafrost region, it does not offer any ready solution other than indicating 'a great number of paralleled buried electrodes' are required to obtain the maximum 25-Ohm resistance to ground mandated by the NFPA No. 70 (NEC). (Note that the NEC is the National Electrical Code applicable in the United States).

4.2 Arctic Grounding Systems

Ref. [6] titled 'Design Considerations for Arctic Grounding Systems' addresses grounding system design issues particular to the Arctic environment including high and varying soil resistivity, permafrost and isolation from other facilities. In contrast to the above previous reference, it provides specific guidelines for use in Arctic design. However, like the previous

[1] This is presumably intended for installations where the pile cap is above grade – otherwise the approach is not practical.
[2] Rod electrodes being the conventional type whereas Ufer electrodes utilize embedded rebar.

reference it highlighted the difficulties associated with overhead power lines – in particular the difficulty associated with establishing a suitable ground.

The following excerpt is directly applicable to the Mary River project: "In a recent design, one particular production complex is totally isolated from all other utility systems and depends entirely upon its own generation, with no overhead lines anywhere in the complex. Under these circumstances, and with no lightning current, there is no need for high-current capacity earth connections. An actual earth connection is less essential in such a modular environment but is still an NEC requirement which must be satisfied".

The paper goes on to describe the installation of ground conductors in the cable tray with the feeder cables continuously bonded to the cable trays and bonded to the module structures at any transition thereby creating an interconnected ground system with the E-House modules forming the nodes at which earth connections are made. The author also goes on to discuss the control of step and touch potentials which he suggests are most readily controlled to acceptable values through the application of high resistance system grounding. Otherwise he recommends the use of ground mats at contact points between high resistivity soils and modules – for example at stairs, platforms and ladders.

4.3 Communication Tower Grounding System

Ref. [7] titled 'Copper Grounding System Protects Mt. Washington Towers' and published on the Copper Development Association website addresses the use of a deep well electrode grounding system for lightning protection of a communication tower installation on granite and permafrost. The previous grounding system measured a resistance to remote earth in excess of 1000 ohms. Though the facility is in a low isokeuronic area, lightning strikes resulted in annual equipment damage and outages. To improve the grounding system two 183-m wells were sunk in which sixty (60) 3-meter copper-clad ground rods joined by brass coupling were installed and backfilled with bentonite clay. The new system has a resistance to remote ground between eight and nine ohms – orders of magnitude better than the previous installation – resulting in a complete elimination of lightning induced damage and outages.

5. Electrical Grounding Design Basis

This section describes the recommended project design basis based on requirements and guidelines described above:

1. Avoid the use of overhead pole lines for primary power distribution as these type of distribution circuits rely on an earth return for ground fault currents. Given the high soil resistivities on site it would be very difficult to engineer an adequate grounding system to obtain sufficiently high ground fault currents for ground fault protection.[3]

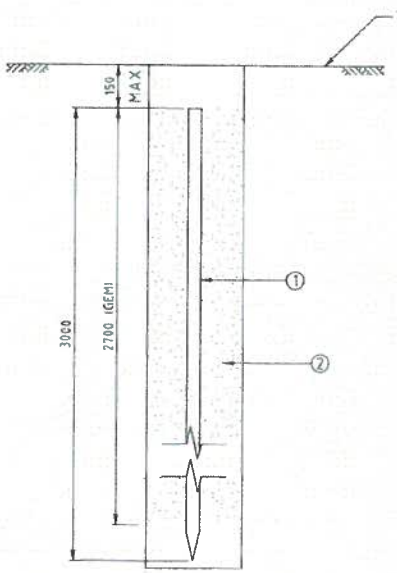
[3] Other reasons to avoid the use of overhead pole lines include the high maximum wind velocities, ice loading and permafrost soil.

2. Adopt the use of HVTECK and TECK90 armoured cable for primary and secondary power distribution thereby providing a number of prospective low impedance ground fault current return paths including:
   a. Conductor insulation shield/sheath on HVTECK cable
   b. Cable ground conductor
   c. Cable armour
   d. Supplementary ground conductors and/or cable tray ground conductor.
   e. Cable tray where installed.
3. The primary distribution cable tray ground conductor should be connected to ground using ground electrodes at suitable intervals to minimize prospective potential difference between the raceway and ground during a ground fault condition. As a minimum ground electrodes would be installed at each unit substation E-House.
4. Use low resistance neutral grounding on 4160 V primary distribution systems. This not only provides a ready means of detecting a ground fault, but also limits the prospective ground fault current to minimize the ground-fault voltage. Note that low resistance neutral grounding (as opposed to a high resistance system) is required to avoid sympathetic tripping of long feeders.
5. Generally adopt the use of ¾" diameter, 3-meter copper-clad ground rods as ground electrodes including suitable backfill material such as a bentonite clay or other ground enhancing material. Acceptable alternatives might include:
   a. Pile casings (at least where pile caps are above grade)
   b. Plate electrodes or grounding mats
   c. Chemical electrodes.
6. 600 V secondary distribution systems should adopt a similar grounding practice to primary distribution. The only notable exception is that secondary distribution systems would employ high resistance neutral grounding.
7. Every facility's main ground bus should be connected to the primary/secondary distribution grounding system at the 600 V service entrance.
8. Notwithstanding the previous clause, facilities requiring lightning protection should have a dedicated ground electrode in the form of a mat, mesh or grid. Deep-well electrodes are not recommended due to the extreme depth of the permafrost. Lightning protection systems should be connected to the primary/secondary distribution grounding system as required by code. Due to the low isokeuronic levels on-site, it is anticipated that only the most exposed and/or critical facilities would have lightning protection.

9. Notwithstanding CSA M421requirements for soil resistivity testing in a permafrost conditions, providing all energized parts and conductors are enclosed in grounded metal and the ground fault potential does not exceed 100 V, a station exemption in accordance with CEC 36-306 may be granted.
10. All buried ground connections should be exothermically welded (i.e. thermoweld). Above ground exposed connections can be either thermoweld or compression connections.

6. References

1. CSA Standard C22.1 Canadian Electrical Code, Part I (Safety Standard for Electrical Installations), Canadian Standards Association, 2009.
2. CSA Standard M421 Use of electricity in mines, Canadian Standards Association, 2011.
3. CSA Standard B72 Installation Code for Lightning Protection Systems, 1987 (Reaffirmed 2008).
4. Good Building Practices Guideline, Government of Nunavut, 2005.
5. Gill, H.W., 'Design Problems for an Electric Power System in an Arctic Region', IEEE Transactions on Industry Applications, Vol. IA-10, No. 2, March/April 1974.
6. Beck, R.T and Yu, L., 'Design Considerations for Arctic Grounding Systems', IEEE Transactions on Industry Applications, Vol. 24, No. 6, November/December 1988.
7. Brooks, Burt, 'Copper Grounding System Protects Mt. Washington Towers', Case Study published at Copper.org Website, 2011.



FOR CONSTRUCTION

ITEM	QTY.	DESCRIPTION	SPECIFICATION	UNIT
1	1	COPPER-CLAD STEEL GROUND ROD	19MMx3.0M (¾"x10')	EA
2	7	GROUND ENHANCEMENT MATERIAL 25LB BAG	ERICO GEM25A	EA

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date 2013-08-21
PERMIT NUMBER: P 512
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REGISTERED PROFESSIONAL ENGINEER
B.K. PERKINS
LICENSEE
2013-08-21
NT/NU

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

NO	DESCRIPTION	BY	CHK'D	APP'D	DATE

REVISIONS

NO	ISSUE FOR	AUTH	BY	DATE
0	CONSTRUCTION	BP	JC	2013-08-21

ISSUE AUTHORIZATION

DESIGNED BY A. HUSSAINI DATE 2013-03-19
CHECKED BY R. SHARMA RS. DATE 2013-07-19
PROJ. ENGR. J. CLELAND DATE 2013-08-21
PROJ. MGR. S. PERRY DATE 2013-08-21

HATCH
DRAWN BY J. SAINI DATE 2013-03-19
DISCIP. ENGR. B. PERKINS DATE 2013-08-21
SCALE NTS OR AS NOTED

Baffinland
MARY RIVER PROJECT

ELECTRICAL GROUNDING STANDARD DRAWING
GROUND ELECTRODE
GROUND ROD WITH GEM

DRAWING NO. H349000-1000-70-041-1102 REV. 0

ORIGINAL SHEET SIZE: A3 (420 X 297)

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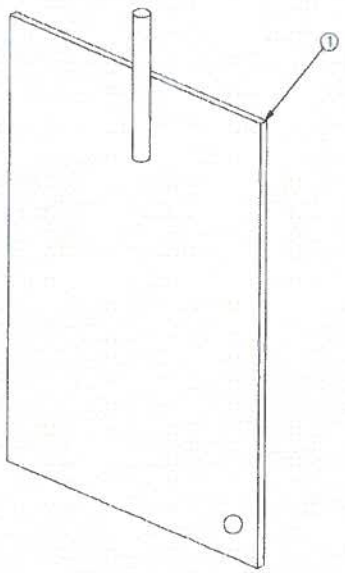

FOR CONSTRUCTION

ITEM	QTY.	DESCRIPTION	SPECIFICATION	UNIT
1	1	¼" GALVANIZED STEEL GROUND PLATE	ERICO EGGP	EA

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NOTES:

1. INSTALL HORIZONTAL MINIMUM 600MM BELOW FINISHED GRADE.

NO	DESCRIPTION	BY	CHK'D	APP'D	DATE

REVISIONS

NO	ISSUE FOR	AUTH. BY	DATE
0	CONSTRUCTION	BP	JC	2013-08-21

ISSUE AUTHORIZATION

DESIGNED BY A. HUSSAINI DATE 2013-05-29
CHECKED BY R. SHARMA R.S. DATE 2013-07-19
PROJ. ENGR. J. CLELAND DATE 2013-08-21
PROJ. MGR. S. PERRY DATE 2013-08-21

HATCH

DRAWN BY J. SAINI DATE 2013-05-29
DISCIP. ENGR. B. PERKINS DATE 2013-08-21
SCALE NTS OR AS NOTED

Baffinland
MARY RIVER PROJECT

ELECTRICAL GROUNDING STANDARD DRAWING
GROUND ELECTRODE
GALVANIZED STEEL GROUND PLATE

DRAWING NO. H349000-1000-70-041-1107
REV. 0

ORIGINAL SHEET SIZE: A3 (420 x 297)

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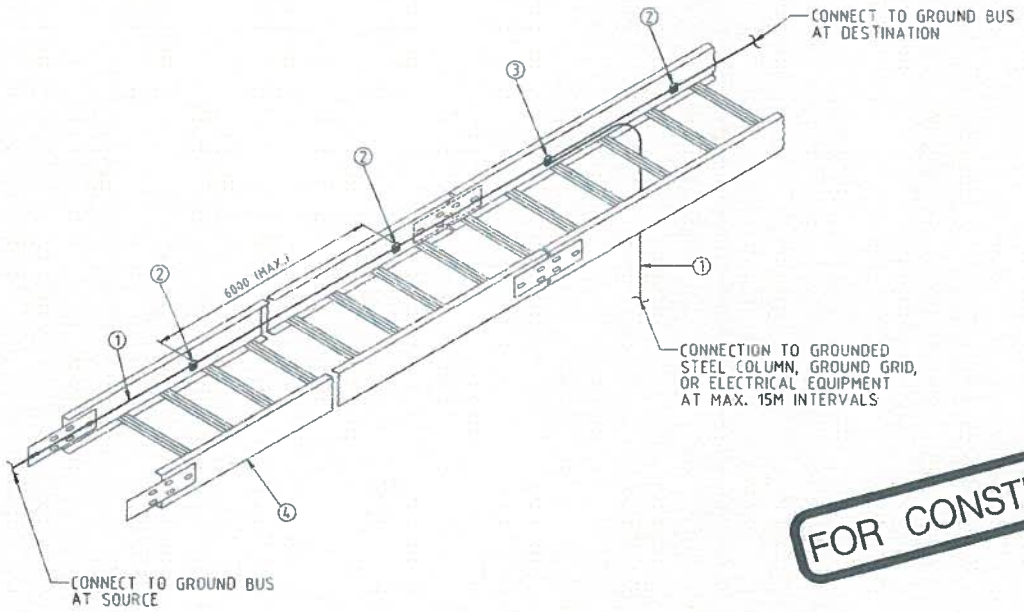

FOR CONSTRUCTION

ITEM	QTY.	DESCRIPTION	SPECIFICATION	UNIT
1	AS REQ'D.	ASTM B3 BARE COPPER STRANDED CONDUCTOR	4/0 AWG	M
2	AS REQ'D.	GROUND CONNECTOR - CU CABLE TO BAR	BLACKBURN GTC24P	EA
3	AS REQ'D.	GROUND CONNECTOR - TWO CU CABLE TO BAR	BLACKBURN CTG250	EA
4	-	ALUMINUM CABLE TRAY	-	M

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Signature BKP
Date 2013-11-05
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2013-11-05
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NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALUMINUM TRAY TO BE INSTALLED IN DRY INDOOR AREA ONLY.

NO	DESCRIPTION	BY	CHK'D	APP'D	DATE

REVISIONS

NO	ISSUE FOR	AUTH. BY	DATE
0	CONSTRUCTION	BP JC	2013-11-05

ISSUE AUTHORIZATION

DESIGNED BY A. HUSSAINI DATE 2013-11-01
CHECKED BY R. SHARMA R.S. DATE 2013-11-05
PROJ. ENGR. J. CLELAND DATE 2013-11-05
PROJ. MGR. S. PERRY DATE 2013-11-05

HATCH

DRAWN BY J. SAINI DATE 2013-11-01
DISCIP. ENGR. B. PERKINS BKP DATE 2013-11-05
SCALE NTS OR AS NOTED

Baffinland

MARY RIVER PROJECT

ELECTRICAL GROUNDING STANDARD DRAWING
ALUMINUM CABLE TRAY
GROUNDING (SINGLE LEVEL)

DRAWING NO. H349000-1000-70-041-1209 REV. 0

ORIGINAL SHEET SIZE: A3 (420 X 297)

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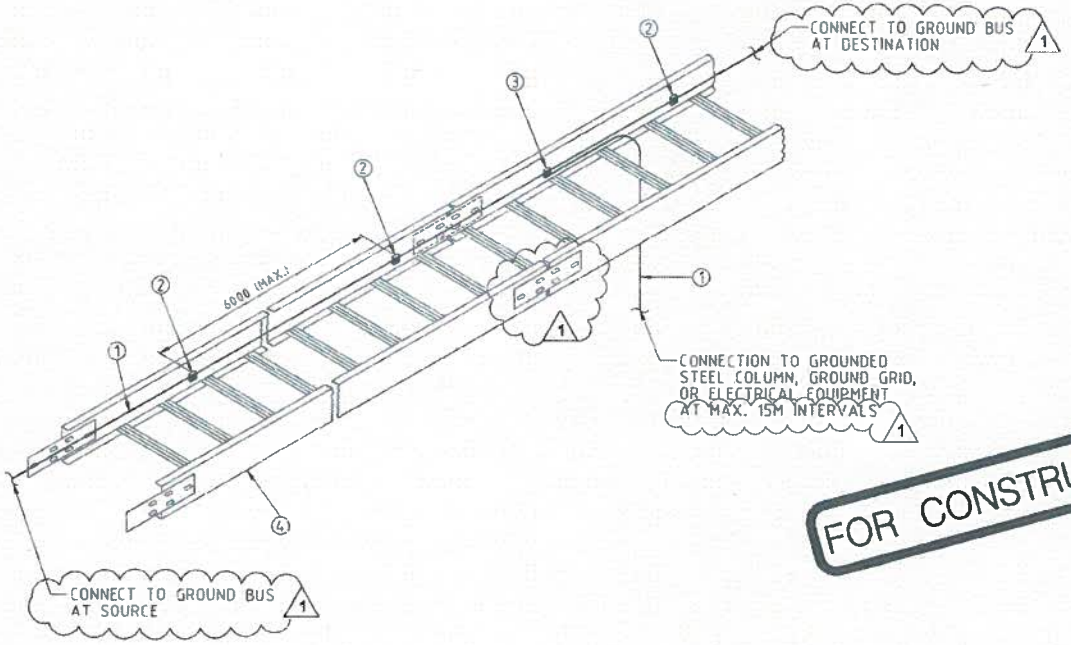

FOR CONSTRUCTION

ITEM	QTY.	DESCRIPTION	SPECIFICATION	UNIT
1	AS REQ'D.	ASTM B3 BARE COPPER STRANDED CONDUCTOR	4/0 AWG	M
2	AS REQ'D.	GROUND CONNECTOR - CU CABLE TO BAR	BLACKBURN GTC24	EA
3	AS REQ'D.	GROUND CONNECTOR - TWO CU CABLE TO BAR	BLACKBURN CTG250	EA
4	-	HDGS CABLE TRAY	-	M

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

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1	FIELD CHANGES	BP	RS	JC	2013-10-31

REVISIONS

NO	ISSUE FOR	AUTH. BY	DATE
1	CONSTRUCTION	BP	2013-10-31
0	CONSTRUCTION	BP JC	2013-08-21

ISSUE AUTHORIZATION

DESIGNED BY A. HUSSAINI DATE 2013-03-18
CHECKED BY R. SHARMA DATE 2013-07-19
PROJ. ENGR. J. CLELAND DATE 2013-08-21
PROJ. MGR. S. PERRY DATE 2013-08-21

HATCH

DRAWN BY J. SAINI DATE 2013-03-18
DISCIP. ENGR. B. PERKINS DATE 2013-08-21
SCALE NTS OR AS NOTED

Baffinland
MARY RIVER PROJECT

ELECTRICAL GROUNDING STANDARD DRAWING
GALVANIZED STEEL CABLE TRAY
GROUNDING (SINGLE LEVEL)

DRAWING NO. H349000-1000-70-041-1210 REV. 1

ORIGINAL SHEET SIZE: A3 (420 X 297)

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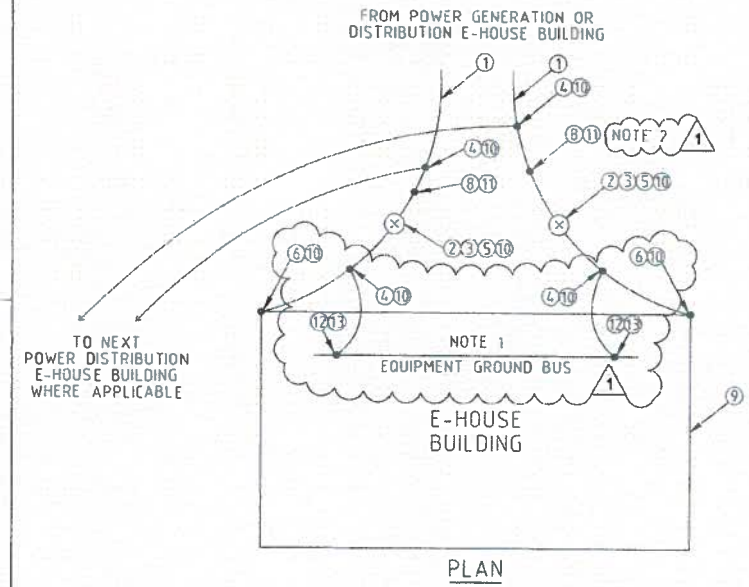

ITEM	QTY.	DESCRIPTION	SPECIFICATION	UNIT
1	AS REQ'D.	ASTM B3 BARE COPPER STRANDED CONDUCTOR	4/0 AWG	M
2	2	COPPER CLAD STEEL GROUND ROD	19MMX3.0M (¾"X10')	EA
3	14	GROUND ENHANCEMENT MATERIAL 25LB BAG	ERICO GEM25A	EA
4	4	EXOTHERMIC CONNECTION - TYPE TA	ERICO TAC2Q2Q	EA
5	2	EXOTHERMIC CONNECTION - TYPE GY	ERICO GYR182Q	EA
6	2	EXOTHERMIC CONNECTION - TYPE VB	ERICO VBC2Q	EA
7	-	NOT USED	-	-
8	2	EXOTHERMIC CONNECTION - TYPE SS	ERICO SSC2Q	EA
9	1	POWER DISTRIBUTION E-HOUSE BUILDING	PE003	EA
10	8	CADWELD WELDING MATERIAL	150g CARTRIDGE	EA
11	2	CADWELD WELDING MATERIAL	90g CARTRIDGE	EA
12	2	ONE-HOLE COMPRESSION LUG FOR 4/0 CABLE	T&B 54170	EA
13	2	NUT, BOLT, WASHERS	50010HN-C, 50225BB-C, 50030SW-C, 50040FW-C	EA

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Date 2013-10-31
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

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B.K. PERKINS
LICENSEE
2013-10-31
NT/NU

FOR CONSTRUCTION

NOTES:
1. CONNECT EQUIPMENT GROUND BUS TO EXTERNAL GROUND AT TWO LOCATIONS AS SHOWN.
2. AVOID TYPE SS CONNECTIONS WHERE POSSIBLE.

NO	DESCRIPTION	BY	CHK'D	APP'D	DATE
1	ADDED GROUND BUS CONNECTION	BP	RS	JC	2013-11-01

REVISIONS

NO	ISSUE FOR	AUTH. BY		DATE
1	CONSTRUCTION	BP	JC	2013-11-01
0	CONSTRUCTION	BP	JC	2013-08-21

ISSUE AUTHORIZATION

DESIGNED BY A. HUSSANI DATE 2013-05-27
CHECKED BY R. SHARMA DATE 2013-07-19
PROJ. ENGR. J. CLELAND DATE 2013-08-21
PROJ. MGR. S. PERRY DATE 2013-08-21
DRAWN BY J. SAINI DATE 2013-05-27
DISCIP. ENGR. B. PERKINS DATE 2013-08-21
SCALE NTS OR AS NOTED

HATCH

Baffinland
MARY RIVER PROJECT

ELECTRICAL GROUNDING STANDARD DRAWING
BUILDING GROUNDING
POWER DIST. E-HOUSE BLDG. GROUNDING

DRAWING NO. H349000-1000-70-041-1220
REV. 1

ORIGINAL SHEET SIZE: A3 (420 X 297)

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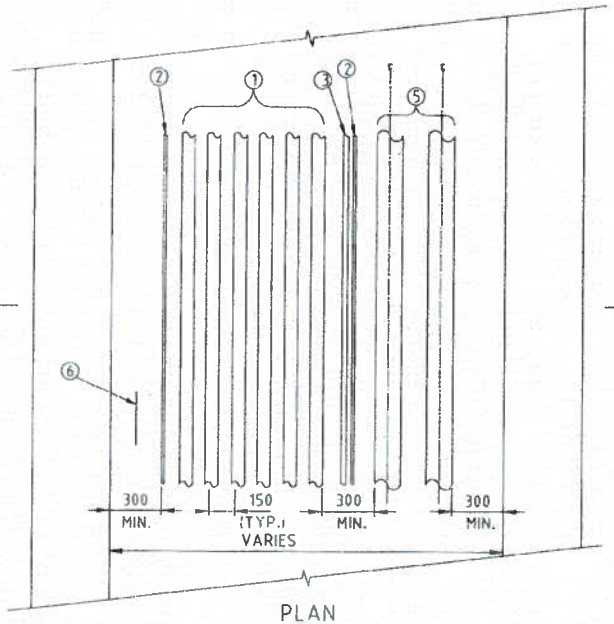
ITEM	QUANTITY	DESCRIPTION	SPECIFICATION
1	AS REQ'D	TECK90 OR HVTECK CABLE	MAX. 75MM OD
2	AS REQ'D	GROUND CONDUCTOR	4/0 CU BARE
3	AS REQ'D	FIBER OPTIC COMMUNICATION CABLE	OFN-LS, 17.6MM OD
4	N/A	150MM ø STEEL CASING PIPE	C/W SPACERS
5	AS REQ'D	UTILITY PIPING	INSULATED HDPE (TYP.)
6	EVERY 10m	WARNING SIGN	PER CEC
7	N/A	ROAD BED	
8	-	UTILITY BERM	
9	-	FILL AND TOP COURSE	
10	-	ORIGINAL GROUND	
11	N/A	300MM ø STEEL CASING PIPE	C/W SPACERS



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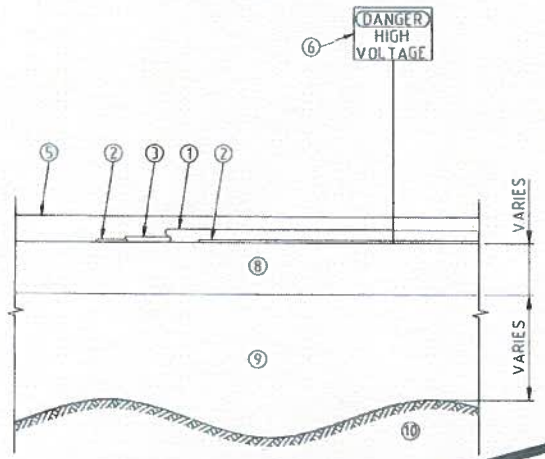

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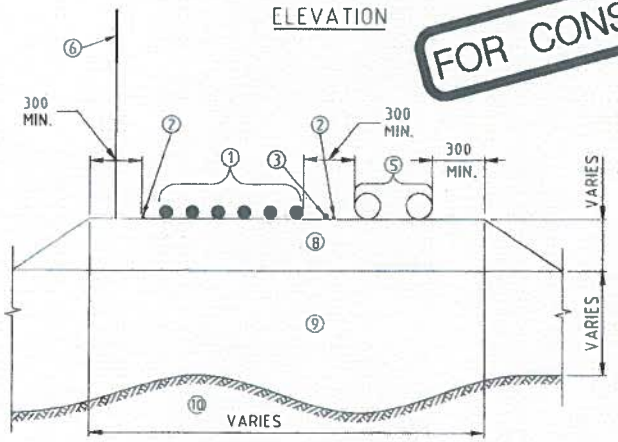

SECTION A

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date 2013-08-23
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

FOR CONSTRUCTION

REGISTERED PROFESSIONAL ENGINEER
B.K. PERKINS
LICENSEE
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NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

NO	DESCRIPTION	BY	CHK'D	APP'D	DATE
	REVISIONS				

NO	ISSUE FOR	AUTH. BY	DATE
0	CONSTRUCTION	BP JC	2013-08-21
	ISSUE AUTHORIZATION		

DESIGNED BY A. HUSSAINI DATE 2013-04-30
CHECKED BY R. SHARMA R.S. DATE 2013-08-16
PROJ. ENGR. J. CLELAND DATE 2013-08-21
PROJ. MGR. S. PERRY DATE 2013-08-21

HATCH
DRAWN BY J. SAINI DATE 2013-04-30
DISCIP. ENGR. B. PERKINS DATE 2013-08-21
SCALE 1:25 OR AS NOTED

Baffinland
MARY RIVER PROJECT

POWER DISTRIBUTION STANDARD DRAWING
POWER CABLE ON UTILITY BERM
CABLE AND PIPING

DRAWING NO. H349000-1000-70-041-2001 REV. 0

ORIGINAL SHEET SIZE: A3 (420 X 297)

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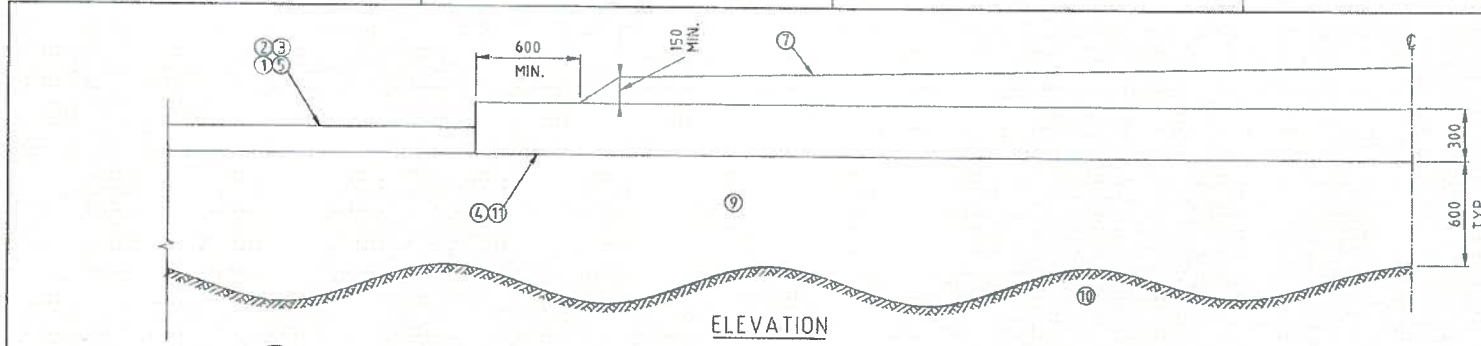
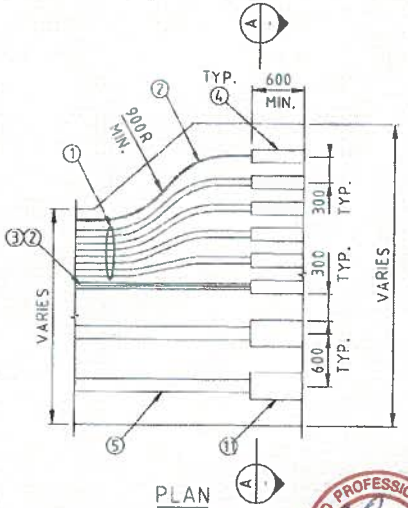


ELEVATION



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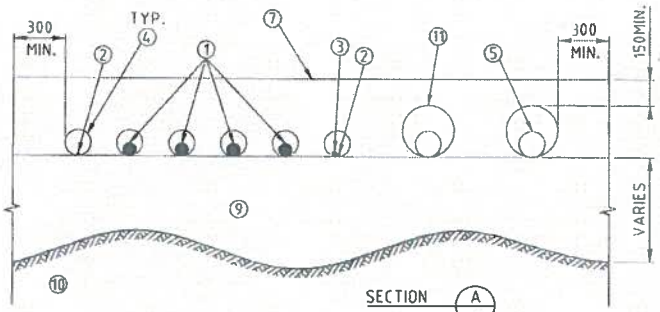
SCALE 1:50



SECTION A

FOR CONSTRUCTION

ITEM	QUANTITY	DESCRIPTION	SPECIFICATION
1	AS REQ'D	TECK90 OR HVTECK CABLE	MAX. 75MM OD
2	AS REQ'D	GROUND CONDUCTOR	4/0 CU BARE
3	AS REQ'D	FIBER OPTIC COMMUNICATION CABLE	OFN-LS, 17.6MM OD
4	AS REQ'D	150MM ø STEEL CASING PIPE	C/W SPACERS
5	AS REQ'D	UTILITY PIPING	INSULATED HDPE (TYP.)
6	N/A	WARNING SIGN	PER CEC
7	-	ROAD BED	
8	N/A	UTILITY BERM	
9	-	FILL AND TOP COURSE	
10	-	ORIGINAL GROUND	
11	AS REQ'D	300MM ø STEEL CASING PIPE	C/W SPACERS

REGISTERED PROFESSIONAL ENGINEER
B.K. PERKINS
LICENSEE
NT/NU

PERMIT TO PRACTICE
HATCH LTD.
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Date 2013-08-23
PERMIT NUMBER: P 512
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NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

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0	CONSTRUCTION	BP	JC	2013-08-21

ISSUE AUTHORIZATION

DESIGNED BY A. HUSSAINI DATE 2013-04-30
CHECKED BY R. SHARMA R.S. DATE 2013-08-16
PROJ. ENGR. J. CLELAND DATE 2013-08-21
PROJ. MGR. S. PERRY DATE 2013-08-21

HATCH

DRAWN BY J. SAINI DATE 2013-04-30
DISCIP. ENGR. B. PERKINS DATE 2013-08-21
SCALE 1:25 OR AS NOTED

Baffinland
MARY RIVER PROJECT

POWER DISTRIBUTION STANDARD DRAWING
POWER CABLE ROAD CROSSING
CABLE AND PIPING

DRAWING NO. H349000-1000-70-041-2003
REV. 0

ORIGINAL SHEET SIZE: A3 (420 X 297)

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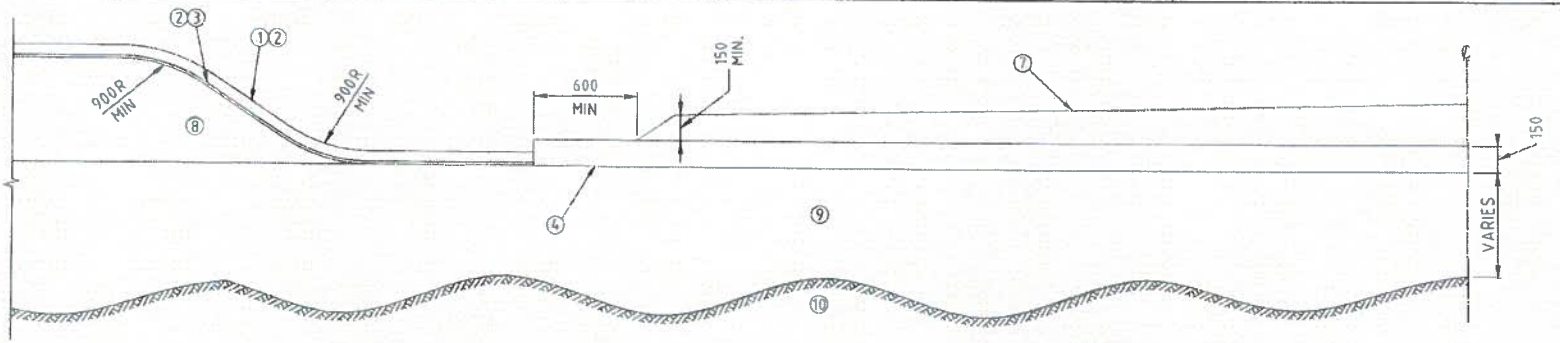

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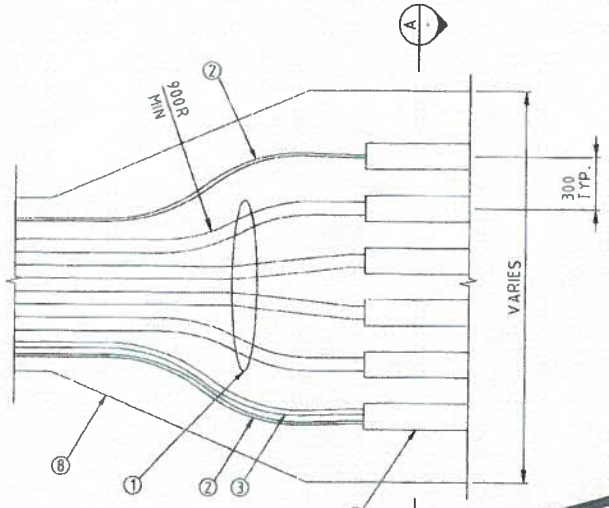
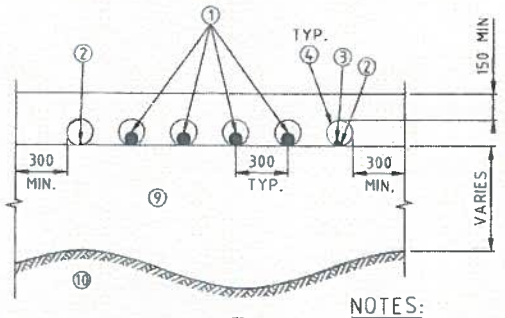


PLAN



SECTION A

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

ITEM	QUANTITY	DESCRIPTION	SPECIFICATION
1	AS REQ'D	TECK90 OR HVTECK CABLE	MAX. 75MM OD
2	AS REQ'D	GROUND CONDUCTOR	4/0 CU BARE
3	AS REQ'D	FIBER OPTIC COMMUNICATION CABLE	OFN-LS, 17.6MM OD
4	AS REQ'D	150MM ø STEEL CASING PIPE	C/W SPACERS
5	N/A	UTILITY PIPING	INSULATED HDPE (TYP.)
6	N/A	WARNING SIGN	PER CEC
7	-	ROAD BED	
8	-	UTILITY BERM	
9	-	FILL AND TOP COURSE	
10	-	ORIGINAL GROUND	
11	N/A	300MM ø STEEL CASING PIPE	C/W SPACERS

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date 2013-08-23
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

REGISTERED PROFESSIONAL ENGINEER
B.K. PERKINS
LICENSEE
2013-08-23
NT/NU

FOR CONSTRUCTION

NO	DESCRIPTION	BY	CHK'D	APP'D	DATE

REVISIONS

NO	ISSUE FOR	AUTH. BY	DATE
0	CONSTRUCTION	BP	JC	2013-08-21

ISSUE AUTHORIZATION

DESIGNED BY A. HUSSAINI DATE 2013-04-30
CHECKED BY R. SHARMA R.S. DATE 2013-08-16
PROJ. ENGR J. CLELAND DATE 2013-08-21
PROJ. MGR. S. PERRY DATE 2013-08-21

HATCH
DRAWN BY J. SAINI DATE 2013-04-30
DISCIP. ENGR. B. PERKINS DATE 2013-08-21
SCALE 1:25 OR AS NOTED

Baffinland
MARY RIVER PROJECT

POWER DISTRIBUTION STANDARD DRAWING
POWER CABLE ROAD CROSSING
CABLE ONLY

DRAWING NO. H349000-1000-70-041-2002
REV. 0

ORIGINAL SHEET SIZE: A3 (420 x 297)

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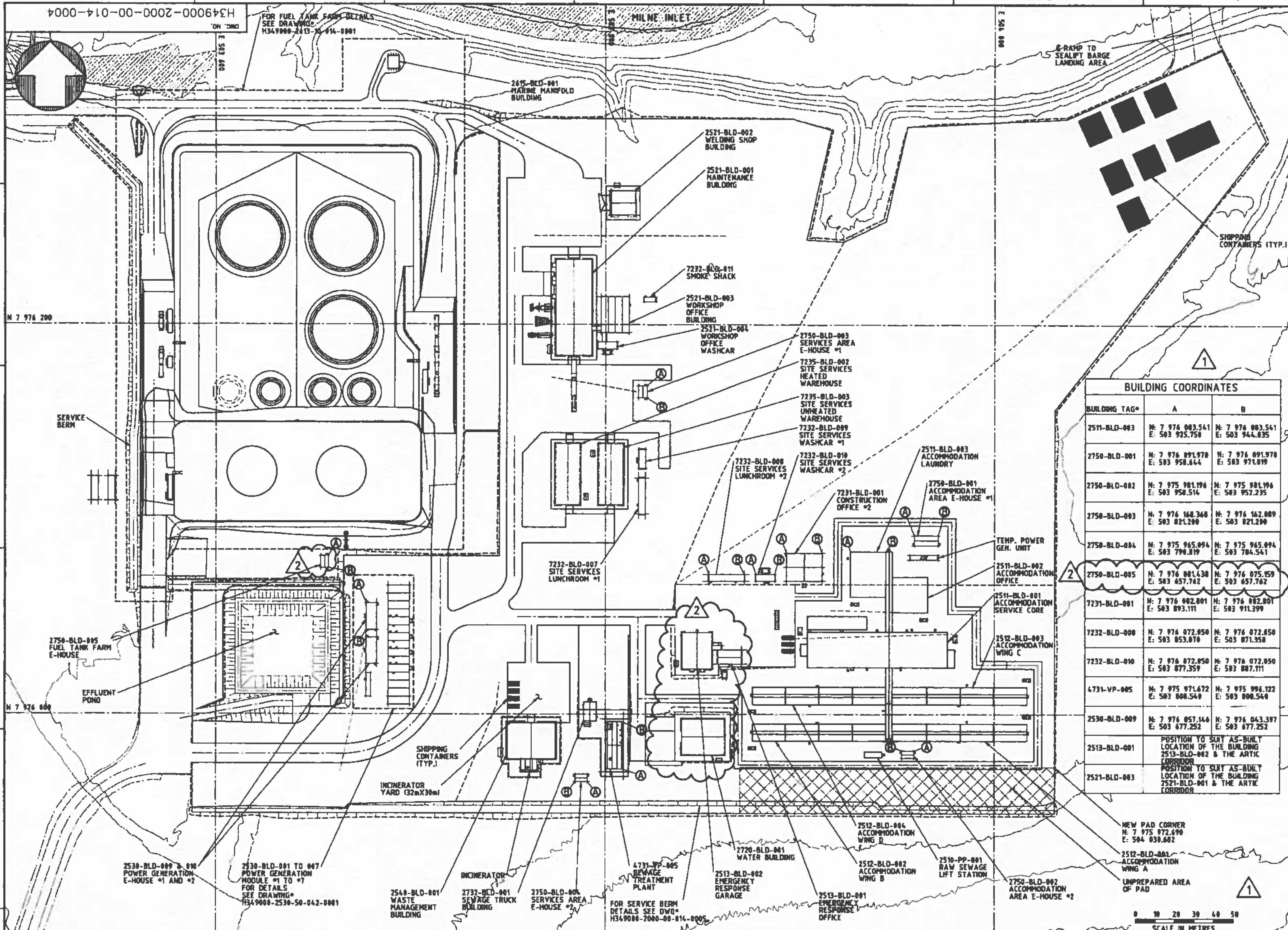
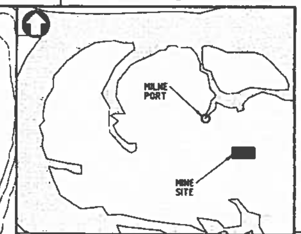


BUILDING COORDINATES		
BUILDING TAG*	A	B
2511-BLD-003	N: 7 976 003.541 E: 503 925.750	N: 7 976 003.541 E: 503 944.035
2750-BLD-001	N: 7 976 091.970 E: 503 950.644	N: 7 976 091.970 E: 503 971.019
2750-BLD-002	N: 7 975 981.196 E: 503 950.514	N: 7 975 981.196 E: 503 952.235
2750-BLD-003	N: 7 976 160.368 E: 503 821.200	N: 7 976 162.089 E: 503 821.200
2750-BLD-004	N: 7 975 965.094 E: 503 790.819	N: 7 975 965.094 E: 503 784.541
2750-BLD-005	N: 7 976 081.438 E: 503 657.762	N: 7 976 075.159 E: 503 657.762
7231-BLD-001	N: 7 976 002.801 E: 503 893.111	N: 7 976 002.801 E: 503 911.399
7232-BLD-008	N: 7 976 072.050 E: 503 853.070	N: 7 976 072.050 E: 503 871.358
7232-BLD-010	N: 7 976 072.050 E: 503 877.359	N: 7 976 072.050 E: 503 887.111
4731-VP-005	N: 7 975 971.672 E: 503 808.540	N: 7 975 996.122 E: 503 808.540
2530-BLD-009	N: 7 976 057.146 E: 503 677.252	N: 7 976 043.397 E: 503 677.252
2513-BLD-001	POSITION TO SUIT AS-BUILT LOCATION OF THE BUILDING 2513-BLD-002 & THE ARTIC CORRIDOR	
2521-BLD-003	POSITION TO SUIT AS-BUILT LOCATION OF THE BUILDING 2521-BLD-001 & THE ARTIC CORRIDOR	



KEY-PLAN

NOTES:

1. TOPOGRAPHY PROVIDED BY TERRAPOINT CANADA INC.
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METRES.
3. CONTOURS ARE IN METRES. CONTOUR INTERVAL IS 1.5 METRES.
4. ALL 7000 SERIES MODULAR BUILDINGS ARE FOR CONSTRUCTION AND THEIR FINAL LOCATIONS WILL BE DETERMINED AT SITE BY THE CONSTRUCTION GROUP.
5. FOR FOLD-AWAY BUILDINGS SETOUT COORDINATES REFER TO APPLICABLE FOUNDATION DRAWINGS.

FOR CONSTRUCTION

DRAWING NO.	DRAWING TITLE
H349000-2000-00-014-0001	EARLY REVENUE PHASE – SITE LAYOUT

REFERENCE DRAWINGS

PERMIT TO PRACTICE HATCH LTD. PERMIT NUMBER: P 012 The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

NO.	DESCRIPTION	BY	CHK'D	APP'D	DATE
2	CHANGED BUILDING LOCATIONS & COORDINATES	DK	CL	TT	2013-08-28
1	SCALE CHANGED & BLDG. COORDINATES ADDED	DK	CL	TT	2013-08-13

REVISIONS

REV.	ISSUE FOR	AUTH.	BY	DATE
2	FOR CONSTRUCTION	TT	JC	2013-08-29
1	FOR CONSTRUCTION	TT	JC	2013-08-13
0	FOR CONSTRUCTION	TT	JC	2013-05-09

ISSUE AUTHORIZATION

HATCH

DESIGNED BY T. THERTELL DATE 2013-08-27
DRAWN BY D. KARUNAKARAN DATE 2013-08-27
CHECKED BY T. THERTELL DATE 2013-08-29
DESIGN CHECK J. LEMAY DATE 2013-08-29
PROJ. DES. COORD. T. THERTELL DATE 2013-08-29
PROJ. ENGR. J. CLELAND DATE 2013-08-29
PROJ. MGR. S. PERRY DATE 2013-08-29

Baffinland

MARY RIVER PROJECT

MILNE PORT
INFRASTRUCTURE
SITE LAYOUT

SCALE: 1:1000 OR AS NOTED
DWG. NO. H349000-2000-00-014-0004
REV. 2

ORIGINAL SHEET SIZE: ISO A1 (841 x 594)

H349000-2000-00-014-0004

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MILNE PORT POWER GENERATION AND DISTRIBUTION: BUILDING SCHEDULE

BUILDING TAG NO.	BUILDING DESCRIPTION	BUILDING FUNCTION	DIMENSIONS (LxWxH)	DRY WEIGHT (LBS)	WET WEIGHT (LBS)	SUPPLY (YEAR)	INSTALL YEAR	REMARKS
2530-BLD-001	POWER GENERATION MODULE #1	1365kW, 4160V	46'x13'6"x13'4"	86,000	105,000	PE001 (2014)	2014	NOTE 1
2530-BLD-002	POWER GENERATION MODULE #2	1365kW, 4160V	46'x13'6"x13'4"	86,000	105,000	PE001 (2014)	2014	NOTE 1
2530-BLD-003	POWER GENERATION MODULE #3	1365kW, 4160V	46'x13'6"x13'4"	86,000	105,000	PE001 (2013)	2013	
2530-BLD-004	POWER GENERATION MODULE #4	1365kW, 4160V	46'x13'6"x13'4"	86,000	105,000	PE001 (2013)	2013	
2530-BLD-005	POWER GENERATION MODULE #5	1365kW, 4160V	46'x13'6"x13'4"	86,000	105,000	PE001 (2013)	2013	
2530-BLD-006	POWER GENERATION MODULE #6	1365kW, 4160V	46'x13'6"x13'4"	86,000	105,000	PE001 (2013)	2013	
2530-BLD-007	POWER GENERATION MODULE #7	1365kW, 4160V	46'x13'6"x13'4"	86,000	105,000	PE001 (2014)	2014	NOTE 1
2530-BLD-008	POWER GENERATION MODULE #8	N/A	N/A	N/A	N/A	FUTURE PROVISION	FUTURE PROVISION	NOTE 2
2530-BLD-009	POWER GENERATION E-HOUSE #1	4160V SWGR./ 600V UNIT SUB	45'x18'x12'	110,000	N/A	PE001 (2013)	2013	
2530-BLD-010	POWER GENERATION E-HOUSE #2	4160V SWGR./ BLK. START GEN.	45'x18'x12'	110,000	N/A	PE001 (2013)	2013	
2530-BLD-011	POWER GENERATION STORES	WALK-IN STORAGE CONTAINER	40'x8'x8'6"	35,200	N/A	PE001 (2013)	2013	

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date 2013-08-28
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

FOR CONSTRUCTION

REGISTERED PROFESSIONAL ENGINEER
B.K. PERKINS
LICENSEE
NT/NU

NOTES:
1. GENSETS FOR 2014 DELIVERY.
2. PROVISIONAL BUILDING TAG FOR FUTURE GENSET.
3. BUILDING TAG NO.'S AND DESCRIPTIONS ARE GENERALLY AS PER H349000-1000-00-144-0001, MASTER BUILDING MATRIX.

NO	DESCRIPTION	BY	CHK'D	APP'D	DATE

REVISIONS

NO	ISSUE FOR	AUTH. BY	DATE
0	CONSTRUCTION	BP JC	2013-08-28

ISSUE AUTHORIZATION

DESIGNED BY A. HUSSAINI DATE 2013-05-06	HATCH
CHECKED BY M. JAGANI MJ DATE 2013-08-27	DRAWN BY J. SAINI DATE 2013-05-06
PROJ. ENGR. J. CLELAND DATE 2013-08-28	DISCIP. ENGR. B. PERKINS DATE 2013-08-28
PROJ. MGR. S. PERRY DATE 2013-08-28	SCALE NTS OR AS NOTED

Baffinland
MARY RIVER PROJECT
MILNE PORT
POWER GENERATION AND DISTRIBUTION
BUILDING SCHEDULE (SHT. 1 OF 2)

DRAWING NO. H349000-2000-70-007-0001-001 REV. 0

ORIGINAL SHEET SIZE: A3 (420 X 297)

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MILNE PORT POWER GENERATION AND DISTRIBUTION: BUILDING SCHEDULE (CONT.)

BUILDING TAG NO.	BUILDING DESCRIPTION	BUILDING FUNCTION	DIMENSIONS (L x W x H)	DRY WEIGHT (LBS)	WET WEIGHT (LBS)	SUPPLY (YEAR)	INSTALL YEAR	REMARKS
2750-BLD-001	ACCOMMODATION AREA E-HOUSE #1	TYPE I UNIT SUB	40'x16'x11'	84,000	N/A	PE003 (2013)	2013	
2750-BLD-002	ACCOMMODATION AREA E-HOUSE #2	TYPE III UNIT SUB	24'6"x16'x11'	36,000	N/A	PE003 (2013)	2013	
2750-BLD-003	SERVICES AREA E-HOUSE #1	TYPE II UNIT SUB	24'6"x16'x11'	48,000	N/A	PE003 (2013)	2013	
2750-BLD-004	SERVICES AREA E-HOUSE #2	TYPE III UNIT SUB	24'6"x16'x11'	36,000	N/A	PE003 (2013)	2013	
2750-BLD-005	FUEL TANK FARM E-HOUSE	TYPE III UNIT SUB	24'6"x16'x11'	36,000	N/A	PE003 (2013)	2013	
2342-BLD-001	SHIPLOADING AREA E-HOUSE	4160V MCC/ 600V UNIT SUB	TBD	TBD	N/A	PM002 (2014)	2014	
2351-SL-001	SHIPLOADER #1 E-HOUSE	600V UNIT SUB	TBD	TBD	N/A	PM002 (2014)	2014	LOCATED ON SHIPLOADER #1
2351-SL-002	SHIPLOADER #2 E-HOUSE	600V UNIT SUB	TBD	TBD	N/A	PM002 (2014)	2014	LOCATED ON SHIPLOADER #2

HOLD
H0001

FOR CONSTRUCTION

PERMIT TO PRACTICE
HATCH LTD.
Signature BKP
Date 2013-08-28
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

REGISTERED PROFESSIONAL ENGINEER
B.K. PERKINS
LICENSED
NT/NU

HOLDS:

H0001. HOLD FOR SHIPLOADING AREA E-HOUSE DATA.

NO	DESCRIPTION	BY	CHK'D	APP'D	DATE

REVISIONS

NO	ISSUE FOR	AUTH. BY	DATE
0	CONSTRUCTION	BP JC	2013-08-28

ISSUE AUTHORIZATION

DESIGNED BY A. HUSSAINI DATE 2013-05-06
CHECKED BY M. JAGANI MJ. DATE 2013-08-27
PROJ. ENGR. J. CLELAND DATE 2013-08-28
PROJ. MGR. S. PERRY DATE 2013-08-28

HATCH

DRAWN BY J. SAINI DATE 2013-05-06
DISCIP. ENGR. B. PERKINS DATE 2013-08-28
SCALE NTS OR AS NOTED

Baffinland
MARY RIVER PROJECT

MILNE PORT
POWER GENERATION AND DISTRIBUTION
BUILDING SCHEDULE (SHT. 2 OF 2)

DRAWING NO. H349000-2000-70-007-0001-002 REV. 0

ORIGINAL SHEET SIZE: A3 (420 x 297)

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MILNE PORT POWER DISTRIBUTION: GROUND CONDUCTOR SCHEDULE

ITEM NO.	ORIGIN BUILDING TAG NO.	ORIGIN BUILDING DESCRIPTION	ORIGIN EQUIPMENT	DESTINATION TAG NO.	DESTINATION DESCRIPTION	DESTINATION EQUIPMENT	GROUND CABLE DESCRIPTION	ESTIMATED LENGTH (M)	SUPPLIED LENGTH (M)	SUPPLY (YEAR)	INSTALL YEAR
1	N/A	FUEL TANK FARM	GROUND GRID	2530-BLD-009	POWER GENERATION E-HOUSE #1	GROUND PAD	4/0 AWG BARE CU	2 X 364	2 X 546	BE001 (2013)	2013
2	N/A	FUEL TANK FARM	GROUND GRID	2530-BLD-010	POWER GENERATION E-HOUSE #2	GROUND PAD	4/0 AWG BARE CU	2 X 426	2 X 640	BE001 (2013)	2013
3	2530-BLD-009	POWER GENERATION E-HOUSE #1	GROUND PAD	2750-BLD-003	SERVICES AREA E-HOUSE #1	GROUND PAD	4/0 AWG BARE CU	2 X 400	2 X 601	BE001 (2013)	2013
4	2530-BLD-010	POWER GENERATION E-HOUSE #2	GROUND PAD	2750-BLD-004	SERVICES AREA E-HOUSE #2	GROUND PAD	4/0 AWG BARE CU	2 X 296	2 X 445	BE001 (2013)	2013
5	2750-BLD-004	SERVICES AREA E-HOUSE #2	GROUND PAD	2750-BLD-002	ACCOMMODATION AREA E-HOUSE #2	GROUND PAD	4/0 AWG BARE CU	2 X 264	2 X 396	BE001 (2013)	2013
6	2750-BLD-002	ACCOMMODATION AREA E-HOUSE #2	GROUND PAD	2750-BLD-001	ACCOMMODATION AREA E-HOUSE #1	GROUND PAD	4/0 AWG BARE CU	2 X 191	2 X 287	BE001 (2013)	2013
7	2530-BLD-010	POWER GENERATION E-HOUSE #2	GROUND PAD	2750-BLD-005	FUEL TANK FARM E-HOUSE	GROUND PAD	4/0 AWG BARE CU	2 X 118	2 X 177	BE001 (2013)	2013
8	2750-BLD-005	FUEL TANK FARM E-HOUSE	GROUND PAD	2432-BLD-001	SHIPLOADING AREA E-HOUSE	GROUND PAD	4/0 AWG BARE CU	2 X 932	2 X 1398	BE001 (2014)	2014

FOR CONSTRUCTION

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date 2013-08-28
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

REGISTERED PROFESSIONAL ENGINEER
B.K. PERKINS
LICENSEE
2013-08-28
NT/NU

NOTES:

1. PRIMARY DISTRIBUTION GROUNDING ORIGINATES AT FUEL TANK FARM GROUND GRID AS INDICATED IN ITEMS 1 AND 2.
2. GROUND PAD INDICATES A SUITABLE GROUND CONNECTION POINT IDENTIFIED ON BUILDING EXTERIOR (E.G. ON BASE FRAME).
3. PRIMARY DISTRIBUTION GROUND CONDUCTOR GENERALLY INSTALLED ON UTILITY BERM ADJACENT TO 5kV FEEDER CABLE.
4. EQUIPMENT TAG NO.'S ARE AS PER PROJECT POWER GENERATION AND DISTRIBUTION SLD'S.
5. BUILDING TAG NO.'S AND DESCRIPTIONS ARE AS PER H349000-2000-70-007-0001-001 AND 002, POWER GENERATION AND DISTRIBUTION BUILDING SCHEDULES.
6. ESTIMATED LENGTHS BASED ON H349000-2000-00-014-0005, MILNE PORT UTILITY SERVICES SITE LAYOUT.
7. SUPPLIED LENGTHS BASED ON 50% CONTINGENCY.
8. FIELD VERIFY GROUND CONDUCTOR LENGTHS PRIOR TO CUTTING CABLE FROM REEL.

NO	DESCRIPTION	BY	CHK'D	APP'D	DATE

REVISIONS

NO	ISSUE FOR	AUTH. BY	DATE
0	CONSTRUCTION	BP JC	2013-08-28

ISSUE AUTHORIZATION

DESIGNED BY A. HUSSAINI DATE 2013-05-06
CHECKED BY M. JAGANI MJ. DATE 2013-08-27
PROJ. ENGR. J. CLELAND DATE 2013-08-28
PROJ. MGR. S. PERRY DATE 2013-08-28

HATCH

DRAWN BY J. SAINI DATE 2013-05-06
DISCIP. ENGR. B. PERKINS DATE 2013-08-28
SCALE NTS OR AS NOTED

Baffinland
MARY RIVER PROJECT

MILNE PORT
PRIMARY DISTRIBUTION GROUNDING
GROUND CONDUCTOR SCHEDULE

DRAWING NO. H349000-2000-70-007-0002
REV. 0

ORIGINAL SHEET SIZE: A3 (420 X 297)

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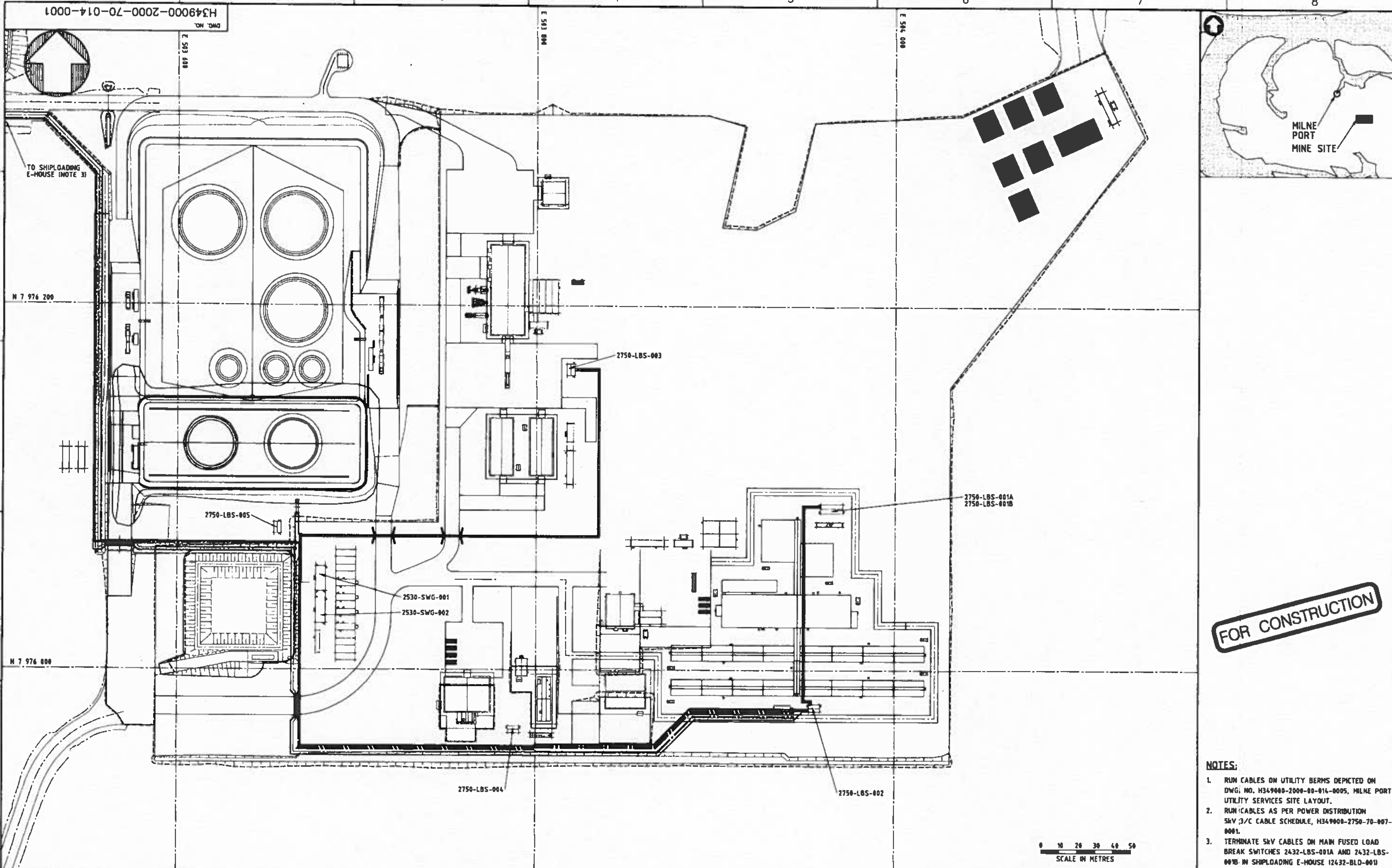

NOTES:

1. RUN CABLES ON UTILITY BERMS DEPICTED ON DWG. NO. H349000-2000-00-014-0005, MILNE PORT UTILITY SERVICES SITE LAYOUT.
2. RUN CABLES AS PER POWER DISTRIBUTION 5kV 3/C CABLE SCHEDULE, H349000-2750-70-007-0001.
3. TERMINATE 5kV CABLES ON MAIN FUSED LOAD BREAK SWITCHES 2432-LBS-001A AND 2432-LBS-001B IN SHIPLOADING E-HOUSE (2432-BLD-001)

DRAWING NO.	DRAWING TITLE
H349000-2750-70-007-0001	MILNE PORT - POWER DIST. 5kV 3/C CABLE SCHEDULE
H349000-2000-00-014-0005	MILNE PORT - UTILITY SERVICES SITE LAYOUT
H349000-2000-00-014-0004	MILNE PORT - INFRASTRUCTURE SITE LAYOUT

REFERENCE DRAWINGS

PERMIT TO PRACTICE
Date 2013-09-09
PERMIT NUMBER: P 612

NO.	DESCRIPTION	BY	CHK'D	APP'D	DATE

REVISIONS

REV.	ISSUE FOR	AUTH. BY		DATE
0	CONSTRUCTION	BP	JC	2013-09-09

ISSUE AUTHORIZATION

HATCH

DESIGNED BY A. HUSSAINI DATE 2013-06-28	DRAWN BY J. SAINI DATE 2013-06-28
CHECKED BY M. JAGANI DATE 2013-09-05	DISCIP. ENGR. B. PERRY DATE 2013-09-09
PROJ. DES. DATE 2013-09-09	PROJ. DATE 2013-09-09
PROJ. MGR. S. PERRY DATE 2013-09-09	

Baffinland

MARY RIVER PROJECT

MILNE PORT
5KV 3/C CABLE TIE-INS
POWER DISTRIBUTION LAYOUT

SCALE 1:1000 (OR AS NOTED)
DWG. NO. H349000-2000-70-014-0001
REV. 0
ORIGINAL SHEET SIZE: ISO A1 (841 x 594)

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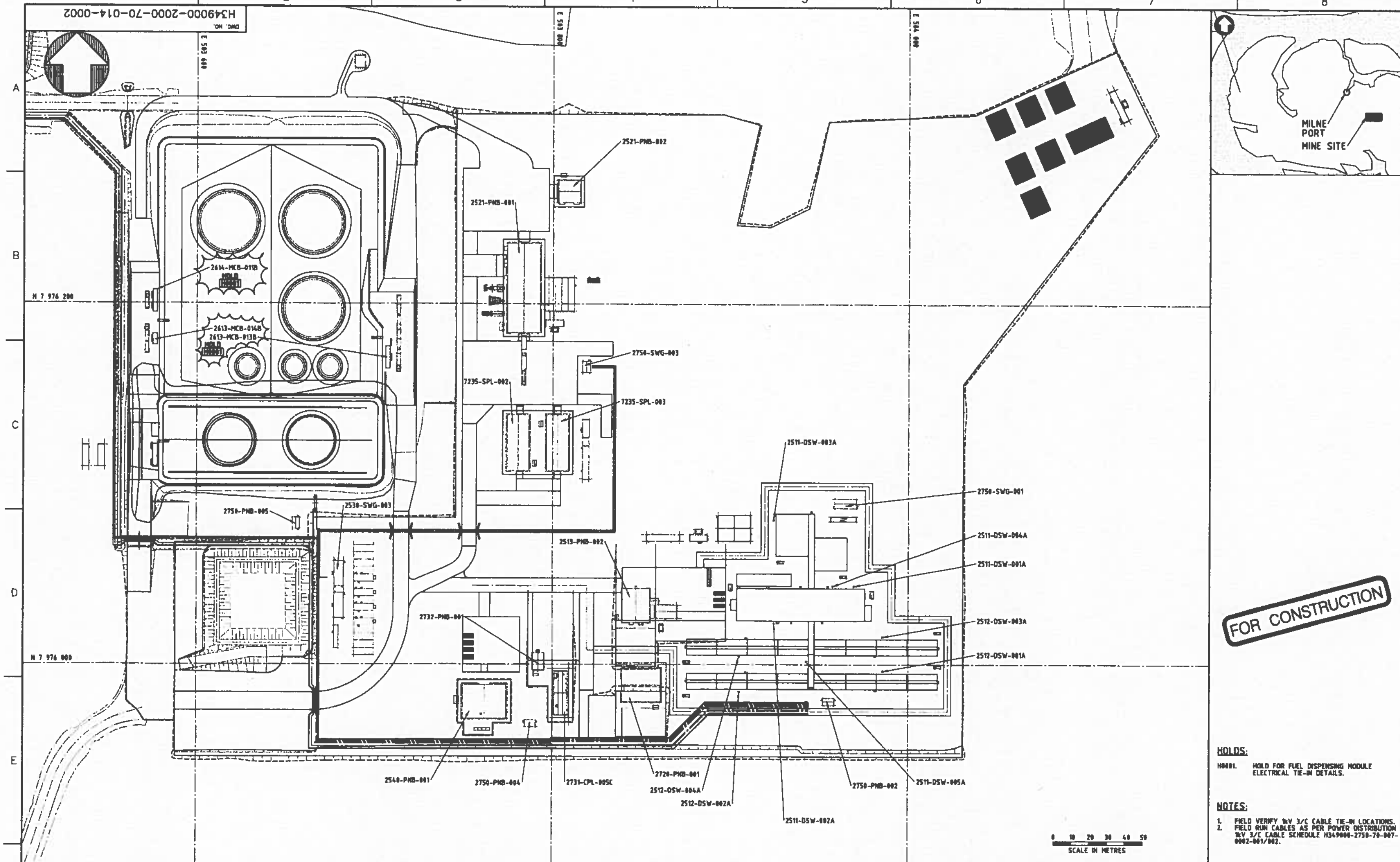

HOLDS:

H0001. HOLD FOR FUEL DISPENSING MODULE ELECTRICAL TIE-IN DETAILS.

NOTES:

1. FIELD VERIFY 1kV 3/C CABLE TIE-IN LOCATIONS.
2. FIELD RUN CABLES AS PER POWER DISTRIBUTION 1kV 3/C CABLE SCHEDULE H349000-2750-70-007-0002-001/002.

DRAWING NO.	DRAWING TITLE
H349000-2750-70-007-0002-002	MILNE PORT - POWER DIST. 1kV 3/C CABLE SCHEDULE
H349000-2750-70-007-0002-001	MILNE PORT - POWER DIST. 1kV 3/C CABLE SCHEDULE
H349000-2000-00-014-0004	MILNE PORT - INFRASTRUCTURE SITE LAYOUT

REFERENCE DRAWINGS

PERMIT TO PRACTICE
HATCH LTD.
2013-08-29
PERMIT NUMBER: P 012
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

NO.	DESCRIPTION	BY	CHK'D	APP'D	DATE

REVISIONS

REV.	ISSUE FOR	AUTH. BY		DATE
0	CONSTRUCTION	BP	JC	2013-08-28

ISSUE AUTHORIZATION

HATCH

DESIGNED BY A. HUSSAINI DATE 2013-06-28	DRAWN BY J. SAINI DATE 2013-06-28
CHECKED BY M. JAGANI DATE 2013-06-27	DISCIP. ENG. B. P. DATE 2013-08-28
PROJ. DES. COORD. T. THE... DATE 2013-08-28	PROJ. ENGR. J. CLELAND DATE 2013-08-28
PROJ. MGR. S. PERRY DATE 2013-08-28	

Baffinland

MARY RIVER PROJECT

MILNE PORT
1KV 3/C CABLE TIE-INS
POWER DISTRIBUTION LAYOUT

SCALE	DWG. NO.	REV.
1:1000 OR AS NOTED	H349000-2000-70-014-0002	0

ORIGINAL SHEET SIZE: ISO A1 (841 x 594)

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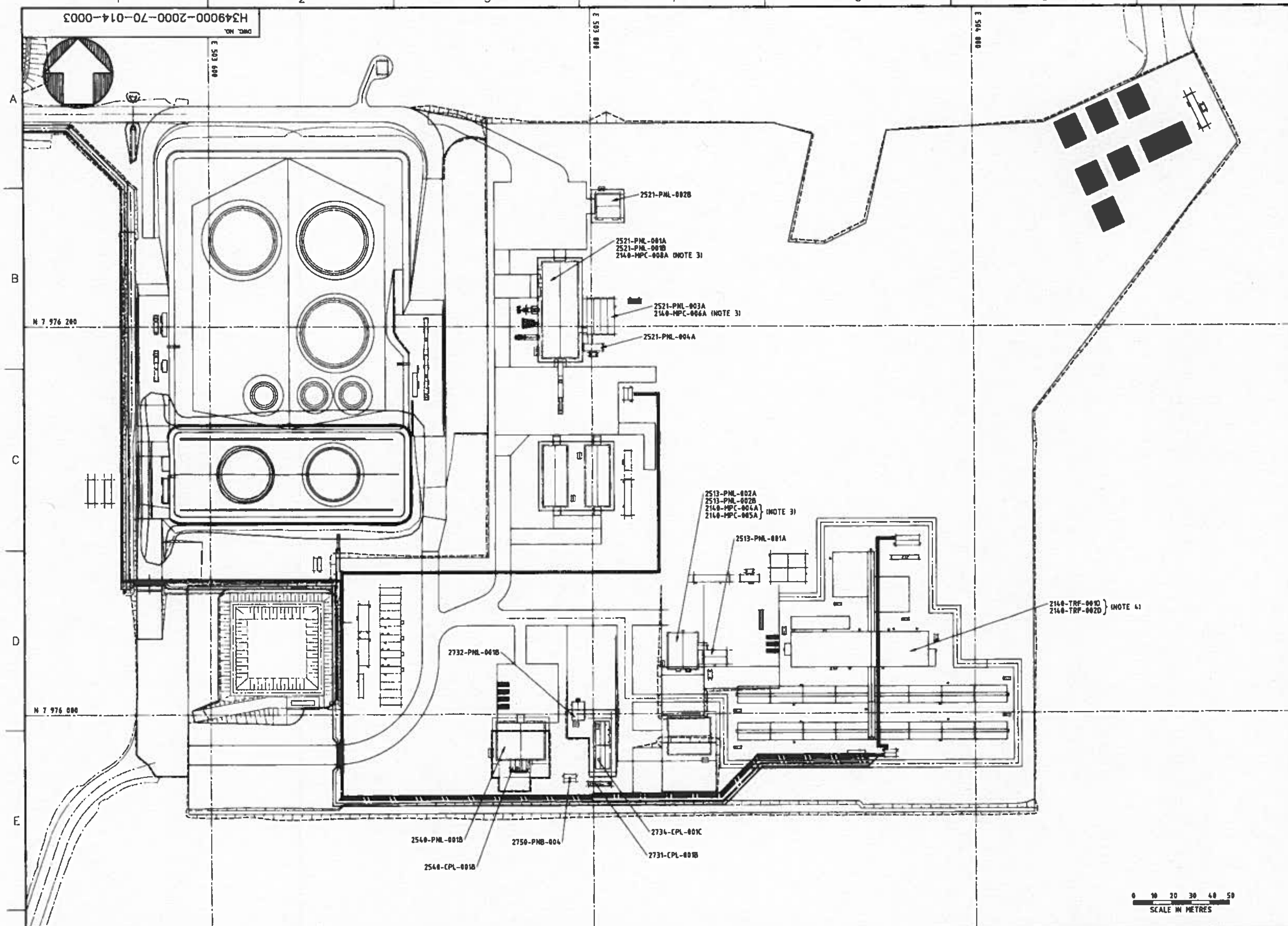

NOTES:

1. FIELD VERIFY 1kV 4/C CABLE TIE-IN LOCATIONS.
2. FIELD RUN CABLES AS PER POWER DISTRIBUTION 1kV 4/C CABLE SCHEDULE, H349000-2750-70-007-0003.
3. EACH MINI POWER CENTER (MPC) IS TO BE INSTALLED ON EXTERIOR OF IDENTIFIED BUILDING, IN PROXIMITY TO ITS ASSOCIATED READY LINE (NOT SHOWN).
4. EACH 600/480V REEFER POWER SUPPLY TRANSFORMER (TRF) IS TO BE INSTALLED OUTDOOR, ADJACENT TO THE ACCOMMODATION SERVICE CORE, AND WILL POWER ITS DEDICATED REEFER OUTLET ASSEMBLY CONSISTING OF 10 RECEPTACLES (NOT SHOWN).
5. LOCATE AND INSTALL MOBILE EQUIPMENT READY LINES AS PER READY LINE SCHEDULE H349000-2140-70-007-0001.

DRAWING NO.	DRAWING TITLE
H349000-2750-70-007-0003	MILNE PORT – POWER DIST. 1kV 4/C CABLE SCHEDULE
H349000-2000-00-014-0004	MILNE PORT – INFRASTRUCTURE SITE LAYOUT

REFERENCE DRAWINGS

PERMIT TO PRACTICE
2013-09-09
PERMIT NUMBER: P 012

NO.	DESCRIPTION	BY	CHK'D	APP'D	DATE

REVISIONS

REV.	ISSUE FOR	AUTH. BY		DATE
0	CONSTRUCTION	BP	JC	2013-09-09

ISSUE AUTHORIZATION

HATCH

DESIGNED BY A. HUSSAINI DATE 2013-06-28
DRAWN BY J. SAINI DATE 2013-06-28
CHECKED BY M. JAGANI DATE 2013-09-05
DISCIP. ENG. B. PERRY DATE 2013-09-09
PROJ. DES. COORD. DATE 2013-09-09
PROJ. ENG. DATE 2013-09-09
PROJ. MGR. S. PERRY DATE 2013-09-09

Baffinland

MARY RIVER PROJECT

MILNE PORT
1KV 4/C CABLE TIE-INS
POWER DISTRIBUTION LAYOUT

SCALE 1:1000
DWG. NO: H349000-2000-70-014-0003
REV. 0
ORIGINAL SHEET SIZE: ISO A1 (841 x 594)

09/09/2013 1:52:23 PM
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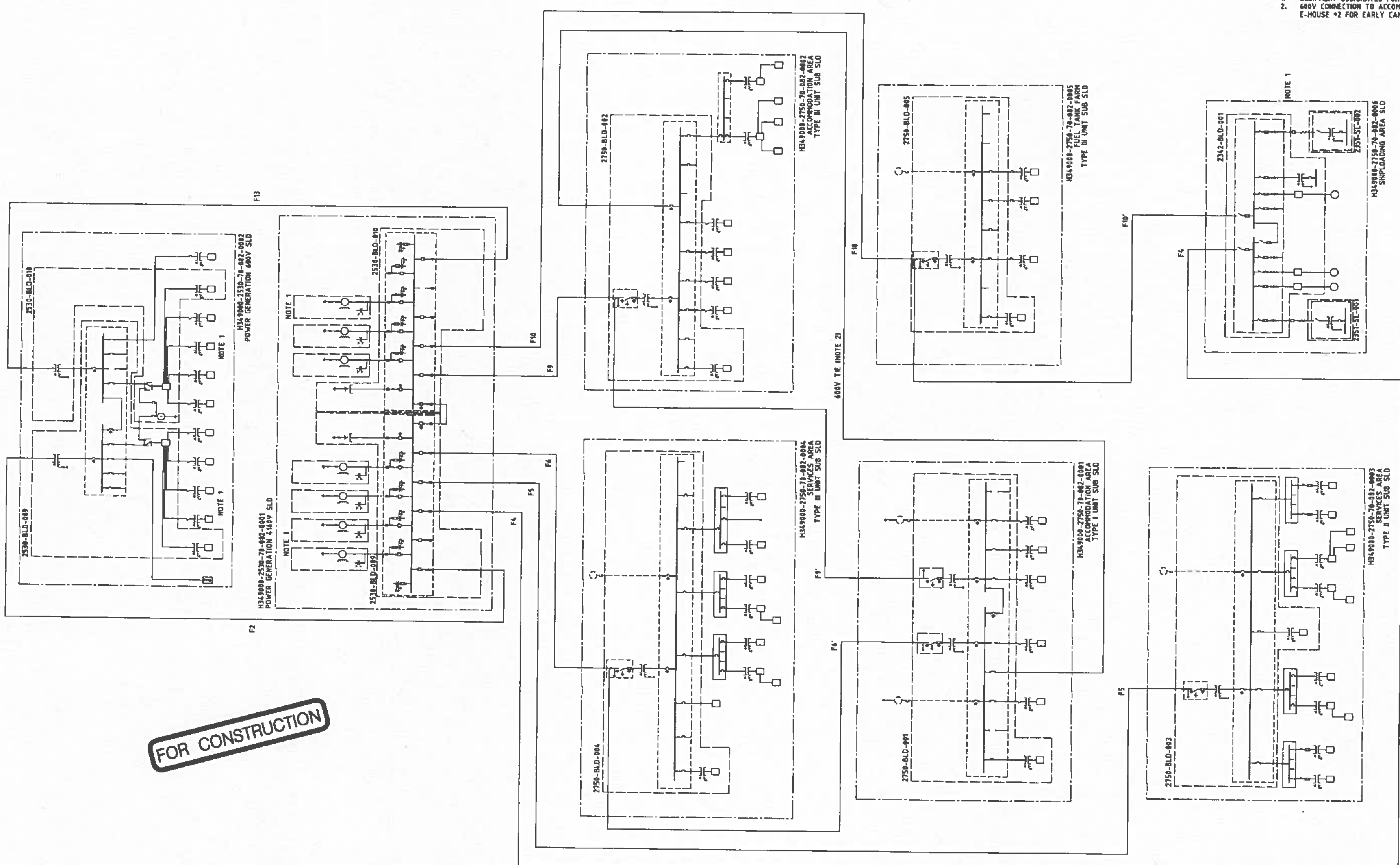
H349000-2000-70-082-0001
DWG. NO.

NOTES:

1. EQUIPMENT DESIGNATED FOR 2014 DELIVERY.
2. 600V CONNECTION TO ACCOMMODATION AREA E-HOUSE #2 FOR EARLY CAMP OPERATIONS.



DRAWING NO.	DRAWING TITLE

REFERENCE DRAWINGS

PERMIT TO PRACTICE
Date 2013-09-25
PERMIT NUMBER: P 012
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

NO.	DESCRIPTION	BY	CHK'D	APP'D	DATE

REVISIONS

REV.	ISSUE FOR	AUTH.	BY	DATE
0	CONSTRUCTION	BP	JC	2013-09-26

ISSUE AUTHORIZATION

HATCH

DESIGNED BY B. PERKINS DATE 2013-05-24	DRAWN BY J. SAINI DATE 2013-05-24
CHECKED BY M. JACAN DATE 2013-09-23	DISCIP. ENGR. B. PERKINS DATE 2013-09-26
PROJ. DES. COORD. T. THERIEN DATE 2013-09-26	PROJ. ENGR. J. CLELAND DATE 2013-09-26
PROJ. MGR. S. PERRY DATE 2013-09-26	

Baffinland Iron Mines Corporation

MARY RIVER PROJECT

MILNE PORT
OVERALL KEY DRAWING
SINGLE LINE DIAGRAM

SCALE	DWG. NO.	REV.
NTS OR AS NOTED	H349000-2000-70-082-0001	0

ORIGINAL SHEET SIZE: ISO A1 (841 x 594)

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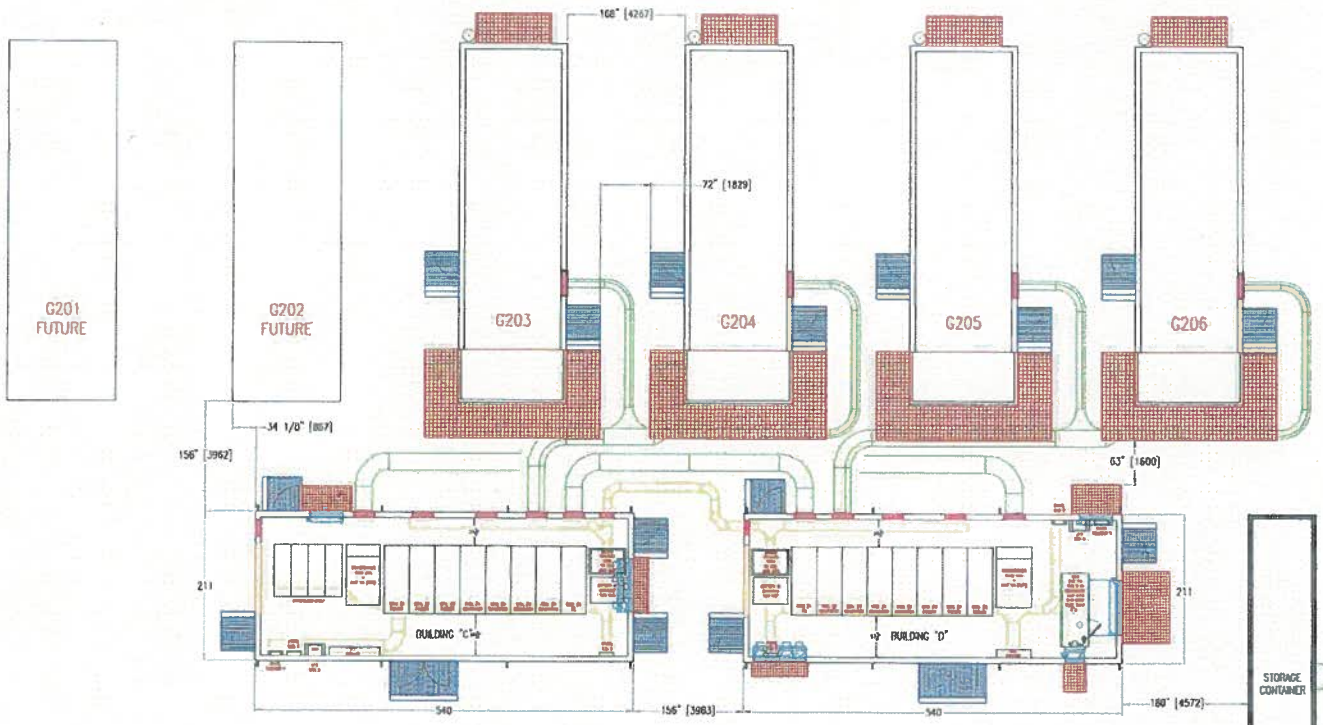
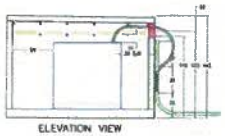




ELEVATION VIEW

HATCH — VENDOR DATA REVIEW

Doc Number	E340000-PE001-70-001-0001
Sub	03
Date Received	2013 10 18

Review Code

- ☐ C1 – Proceed to next submission & status
- ☐ C2 – Proceed with exceptions as noted to next submission & status
- ☐ C3 – Do not proceed, revise as noted & resubmit
- ☑ C4 – No further submission required – Complete
- ☐ No further submission required – Cancelled
- ☐ No further submission required – Superseded

Next Submittal Status: ☐ Interim Review ☐ Certified Final ☐ Final ☐ As-Built

Next Submittal Date:

Reviewer Name: B. Perkins | Reviewer Signature: BP | Review Date: 2013 10 18

REVIEWED ONLY FOR GENERAL CONFORMITY WITH THE SPECIFICATIONS. ACCEPTANCE BY THE OWNER DOES NOT RELIEVE OR SUPERSEDE THAT THE INFORMATION CONTAINED ON THIS DRAWING/DOCUMENT IS EITHER ACCURATE OR COMPLETE. THE SOLE RESPONSIBILITY FOR CORRECT DESIGN, DETAILS & DIMENSIONS SHALL REMAIN WITH THE PARTY SUBMITTING THE DRAWING/DOCUMENT.

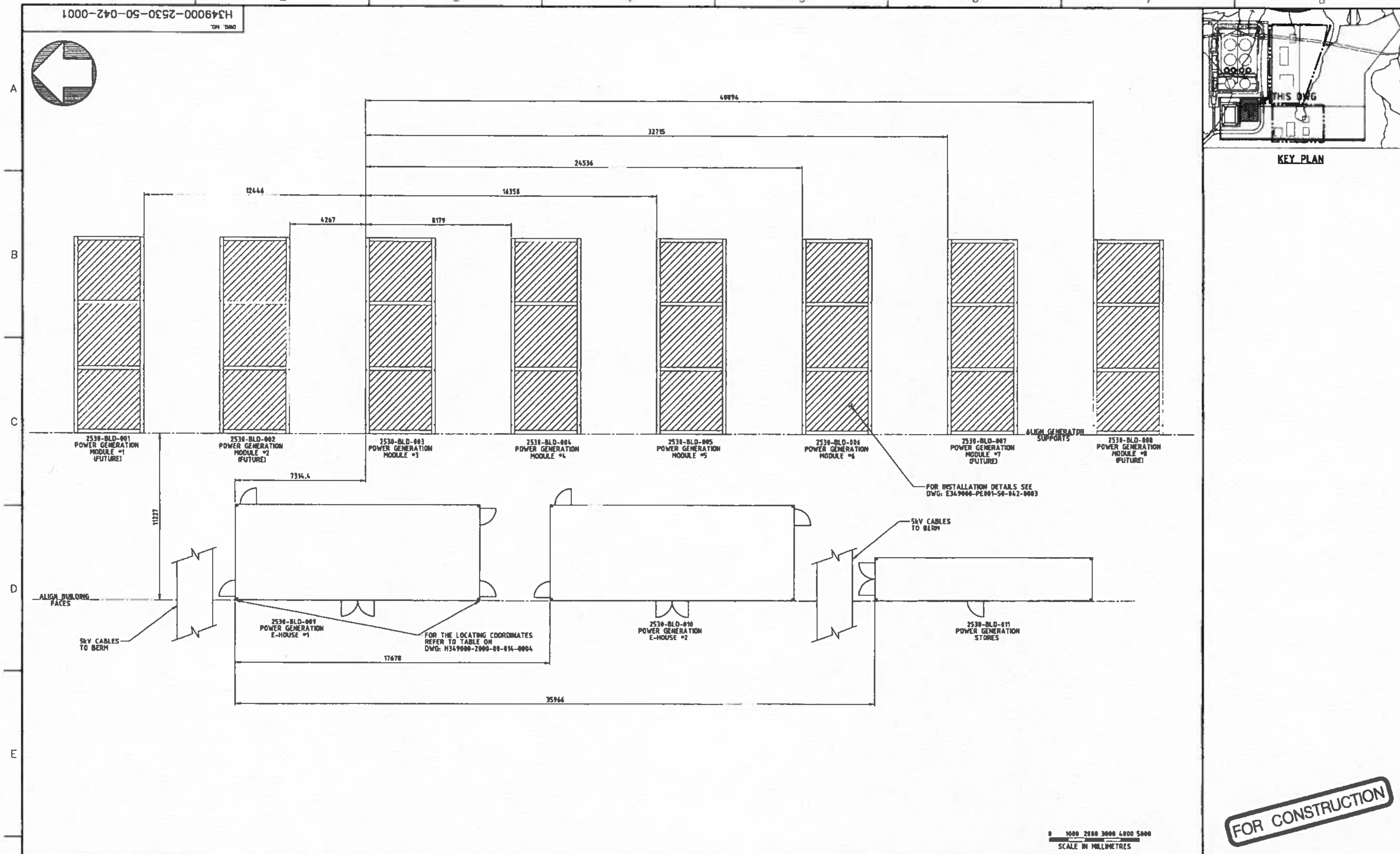
C	FOR ORDER	A.B.	A.B.	2013/09/10
B	ISSUED FOR APPROVAL	A.B.	A.B.	2013/08/07
A	ISSUED FOR APPROVAL	A.B.	A.B.	2013/08/16

Cummins Eastern Canada

MARY RIVER PROJECT
MILNE PORT
ELECTRICAL LAYOUT
WALK-IN BUILDING "C" & "D"

BAFFINLAND IRON MINE

DESIGN PERFORMED BY: A. BYRNS	DATE: 2013/04/18	PROJECT NO.: 9205	SHEET: 1/1
DRAWN PERFORMED BY: A. BYRNS	DATE: 2013/04/18		REV: C
APPROVED PERFORMED BY: E. OLIVER	DATE: 2013/04/18		
SCALE/SCALE: NTS		AutoCAD *.DWG	DRAWING NO.: 9205-010-180-01-D


H349000-2530-50-042-0001
KEY PLAN
THIS DWG
40894
32715
24536
16358
12446
8179
4267
7314.4
11227
17678
35966
2530-BLD-001 POWER GENERATION MODULE #1 (FUTURE)
2530-BLD-002 POWER GENERATION MODULE #2 (FUTURE)
2530-BLD-003 POWER GENERATION MODULE #3
2530-BLD-004 POWER GENERATION MODULE #4
2530-BLD-005 POWER GENERATION MODULE #5
2530-BLD-006 POWER GENERATION MODULE #6
2530-BLD-007 POWER GENERATION MODULE #7 (FUTURE)
2530-BLD-008 POWER GENERATION MODULE #8 (FUTURE)
ALIGN GENERATOR SUPPORTS
FOR INSTALLATION DETAILS SEE DWG: E349000-PE001-50-042-0003
5kV CABLES TO BERM
ALIGN BUILDING FACES
5kV CABLES TO BERM
2530-BLD-009 POWER GENERATION E-HOUSE #1
FOR THE LOCATING COORDINATES REFER TO TABLE ON DWG: H349000-2000-00-014-0004
2530-BLD-010 POWER GENERATION E-HOUSE #2
2530-BLD-011 POWER GENERATION STORES
0 1000 2000 3000 4000 5000
SCALE IN MILLIMETRES
FOR CONSTRUCTION

DRAWING NO.	DRAWING TITLE
REFERENCE DRAWINGS	

PERMIT TO PRACTICE
2013-08-22
PERMIT NUMBER: P 012
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

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

REV.	ISSUE FOR	AUTH. BY	DATE
0	FOR CONSTRUCTION	TI	2013-08-22
ISSUE AUTHORIZATION			

HATCH

DESIGNED BY	DRAWN BY
T. THERRELL DATE 2013-08-22	D. KARUNAKARAN DATE 2013-08-22
CHECKED B. PE... DATE 2013-08-22	DISC. ENGR. DATE 2013-08-22
PROJ. DES. COORD. T. ... DATE 2013-08-22	PROJ. ENGR. J. CLELAND DATE 2013-08-22
PROJ. MGR. S. PERRY DATE 2013-08-22	

Baffinland

MARY RIVER PROJECT

MILNE PORT
POWER GENERATION
GENERAL ARRANGEMENT

SCALE	DWG. NO.	REV.
1:100	H349000-2530-50-042-0001	0

ORIGINAL SHEET SIZE: ISO A1 (841 x 594)

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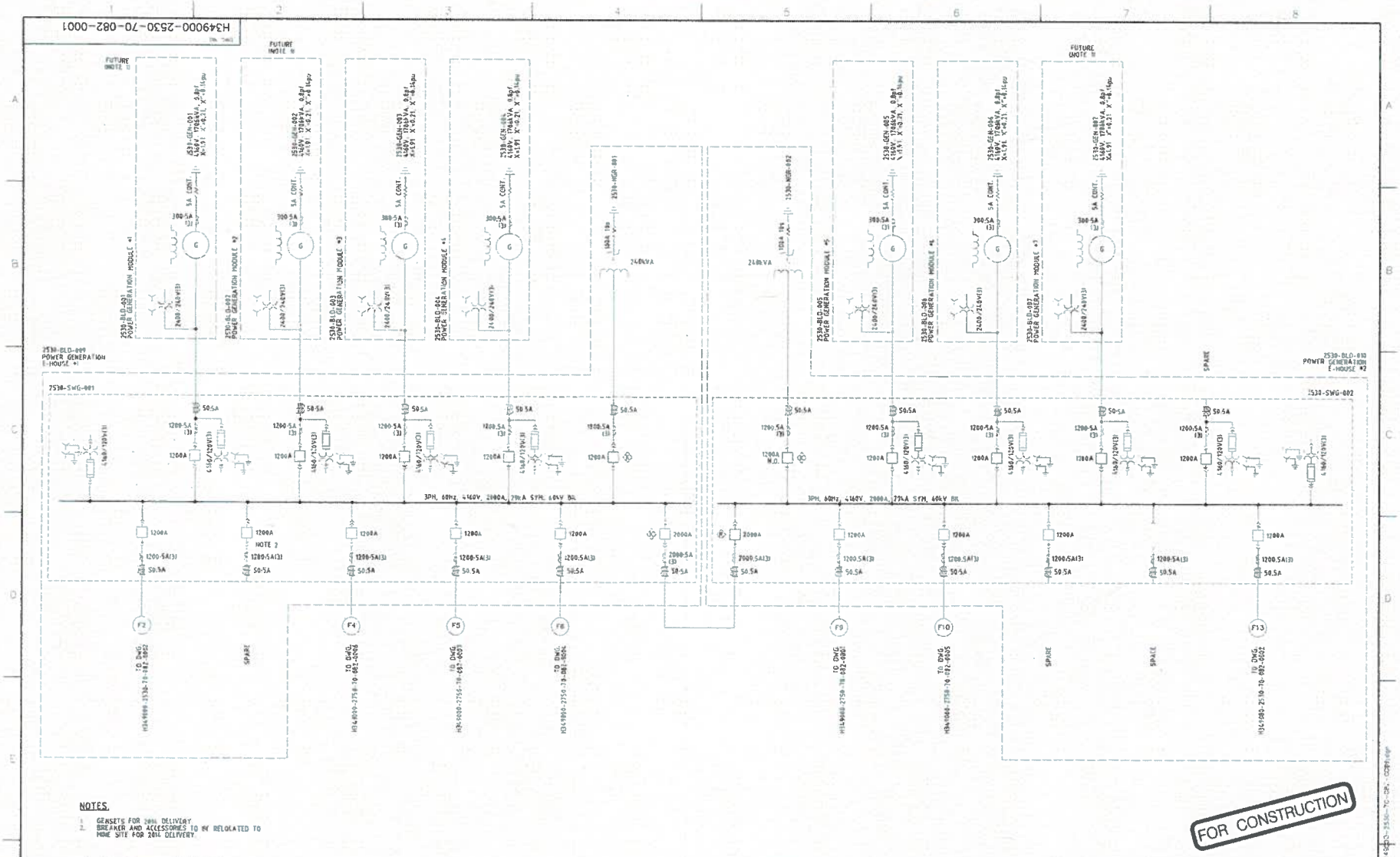


NOTES.

1. GENSETS FOR 2014 DELIVERY.
2. BREAKER AND ACCESSORIES TO BE RELOCATED TO MINE SITE FOR 2014 DELIVERY.

FOR CONSTRUCTION

REFERENCE DRAWINGS

PERMIT TO PRACTICE
PERMIT NUMBER: P 812
The Association of Professional Engineers, Geologists and Geophysicists of the NWT

REVISIONS

ISSUE AUTHORIZATION

HATCH

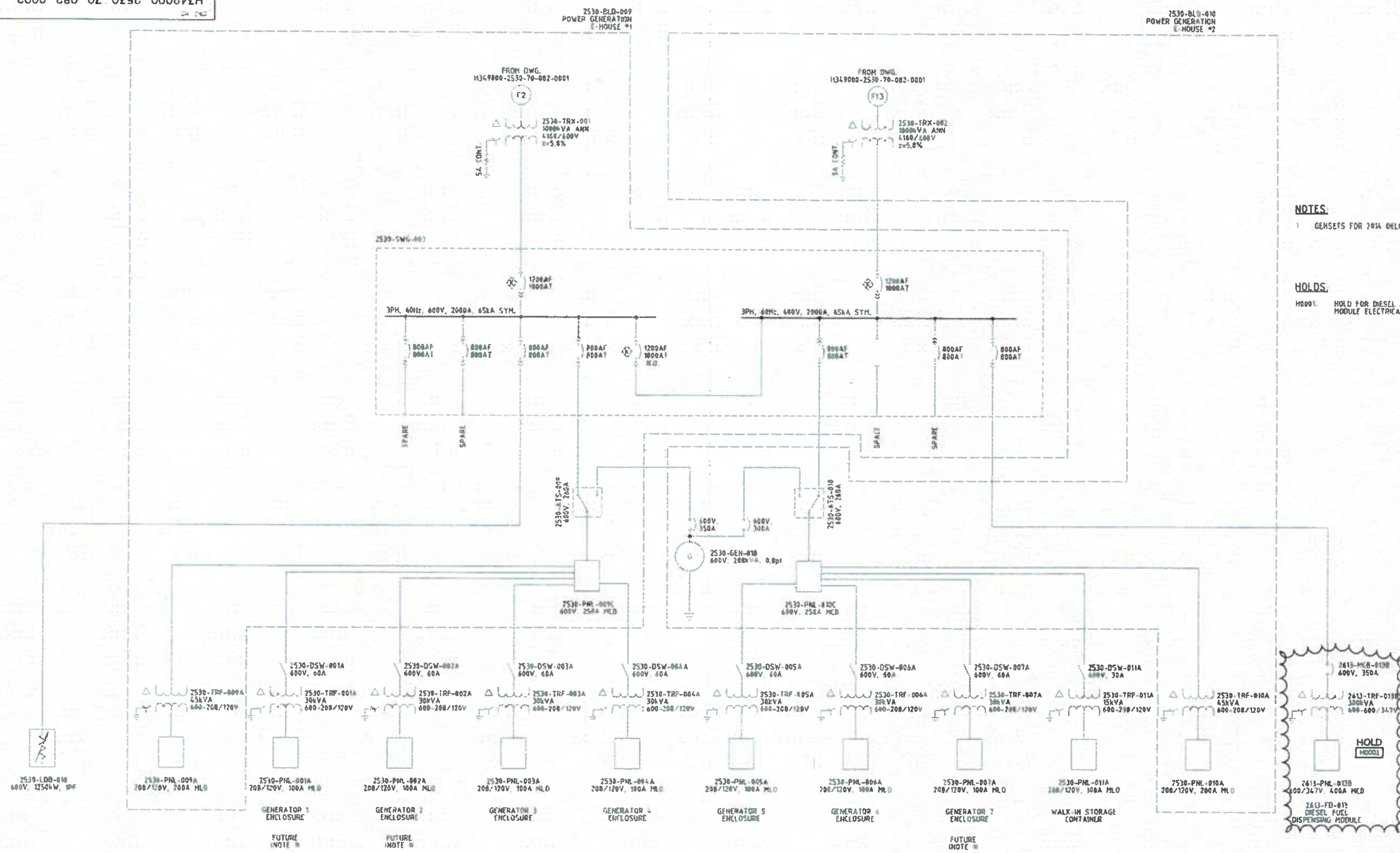
Baffinland

MARY RIVER PROJECT

MILNE PORT
POWER GENERATION
4160V SINGLE LINE DIAGRAM

SCALE	DWG. NO.	REV.
NTS	H349000-2530-70-082-0001	0

ORIGINAL SHEET SIZE: ISO A1 (841 x 594)



NOTES:

1. GENSETS FOR 2014 DELIVERY

HOLDS:

H0001 HOLD FOR DIESEL FUEL DISPENSING MODULE ELECTRICAL DETAILS.

FOR CONSTRUCTION

H349000-2530-70-082-0002

DRAWING NO.	DRAWING TITLE
REFERENCE DRAWINGS	

PERMIT TO PRACTICE
PERMIT NUMBER: P 613

REVISIONS

REV	ISSUE FOR		DATE
0	CONSTRUCTION		2013-08-05

ISSUE AUTHORIZATION

HATCH

DESIGNED BY: B. PERKINS, DATE 2013-04-17
DRAWN BY: J. SABA, DATE 2013-04-17
CHECKED BY: M. JACAR, DATE 2013-07-26
PROJ. ENGR: S. PERRY

Baffinland

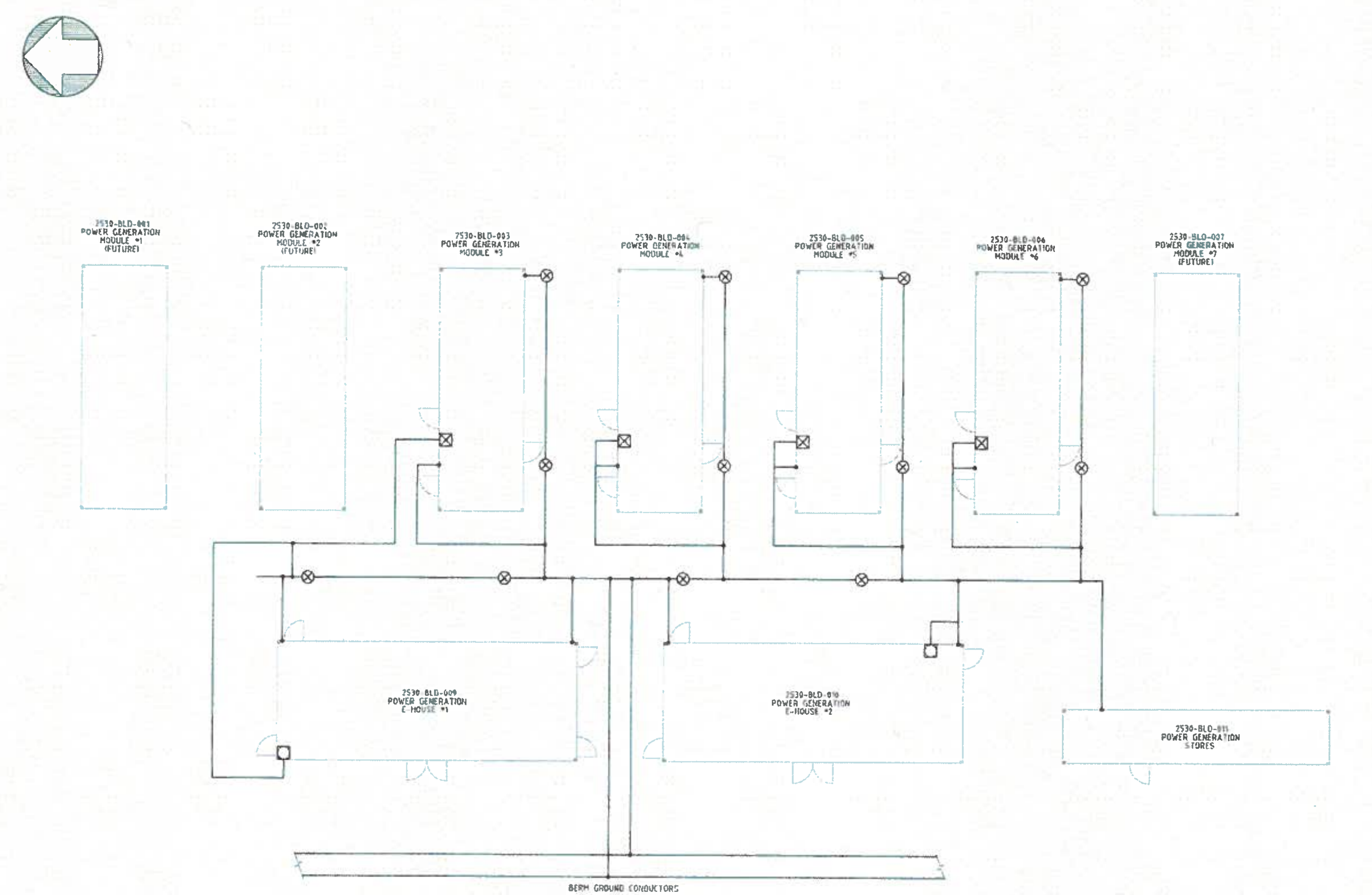
MARY RIVER PROJECT

MILNE PORT
POWER GENERATION
600V SINGLE LINE DIAGRAM

SCALE: NTS
DWG. NO. H349000-2530-70-082-0002
REV 0

ORIGINAL SHEET SIZE: ISO A1 (841 x 594)

H349000-2530-70-094-0001



NOTES:

1. MINIMUM 150mm COVER OVER GROUND CONDUCTOR (EXCEPT ON BERM).
2. FOR GROUND ROD DETAIL REFER TO H349000-1000-70-041-1102 AND H349000-1000-70-041-1123
3. FOR EXOTHERMIC CONNECTION DETAILS REFER TO H349000-1000-70-041-1111 AND H349000-1000-70-041-1132
4. FOR EXOTHERMIC LUG TO GROUNDING BAR REFER TO H349000-1000-70-041-1136. FIELD DRILL GROUNDING BARS TO SUIT LUGS.
5. FOR COMPRESSION LUG TO GROUNDING BAR USE T&B 54170 OR EQUIVALENT. FIELD DRILL GROUNDING BARS TO SUIT LUGS.
6. INSTALL CABLE TRAY GROUND CONDUCTORS PER H349000-1000-70-041-1209 AND H349000-1000-70-041-1210
7. MIN 50mm/MAX 150mm COVER OVER GROUND RODS.
8. MINIMUM 3000mm SPACING BETWEEN GROUND RODS.

LEGEND

- (line) 4/0 AWG BARE CU
- ⊗ 3M GROUND ROD WITH GEM
- • EXOTHERMIC CONNECTION
- ⊠ EXOTHERMIC LUG TO GROUNDING BAR
- ▢ COMPRESSION LUG TO GROUNDING BAR

0 1000 2000 3000 4000 5000
SCALE IN MILLIMETRES

FOR CONSTRUCTION

REFERENCE DRAWINGS	
DRAWING NO	DRAWING TITLE
H349000-2530-50-042-0001	MILNE PORT - POWER GENERATION GENERAL ARRANGEMENT

PERMIT TO PRACTICE
2013-11-07
PERMIT NUMBER: P 013
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

REVISIONS

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

ISSUE AUTHORIZATION

REV	ISSUED FOR	AUTH. BY	DATE
0	CONSTRUCTION	BP	2013-11-07

HATCH

DESIGNED BY E. GANDOLFI DATE 2013-11-04	DRAWN BY N. KRESOVIC DATE 2013-10-31
CHECKED BY R. SHARMA R.S. DATE 2013-11-07	DISCIP. ENGR. R. PERKINS DATE 2013-11-07
PROJ. DES. T. THEBERGE DATE 2013-11-07	PROJ. ENGR. DATE 2013-11-07
PROJ. MGR. S. PERRY DATE 2013-11-07	

Baffinland

MARY RIVER PROJECT

MILNE PORT
POWER GENERATION
GROUNDING LAYOUT

SCALE	DWG. NO.	REV
1:100 OR AS NOTED	H349000-2530-70-094-0001	0

ORIGINAL SHEET SIZE: ISO A1 (841 x 594)

MILNE PORT POWER DISTRIBUTION: 5kV 3/C CABLE SCHEDULE

ITEM NO.	FEEDER TAG NO.	ORIGIN BUILDING TAG NO.	ORIGIN BUILDING DESCRIPTION	ORIGIN EQUIPMENT TAG NO.	DESTINATION BUILDING TAG NO.	DESTINATION BUILDING DESCRIPTION	DESTINATION EQUIPMENT TAG	FEEDER CABLE DESCRIPTION	ESTIMATED LENGTH (M)	SUPPLIED LENGTH (M)	QTY. TERM./ SPLICES	SUPPLY (YEAR)	INSTALL YEAR
1	F4	2530-BLD-009	POWER GENERATION E-HOUSE #1	2530-SWG-001	2432-BLD-001	SHIPLOADING E-HOUSE	2432-LBS-001A	2 X 5kV HVTECK 3/C 350MCM CU	2 X 1000	2,100	4/2	BE001 (2013/14)	2014
2	F5	2530-BLD-009	POWER GENERATION E-HOUSE #1	2530-SWG-001	2750-BLD-003	SERVICES AREA E-HOUSE #1	2750-LBS-003	1 X 5kV HVTECK 3/C 350MCM CU	400	750	2/0	BE001 (2013)	2013
3	F6	2530-BLD-009	POWER GENERATION E-HOUSE #1	2530-SWG-001	2750-BLD-004	SERVICES AREA E-HOUSE #2	2750-LBS-004	1 X 5kV HVTECK 3/C 350MCM CU	335	750	2/0	BE001 (2013)	2013
4	F6'	2750-BLD-004	SERVICES AREA E-HOUSE #2	2750-LBS-004	2750-BLD-001	ACCOMODATION AREA E-HOUSE #1	2750-LBS-001A	1 X 5kV HVTECK 3/C 350MCM CU	455	750	2/0	BE001 (2013)	2013
5	F9	2530-BLD-010	POWER GENERATION E-HOUSE #2	2530-SWG-002	2750-BLD-002	ACCOMODATION AREA E-HOUSE #2	2750-LBS-002	1 X 5kV HVTECK 3/C 350MCM CU	560	750	2/0	BE001 (2013)	2013
6	F9'	2750-BLD-002	ACCOMODATION AREA E-HOUSE #2	2750-LBS-002	2750-BLD-001	ACCOMODATION AREA E-HOUSE #1	2750-LBS-001B	1 X 5kV HVTECK 3/C 350MCM CU	191	300	2/0	BE001 (2013)	2013
7	F10	2530-BLD-010	POWER GENERATION E-HOUSE #2	2530-SWG-002	2750-BLD-005	FUEL TANK FARM E-HOUSE	2750-LBS-005	2 X 5kV HVTECK 3/C 350MCM CU	2 X 118	750	2/0	BE001 (2013)	2013
8	F10'	2750-BLD-005	FUEL TANK FARM E-HOUSE	2750-LBS-005	2432-BLD-001	SHIPLOADING E-HOUSE	2432-LBS-001B	2 X 5kV HVTECK 3/C 350MCM CU	2 X 932	2,100	4/2	BE001 (2013/14)	2014

PERMIT TO PRACTICE
HATCH LTD.
Signature BK
Date 2013-09-05
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

FOR CONSTRUCTION

REGISTERED PROFESSIONAL ENGINEER
B.K. PERKINS
LICENSE
2013-09-05
NT/NU

NOTES:

1. FEEDER AND EQUIPMENT TAG NO.'S ARE AS PER PROJECT POWER GENERATION AND DISTRIBUTION SLD'S.
2. BUILDING TAG NO.'S AND DESCRIPTIONS ARE AS PER H349000-1000-00-144-0001, MASTER BUILDING MATRIX.
3. ESTIMATED LENGTHS BASED ON H349000-2000-00-014-0005, MILNE PORT UTILITY SERVICES SITE LAYOUT.
4. SUPPLIED LENGTHS BASED ON STANDARD CABLE REEL CAPACITIES WITH A MINIMUM OF ONE (1) REEL PER FEEDER.
5. QTY. TERM./SPLICES DENOTES REQUISITE NUMBER OF TERMINATIONS AND SPLICE KITS.
6. FIELD VERIFY FEEDER CABLE LENGTHS PRIOR TO CUTTING CABLE FROM REEL.

NO	DESCRIPTION	BY	CHK'D	APP'D	DATE

REVISIONS

NO	ISSUE FOR	AUTH. BY	DATE
0	CONSTRUCTION	BP JC	2013-09-05

ISSUE AUTHORIZATION

DESIGNED BY A. HUSSAINI DATE 2013-04-30
CHECKED BY M. JAGANI MJ. DATE 2013-09-03
PROJ. ENGR. T. CREELAND DATE 2013-09-05
PROJ. MGR. DATE 2013-09-05

HATCH
DRAWN BY J. SAINI DATE 2013-04-30
DISCIP. ENGR. B. PERKINS DATE 2013-09-05
SCALE NTS OR AS NOTED

Baffinland
MARY RIVER PROJECT
MILNE PORT
POWER DISTRIBUTION
5KV 3/C CABLE SCHEDULE

DRAWING NO. H349000-2750-70-007-0001
REV. 0
ORIGINAL SHEET SIZE: A3 (420 X 297)

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05/09/2013 2:24:46 PM
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MILNE PORT POWER DISTRIBUTION: 1kV 3/C CABLE SCHEDULE

ITEM NO.	FEEDER TAG NO.	ORIGIN BUILDING TAG NO.	ORIGIN BUILDING DESCRIPTION	ORIGIN EQUIPMENT TAG NO.	DESTINATION TAG NO.	DESTINATION DESCRIPTION	DESTINATION EQUIPMENT TAG NO.	FEEDER CABLE DESCRIPTION	ESTIMATED LENGTH (M)	SUPPLIED LENGTH (M)	SUPPLY (YEAR)	INSTALL YEAR
1	2511-DSW-004A-P	2750-BLD-001	ACCOMMODATION AREA E-HOUSE *1	2750-SWG-001	2511-BLD-001	KITCHEN (PANEL E)	2511-DSW-004A	1 X 1kV TECK90 4/C 1/0 AWG CU (1)	86	129	BE001 (2013)	2013
2	2750-PNB-002-P	2750-BLD-001	ACCOMMODATION AREA E-HOUSE *1	2750-SWG-001	2750-BLD-002	ACCOMMODATION AREA E-HOUSE *2	2750-PNB-002	2 X 1kV TECK90 3/C 350MCM CU	2 X 173	2 X 259	BE001 (2013)	2013
3	2511-DSW-001A-P	2750-BLD-001	ACCOMMODATION AREA E-HOUSE *1	2750-SWG-001	2511-BLD-001	KITCHEN	2511-DSW-001A	1 X 1kV TECK90 3/C 350MCM CU	101	152	BE001 (2013)	2013
4	2511-DSW-002A-P	2750-BLD-001	ACCOMMODATION AREA E-HOUSE *1	2750-SWG-001	2511-BLD-001	RECREATION	2511-DSW-002A	1 X 1kV TECK90 3/C 350MCM CU	134	202	BE001 (2013)	2013
5	2511-DSW-003A-P	2750-BLD-001	ACCOMMODATION AREA E-HOUSE *1	2750-SWG-001	2511-BLD-003	LAUNDRY	2511-DSW-003A	1 X 1kV TECK90 3/C 350MCM CU	56	84	BE001 (2013)	2013
6	2511-DSW-005A-P	2750-BLD-001	ACCOMMODATION AREA E-HOUSE *1	2750-SWG-001	N/A	ARCTIC WALKWAY	2511-DSW-005A	1 X 1kV TECK90 3/C 350MCM CU	134	202	BE001 (2013)	2013
7	2512-DSW-004A-P	2750-BLD-002	ACCOMMODATION AREA E-HOUSE *2	2750-PNB-002	2512-BLD-004	OORM D	2512-DSW-004A	1 X 1kV TECK90 4/C 1/0 AWG CU (1)	102	154	BE001 (2013)	2013
8	2512-DSW-003A-P	2750-BLD-002	ACCOMMODATION AREA E-HOUSE *2	2750-PNB-002	2512-BLD-003	OORM C	2512-DSW-003A	1 X 1kV TECK90 4/C 1/0 AWG CU	110	165	BE001 (2013)	2013
9	2512-DSW-002A-P	2750-BLD-002	ACCOMMODATION AREA E-HOUSE *2	2750-PNB-002	2512-BLD-002	OORM B	2512-DSW-002A	1 X 1kV TECK90 4/C 1/0 AWG CU	78	117	BE001 (2013)	2013
10	2512-DSW-001A-P	2750-BLD-002	ACCOMMODATION AREA E-HOUSE *2	2750-PNB-002	2512-BLD-001	OORM A	2512-OSW-001A	1 X 1kV TECK90 4/C 1/0 AWG CU	86	129	BE001 (2013)	2013
11	2513-PNB-002-P	2750-BLD-002	ACCOMMODATION AREA E-HOUSE *2	2750-PNB-002	2513-BLD-002	EMERG. RESPONSE GARAGE	2513-PNB-002	1 X 1kV TECK90 3/C 350MCM CU	178	267	BE001 (2013)	2013
12	7235-SPL-003-P	2750-BLD-003	SERVICE AREA E-HOUSE *1	2750-SWG-003	7235-BLD-003	UNHEATED WAREHOUSE	7235-SPL-003	1 X 1kV TECK90 3/C 350MCM CU	105	157	BE001 (2013)	2013
13	2521-PNB-002-P	2750-BLD-003	SERVICE AREA E-HOUSE *1	2750-SWG-003	2521-BLD-002	WELDING SHOP	2521-PNB-002	1 X 1kV TECK90 3/C 350MCM CU	133	200	BE001 (2013)	2013
14	2521-PNB-001-P	2750-BLD-003	SERVICE AREA E-HOUSE *1	2750-SWG-003	2521-BLD-001	MAINTENANCE BUILDING	2521-PNB-001	1 X 1kV TECK90 3/C 350MCM CU	106	159	BE001 (2013)	2013

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date 2013-11-05
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

REGISTERED PROFESSIONAL ENGINEER
B.K. PERKINS
LICENSEE
2013-11-05
NT/NU

FOR CONSTRUCTION

NOTES:

1. EQUIPMENT TAG NO.'S ARE AS PER PROJECT POWER GENERATION AND DISTRIBUTION SLD'S.
2. BUILDING TAG NO.'S AND DESCRIPTIONS ARE AS PER H349000-1000-00-144-0001, MASTER BUILDING MATRIX.
3. ESTIMATED LENGTHS BASED ON H349000-2000-00-014-0004, MILNE PORT INFRASTRUCTURE SITE LAYOUT.
4. SUPPLIED LENGTHS BASED ON 50% CONTINGENCY.
5. FIELD VERIFY FEEDER LENGTHS PRIOR TO CUTTING CABLE FROM REEL.
6. (1) FOR 4/C CABLES, THE FOURTH CONDUCTOR IS NOT USED.

NO	DESCRIPTION	BY	CHK'D	APP'D	DATE
1	FIELD CHANGES	MJ	RS	BP	2013-11-06

REVISIONS

NO	ISSUE FOR	AUTH. BY	DATE
1	CONSTRUCTION	BP	JC	2013-11-06
0	CONSTRUCTION	BP	JC	2013-08-28

ISSUE AUTHORIZATION

DESIGNED BY A. HUSSAINI DATE 2013-05-01
CHECKED BY M. JAGANI DATE 2013-08-27
PROJ. ENGR. J. CLELAND DATE 2013-08-28
PROJ. MGR. S. PERRY DATE 2013-08-28
DRAWN BY J. SAINI DATE 2013-05-01
DISCIP. ENGR. B. PERKINS DATE 2013-08-28
SCALE NTS OR AS NOTED

HATCH

Baffinland
MARY RIVER PROJECT

MILNE PORT
POWER DISTRIBUTION
1KV 3/C CABLE SCHEDULE (SHT. 1 OF 2)

DRAWING NO. H349000-2750-70-007-0002-001
REV. 1

ORIGINAL SHEET SIZE: A3 (420 X 297)

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06/11/2013 1:33:13 PM soin5349

MILNE PORT POWER DISTRIBUTION: 1kV 3/C CABLE SCHEDULE (CONT.)

ITEM NO.	FEEDER TAG NO.	ORIGIN BUILDING TAG NO.	ORIGIN BUILDING DESCRIPTION	ORIGIN EQUIPMENT TAG NO.	DESTINATION TAG NO.	DESTINATION DESCRIPTION	DESTINATION EQUIPMENT TAG NO.	FEEDER CABLE DESCRIPTION	ESTIMATED LENGTH (M)	SUPPLIED LENGTH (M)	SUPPLY (YEAR)	INSTALL YEAR
15	7235-SPL-002-P	2750-BLD-003	SERVICE AREA E-HOUSE #1	2750-SWG-003	7235-BLD-002	HEATED WAREHOUSE	7235-SPL-002	1 X 1kV TECK90 3/C 350MCM CU	105	157	BE001 (2013)	2013
16	2731-CPL-005C-P	2750-BLD-004	SERVICE AREA E-HOUSE #2	2750-PNB-004	2731-VP-005	SEWAGE TREATMENT PLANT	2731-CPL-005C	1 X 1kV TECK90 3/C 350MCM CU	33	50	BE001 (2013)	2013
17	2540-PNB-001-P	2750-BLD-004	SERVICE AREA E-HOUSE #2	2750-PNB-004	2540-BLO-001	WASTE MNGMT. BUILDING	2540-PNB-001	1 X 1kV TECK90 3/C 350MCM CU	33	50	BE001 (2013)	2013
18	2732-PNB-001-P	2750-BLD-004	SERVICE AREA E-HOUSE #2	2750-PNB-004	2732-BLD-001	SEWAGE TRUCK BUILDING	2732-PNB-001	1 X 1kV TECK90 3/C 350MCM CU	42	63	BE001 (2013)	2013
19	2720-PNB-001-P	2750-BLD-004	SERVICE AREA E-HOUSE #2	2750-PNB-004	2720-BLD-001	WATER BUILDING	2720-PNB-001	1 X 1kV TECK90 3/C 350MCM CU	79	119	BE001 (2013)	2013
20	2613-MCB-013B-P	2750-BLD-005	FUEL TANK FARM E-HOUSE	2750-PNB-005	2613-FD-013	EXISTING FUEL DISPENSING MODULE	2613-MCB-013B	1 X 1kV TECK90 3/C 350MCM CU	305	457	BE001 (2013)	2013
21	2614-MCB-011B-P	2750-BLD-005	FUEL TANK FARM E-HOUSE	2750-PNB-005	2614-FD-011	JET-A1 FUEL DISPENSING MODULE	2614-MCB-011B	1 X 1kV TECK90 3/C 350MCM CU	330	495	BE001 (2013)	2013
22	2613-MCB-014B-P	2750-BLD-005	FUEL TANK FARM E-HOUSE	2750-PNB-005	2613-FD-014	DIESEL FUEL DISPENSING MODULE	2613-MCB-014B	1 X 1kV TECK90 3/C 350MCM CU	192	288	BE001 (2013)	2013

HOLD
H0001

HOLD
H0001

PERMIT TO PRACTICE
HATCH LTD.
Signature BKP
Date 2013-08-28
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

FOR CONSTRUCTION

REGISTERED PROFESSIONAL ENGINEER
B.K. PERKINS
LICENSEE
2013-08-28
NT/NU

HOLDS:

H0001. HOLD FOR FUEL DISPENSING MODULE ELECTRICAL DETAILS.

NO	DESCRIPTION	BY	CHK'D	APP'D	DATE
REVISIONS					

NO	ISSUE FOR	AUTH. BY	DATE
0	CONSTRUCTION	BP JC	2013-08-28
ISSUE AUTHORIZATION			

DESIGNED BY A. HUSSAINI DATE 2013-05-01	HATCH	Baffinland MARY RIVER PROJECT
CHECKED BY M. JAGANI MJ. DATE 2013-08-27	DRAWN BY J. SAINI DATE 2013-05-01	MILNE PORT POWER DISTRIBUTION 1KV 3/C CABLE SCHEDULE (SHT. 2 OF 2)
PROJ. ENGR. J. CLELAND DATE 2013-08-28	DISCIP. ENGR. B. PERKINS DATE 2013-08-28	
PROJ. MGR. S. PERRY DATE 2013-08-28	SCALE NTS OR AS NOTED	DRAWING NO. H349000-2750-70-007-0002-002 REV. 0
		ORIGINAL SHEET SIZE: A3 (420 x 297)

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28/08/2013 1:43:49 PM
sain54349

MILNE PORT POWER DISTRIBUTION: 1kV 4/C CABLE SCHEDULE

ITEM NO.	FEEDER TAG NO.	ORIGIN BUILDING TAG NO.	ORIGIN BUILDING DESCRIPTION	ORIGIN EQUIPMENT TAG NO.	DESTINATION TAG NO.	DESTINATION DESCRIPTION	DESTINATION EQUIPMENT TAG NO.	FEEDER CABLE DESCRIPTION	ESTIMATED LENGTH (M)	SUPPLIED LENGTH (M)	SUPPLY (YEAR)	INSTALL YEAR
1	2140-MPC-004A-P	2513-BLD-002	EMERGENCY RESPONSE GARAGE	2513-PNL-002B	N/A	READY LINE 4	2140-MPC-004A	1 X 1kV TECK90 4/C 1/0 AWG CU	59	88	BE001 (2013)	2013
2	2140-MPC-005A-P	2513-BLD-002	EMERGENCY RESPONSE GARAGE	2513-PNL-002B	N/A	READY LINE 5	2140-MPC-005A	1 X 1kV TECK90 4/C 1/0 AWG CU	59	88	BE001 (2013)	2013
3	2140-TRF-001D-P	2513-BLD-002	EMERGENCY RESPONSE GARAGE	2513-PNL-002B	N/A	READY LINE 1	2140-TRF-001D	1 X 1kV TECK90 4/C 1/0 AWG CU	219	328	BE001 (2013)	2013
4	2140-TRF-002D-P	2513-BLD-002	EMERGENCY RESPONSE GARAGE	2513-PNL-002B	N/A	READY LINE 2	2140-TRF-002D	1 X 1kV TECK90 4/C 1/0 AWG CU	244	366	BE001 (2013)	2013
5	2513-PNL-001A-P	2513-BLD-002	EMERGENCY RESPONSE GARAGE	2513-PNL-002A	2513-BLD-001	EMERGENCY RESPONSE OFFICE	2513-PNL-001A	1 X 1kV TECK90 4/C 1/0 AWG CU	38	56	BE001 (2013)	2013
6	2140-MPC-006A-P	2521-BLD-002	WELDING SHOP	2521-PNL-002B	2521-BLD-002	READY LINE 6	2140-MPC-006A	1 X 1kV TECK90 4/C 1/0 AWG CU	66	99	BE001 (2013)	2013
7	2140-MPC-008A-P	2521-BLD-001	MAINTENANCE BUILDING	2521-PNL-001B	N/A	READY LINE 8	2140-MPC-008A	1 X 1kV TECK90 4/C 1/0 AWG CU	96	144	BE001 (2013)	2013
8	2521-PNL-004A-P	2521-BLD-001	MAINTENANCE BUILDING	2521-PNL-001A	2521-BLD-004	WORKSHOP OFFICE WASHCAR	2521-PNL-004A	1 X 1kV TECK90 4/C 1/0 AWG CU	61	92	BE001 (2013)	2013
9	2521-PNL-003A-P	2521-BLD-001	MAINTENANCE BUILDING	2521-PNL-001A	2521-BLD-003	WORKSHOP OFFICE	2521-PNL-003A	1 X 1kV TECK90 4/C 1/0 AWG CU	58	86	BE001 (2013)	2013
10	2540-CPL-001B-P	2540-BLD-001	WASTE MNGMT. BUILDING	2540-PNL-001B	2540-VP-001	WASTE INCINERATOR	2540-CPL-001B	1 X 1kV TECK90 4/C 1/0 AWG CU	108	161	BE001 (2013)	2013
11	2734-CPL-001C-P	2750-BLD-004	SERVICES AREA E-HOUSE #2	2750-PNB-004	2731-VP-005	TREATED EFFLUENT HEAT TRACING PNL. (INSIDE STP)	2734-CPL-001C	1 X 1kV TECK90 4/C 1/0 AWG CU	33	50	BE001 (2013)	2013
12	2731-CPL-001B-P	2732-BLD-001	SEWAGE TRUCK BUILDING	2732-PNL-001B	2731-BLD-001	SEWAGE CHEMICAL STORAGE CONTAINER	2731-CPL-001B	1 X 1kV TECK90 4/C 1/0 AWG CU	100	150	BE001 (2013)	2013

PERMIT TO PRACTICE
MATCH LTD.
Signature BK
Date 2013-09-05
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

FOR CONSTRUCTION

REGISTERED PROFESSIONAL ENGINEER
B.K. PERKINS
LICENSEE
2013-09-05
NT/NU

NOTES:

1. FEEDER AND EQUIPMENT TAG NO.'S ARE AS PER PROJECT POWER GENERATION AND DISTRIBUTION SLD'S.
2. BUILDING TAG NO.'S AND DESCRIPTIONS ARE AS PER H349000-1000-00-144-0001, MASTER BUILDING MATRIX.
3. ESTIMATED LENGTHS BASED ON H349000-2000-00-014-0004, MILNE PORT INFRASTRUCTURE SITE LAYOUT.
4. SUPPLIED LENGTHS BASED ON 50% CONTINGENCY.
5. FIELD VERIFY FEEDER LENGTHS PRIOR TO CUTTING CABLE FROM REEL.

NO	DESCRIPTION	BY	CHK'D	APP'D	DATE

REVISIONS

NO	ISSUE FOR	AUTH. BY	DATE
0	CONSTRUCTION	BP	JC	2013-09-05

ISSUE AUTHORIZATION

DESIGNED BY A. HUSSAINI DATE 2013-05-03
CHECKED BY M. JAGANI MJ. DATE 2013-09-04
PROJ. ENGR. K. CLELAND DATE 2013-09-05
PROJ. MGR. DATE 2013-09-05

HATCH
DRAWN BY J. SAINI DATE 2013-05-03
DISCIP. ENGR. B. PERKINS DATE 2013-09-05
SCALE NTS OR AS NOTED

Baffinland
MARY RIVER PROJECT
MILNE PORT
POWER DISTRIBUTION
1KV 4/C CABLE SCHEDULE

DRAWING NO. H349000-2750-70-007-0003 REV. 0
ORIGINAL SHEET SIZE: A3 (420 X 297)

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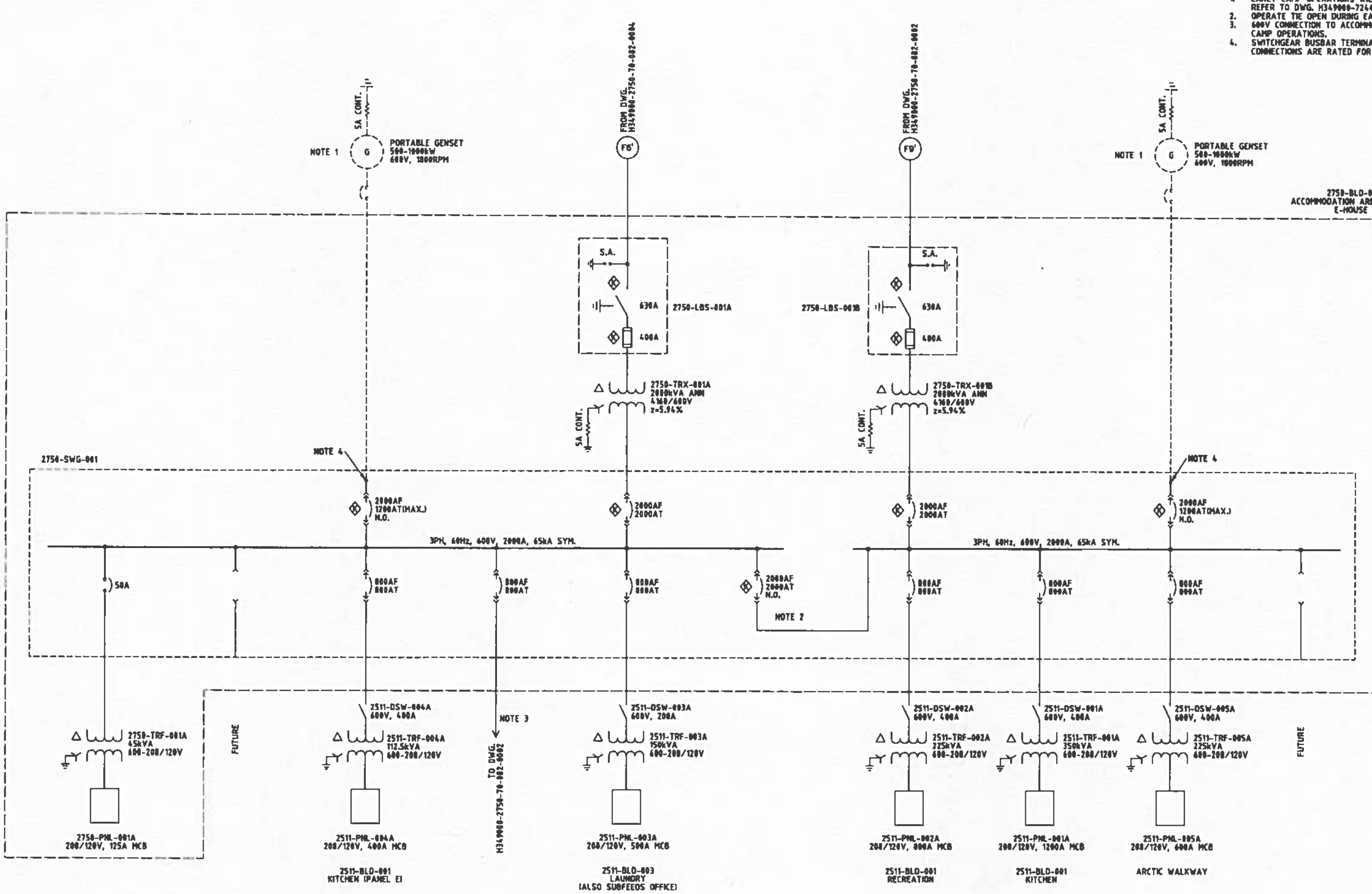
H349000-2750-70-082-0001



NOTES:

1. EARLY CAMP OPERATIONS WILL BE SUPPLIED BY A 1600kW GENSET. REFER TO DWG. H349000-7244-70-085-0001-001 FOR CONNECTION DETAILS.
2. OPERATE TIE OPEN DURING EARLY CAMP OPERATIONS.
3. 600V CONNECTION TO ACCOMMODATION AREA E-HOUSE #2 FOR EARLY CAMP OPERATIONS.
4. SWITCHGEAR BUSBAR TERMINALS PROVIDED FOR PORTABLE GENERATOR CONNECTIONS ARE RATED FOR 1200A (MAX.).

FOR CONSTRUCTION

DRAWING NO.	DRAWING TITLE
REFERENCE DRAWINGS	

PERMIT TO PRACTICE
Date 2013-08-13
PERMIT NUMBER: P 012
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

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

REV.	ISSUE FOR	AUTH. BY		DATE
0	CONSTRUCTION	BP	JC	2013-08-13
ISSUE AUTHORIZATION				

HATCH

DESIGNED BY B. PERKINS DATE 2013-04-17
DRAWN BY B TUNGOL DATE 2013-04-17
CHECKED BY M. JAGANI DATE 2013-08-01
DISCIP. ENG. B. PERKINS DATE 2013-08-13
PROJ. DISCIP. ENG. T. ... DATE 2013-08-13
PROJ. ENG. J. C. CLELAND DATE 2013-08-13
PROJ. MGR. S. PERRY DATE 2013-08-13

Baffinland

MARY RIVER PROJECT

MILNE PORT POWER DISTRIBUTION
ACCOMMODATION AREA
TYPE I UNIT SUBSTATION SLD

SCALE NTS OR AS NOTED
DWG. NO. H349000-2750-70-082-0001
REV. 0
ORIGINAL SHEET SIZE: ISO A1 (841 x 594)

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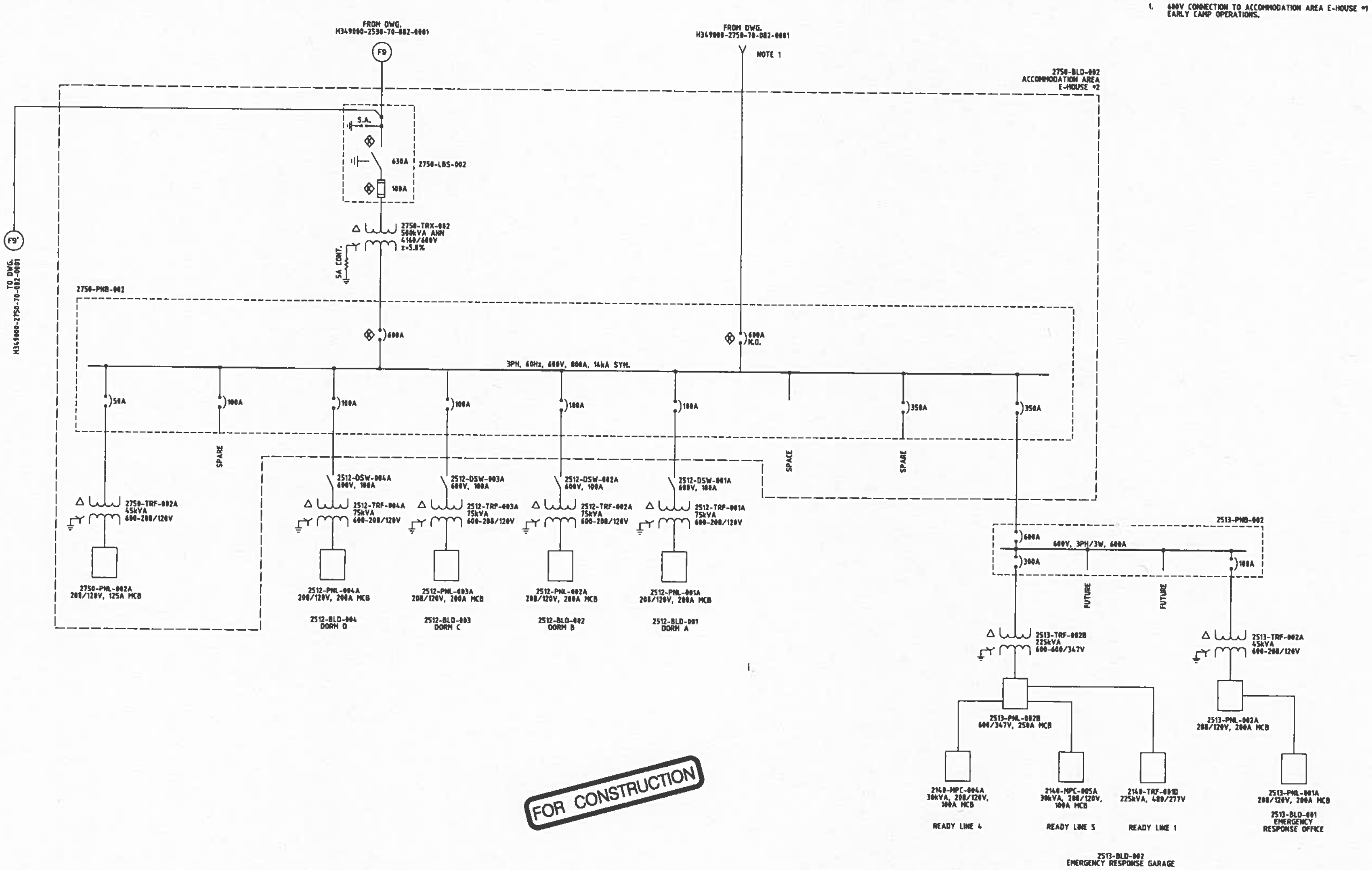
NOTES:

1. 600V CONNECTION TO ACCOMMODATION AREA E-HOUSE #1 FOR EARLY CAMP OPERATIONS.



FOR CONSTRUCTION

DWG. NO. H349000-2750-70-082-0002

DRAWING NO.	DRAWING TITLE

REFERENCE DRAWINGS

PERMIT TO PRACTICE
PERMIT NUMBER: P 812
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

NO.	DESCRIPTION	BY	CHK'D	APP'D	DATE

REVISIONS

REV.	ISSUE FOR	AUTH. BY		DATE
0	CONSTRUCTION	BP	JC	2013-08-13

ISSUE AUTHORIZATION

HATCH

DESIGNED BY B. PERKINS DATE 2013-04-17	DRAWN BY B TUNGOL DATE 2013-04-17
CHECKED BY M. JACAN DATE 2013-08-01	DISCIP. ENGR. B. PERKINS DATE 2013-08-13
PROJ. ENGR. T. THE... DATE 2013-08-13	PROJ. ENGR. J. C... DATE 2013-08-13
PROJ. MGR. S. PERRY DATE 2013-08-13	

Baffinland

MARY RIVER PROJECT

MILNE PORT POWER DISTRIBUTION
ACCOMMODATION AREA
TYPE III UNIT SUBSTATION SLD

SCALE	DWG. NO.	REV.
NTS	H349000-2750-70-082-0002	0

ORIGINAL SHEET SIZE: ISO A1 (841 x 594)

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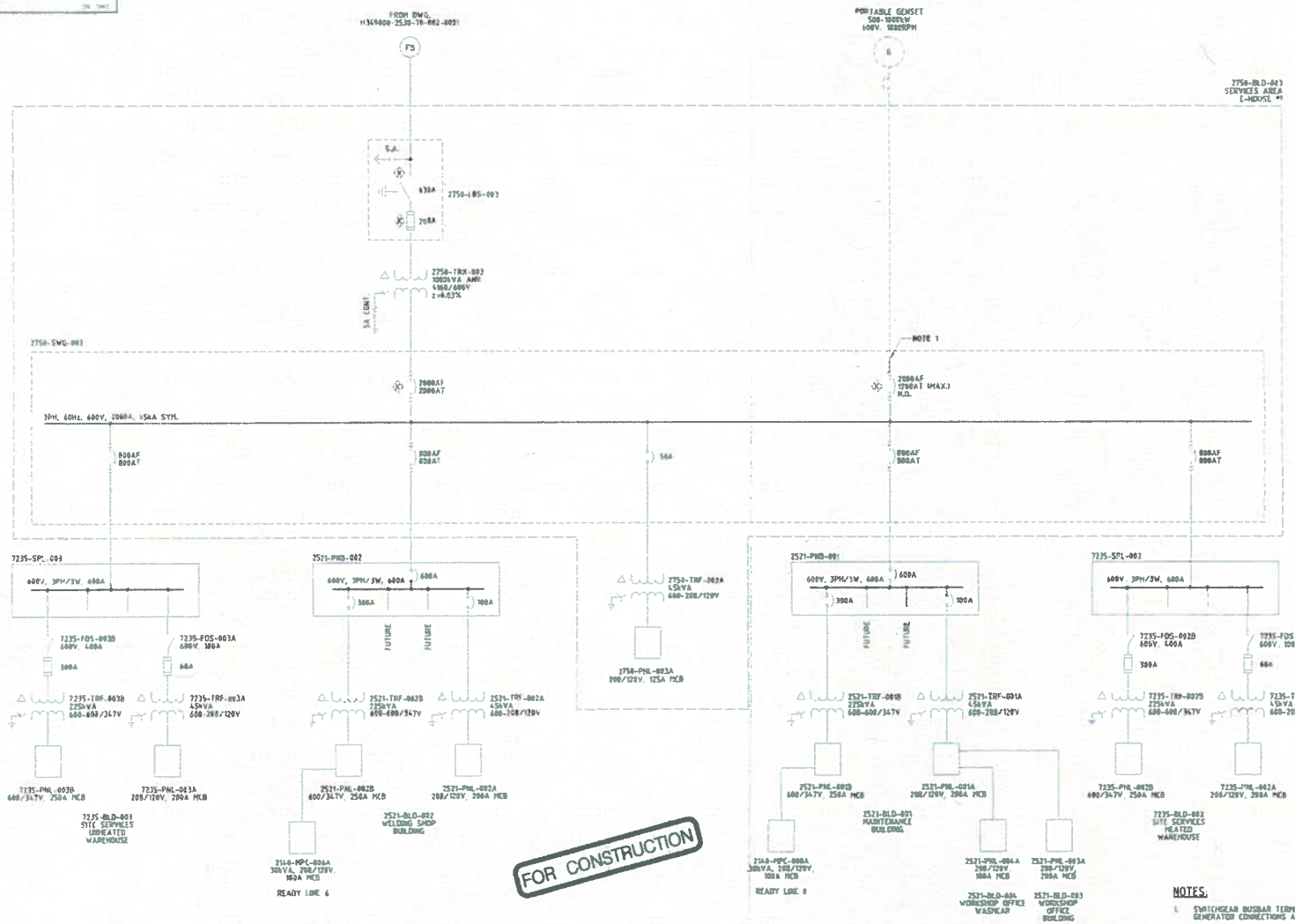
H349000-2750-70-082-0003



NOTES:

1. SWITCHGEAR BUSBAR TERMINALS PROVIDED FOR PORTABLE GENERATOR CONNECTIONS ARE RATED FOR 1200A (MAX).

REFERENCE DRAWINGS

PERMIT TO PRACTICE — PERMIT NUMBER: P 013 — The Association of Professional Engineers, Geologists and Geophysicists of Alberta

REVISIONS

ISSUE AUTHORIZATION

NO.	DESCRIPTION	BY	CHK'D	APP'D	DATE
0	CONSTRUCTION	BP	JC	CJ	2013-08-30

HATCH

Baffinland

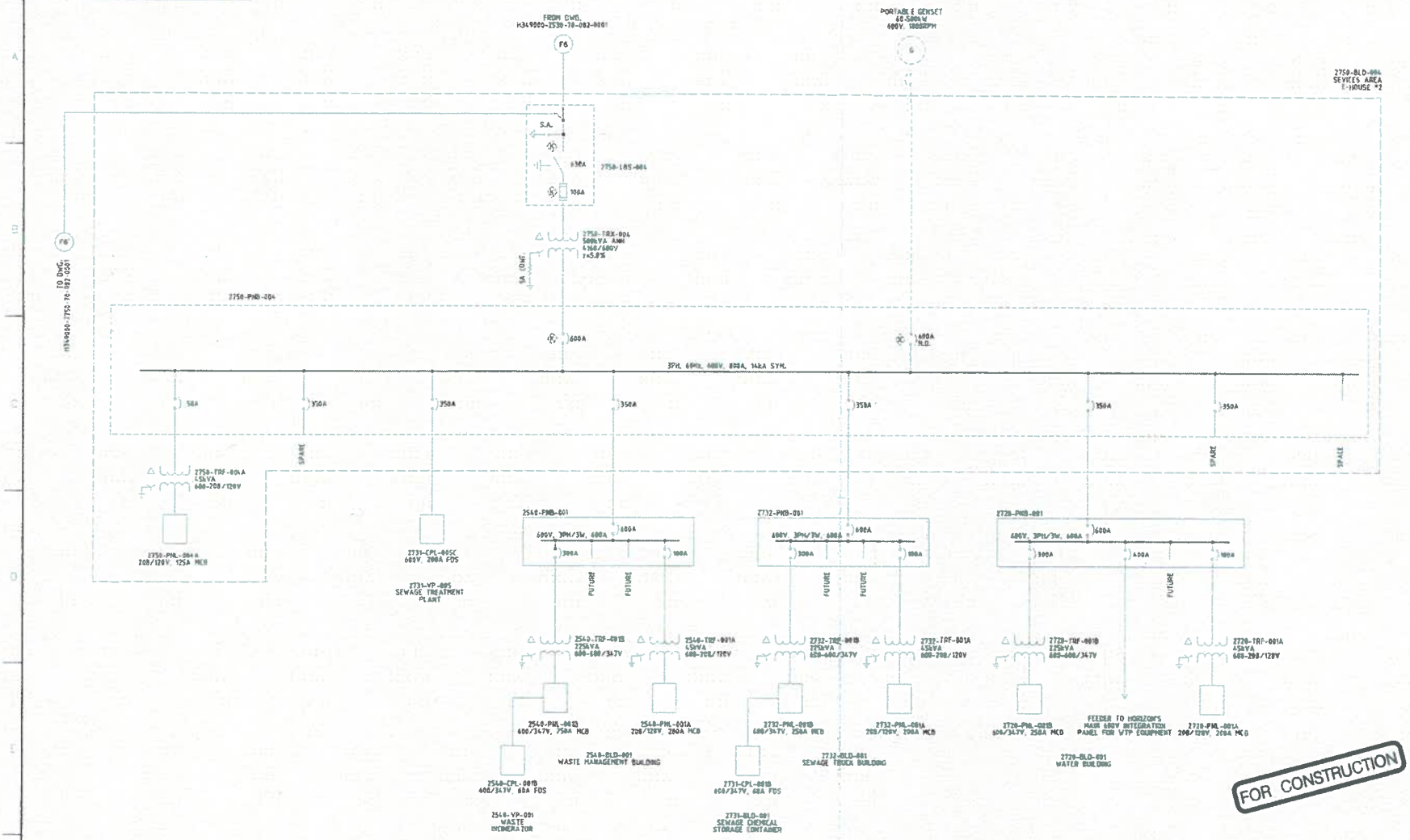
MARY RIVER PROJECT

MILNE PORT POWER DISTRIBUTION SERVICES AREA
TYPE II UNIT SUBSTATION SLD

SCALE	DWG. NO.	REV.
NTS	H349000-2750-70-082-0003	0

ORIGINAL SHEET SIZE: ISO A1 (841 x 594)

H349000-2750-70-082-0004



FOR CONSTRUCTION

REFERENCE DRAWINGS

PERMIT TO PRACTICE APEGNS 2013-08-30 PERMIT NUMBER: P 013 The Association of Professional Engineers, Geologists, and Geophysicists of NS/PEI

REVISIONS

ISSUE AUTHORIZATION

HATCH

Baffinland

MARY RIVER PROJECT

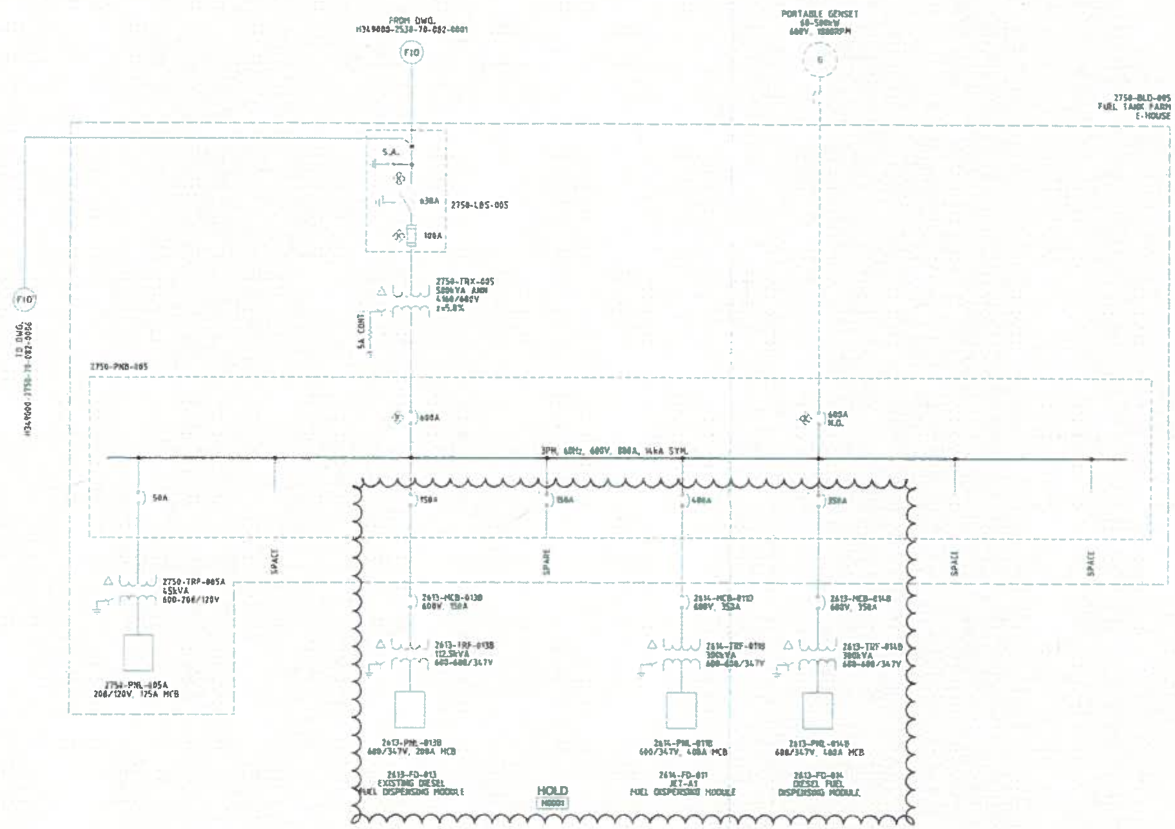
MILNE PORT POWER DISTRIBUTION SERVICES AREA
TYPE III UNIT SUBSTATION SLD

DWG. NO. H349000-2750-70-082-0004

REV. 0

ORIGINAL SHEET SIZE: ISO A1 (841 x 594)

H349000-2750-70-082-0005



FOR CONSTRUCTION

HOLDS:

H0001. HOLD FOR FUEL DISPENSING MODULE ELECTRICAL DETAILS.

REFERENCE DRAWINGS	REVISIONS	ISSUE AUTHORIZATION
		0 CONSTRUCTION

PERMIT TO PRACTICE
HATCH LTD.
2013-08-13
PERMIT NUMBER: P 013

HATCH

Baffinland

MARY RIVER PROJECT

MILNE PORT POWER DISTRIBUTION
FUEL TANK FARM
TYPE III UNIT SUBSTATION SLD

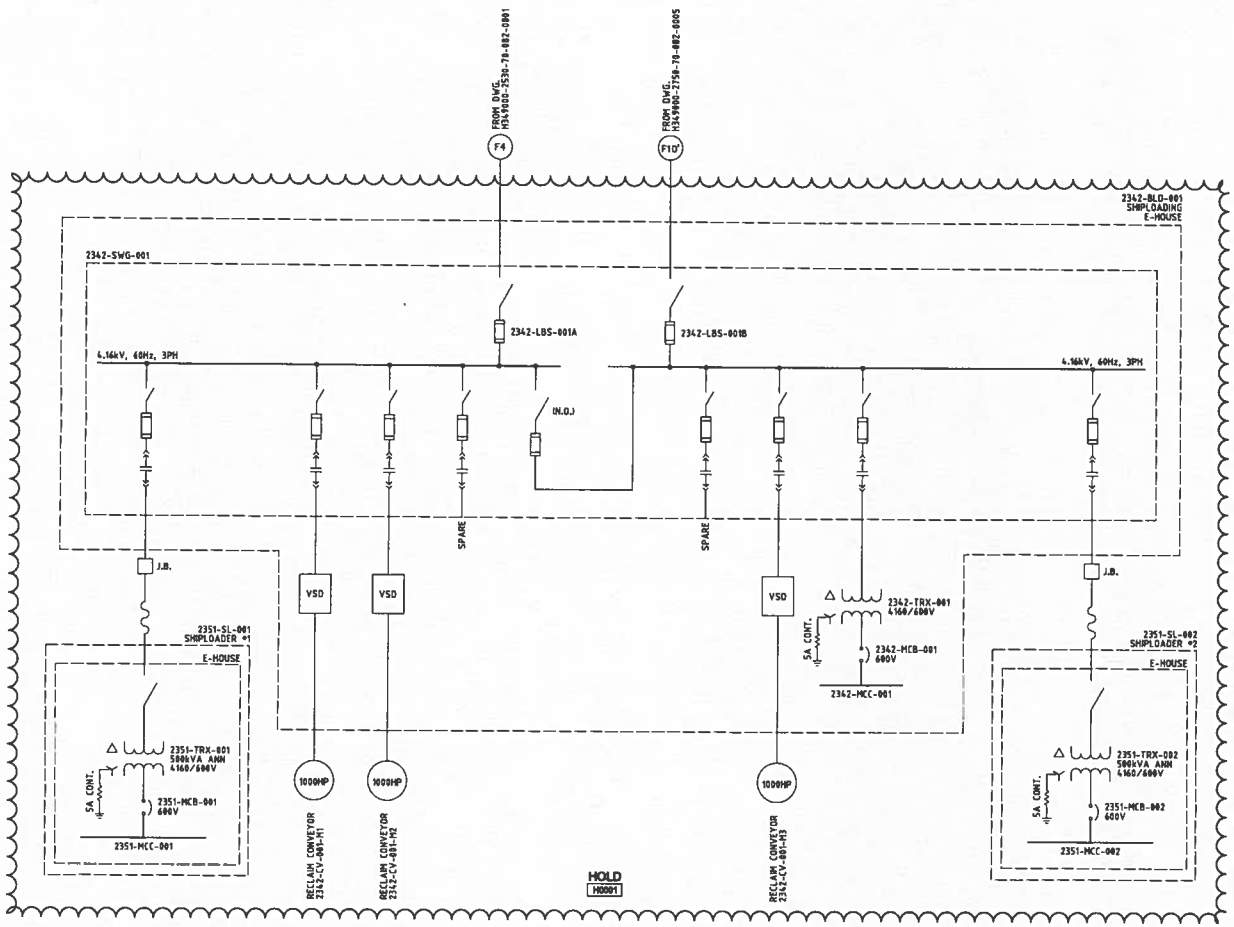
SCALE: NTS

DWG. NO. H349000-2750-70-082-0005

REV 0

ORIGINAL SHEET SIZE: ISO A1 (841 x 594)

DWG. NO. H349000-2750-70-082-0006



FOR CONSTRUCTION

HOLDS:

H0001 HOLD FOR FINAL PM082 ELECTRICAL DATA.

REFERENCE DRAWINGS

DRAWING NO.	DRAWING TITLE

PERMIT TO PRACTICE
2013-11-19
PERMIT NUMBER: P 013
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

REVISIONS

NO.	DESCRIPTION	BY	CHK'D	APP'D	DATE

ISSUE AUTHORIZATION

REV.	ISSUE FOR	AUTH. BY	DATE
0	CONSTRUCTION	BP	JC	2014-09-19

HATCH

DESIGNED BY	DRAWN BY
B. PERKINS DATE 2013-04-30	B TUNGOL DATE 2013-04-30
CHECKED BY	DISCIP. CHK'D
M. JAGANI DATE 2014-09-13	B. PERKINS DATE 2014-09-19
PROJ. DES. MGR.	PROJ. ENGR.
T. THEMELIS DATE 2014-09-19	M. CLELAND DATE 2014-09-19
PROJ. MGR.	
S. PERRY DATE 2014-09-19	

Baffinland

MARY RIVER PROJECT

MILNE PORT POWER DISTRIBUTION
SHIPLOADING AREA
SINGLE LINE DIAGRAM

SCALE	DWG. NO.	REV.
NTS OR AS NOTED	H349000-2750-70-082-0006	0

ORIGINAL SHEET SIZE: ISO A1 (841 x 594)

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Sheridan Science and Technology Park, 2800 Speakman Drive
Mississauga, Ontario, Canada L5K 2R7
Tel. 905 855 7600 • Fax: 905 855 8270 • www.hatch.ca

2013-11-07

Michael Anderson
Vice President Operations

Baffinland Iron Mines Corporation
2275 Upper Middle Road East, Suite 300
Oakville, ON
L6H 0C3

Dear Mr. Anderson

Subject: Milne Port - Request for Station Exemption

Pursuant to Item 1.3.3 raised by the Electrical Inspector in the WSCC Report of an Inspector of Mines dated 2013-10-28, this letter and supporting calculation form a Request for Station Exemption for Milne Port. A similar request for the Mine Site will follow under a separate cover.

The highest facility operating voltage of 4160 V falls under Section 36 (High-voltage installations) of CSA C22.1 (The Canadian Electrical Code). The facilities that fall under the definition of 'Stations' under this section of the code include the Power Generation and Power Distribution E-Houses. Notwithstanding the requirement of CSA M421 (Use of Electricity in Mines) Section 4.6.4 which states that the Station Exemption allowed under CEC 36-306 does not apply in permafrost conditions, an agreement was reached with Hatch whereby a station exemption would be granted provided that all energized parts and conductors are enclosed in grounded metal and that the Ground Fault Potential does not exceed 100 volts. It was also requested to verify that the requirements of CEC 36-308 (3) are met – namely that the Step and Touch Potentials do not exceed the tolerable values specified in Table 52 – as building perimeter ground loops are not installed.

The attached calculation H349000-2000-70-125-0006 (Milne Port E-House Ground-Fault Voltage/Ground Potential Rise) is based on the simple circuit model of CSA M421 Annex A adapted to the Milne Port resistance grounded configuration. The calculation indicates that the maximum Ground Fault Voltage/Ground Potential Rise does not exceed 21.1 V due to the action of the so-called Ground Reinforcing Conductor (GRC) installed between Power Generation and Power Distribution E-Houses. The calculation is based on the action of a single Ground Reinforcing Conductor (GRC) though two are installed for redundancy.

As the Ground Potential Rise does not exceed the Step and Touch Potentials set forth in Table 52, the requirements of CEC 36-308 (3) are also met thereby negating the requirement for building perimeter ground loops.

Note that this finding supporting a relatively modest grounding system is not without precedent. In Beck, R.T. and Yu, L., 'Design Considerations for Arctic Grounding Systems', IEEE Transactions on Industry Applications, Vol. 24, No. 6, November/December 1988, the authors state:

"In a recent design, one particular production complex is totally isolated from all other utility systems and depends entirely upon its own generation, with no overhead lines anywhere in the complex. Under these circumstances, and with no lightning current, there is no need for high-current capacity earth connections. An actual earth connection is less essential in such a modular environment but is still an NEC requirement which must be satisfied".

Yours faithfully,

REGISTERED PROFESSIONAL ENGINEER
B.K. PERKINS
LICENSEE
2013-11-07
NT/NU

Brian Perkins, P.Eng. (ON, NWT & NU)
BP:prj
Attachment: H349000-2000-70-125-0006 (Milne Port E-House Ground-Fault Voltage/Ground Potential Rise)

cc: Glen Hein - BIM
Bikash Paul - BIM
S. Perry - Hatch

HATCH™ Baffinland Iron Mines Corporation

Calculation Cover Sheet

Client:	Baffinland Iron Mines Corporation
Project Title:	Mary River Project - ERP
Discipline:	Electrical
Calculation No.:	H349000-2000-70-125-0006 **File No:** **Number of Sheets:** 8 (incl.)
Description:	Milne Port E-House Ground-Fault Voltage/Ground Potential Rise Calculation
Category of calculation verification required *tick box*	☑ 1 ☐ 2 ☐ 3 ☐ 4
Prepared by:	BK — **Date:** 2013-10-31
Print Name >	B. Perkins
Preliminary Review by:	MJagani — **Date:** 2013-10-31
Print Name >	M. Jagani
Can the calculation now be released for work?	☑ Yes ☐ No **To the Client?** ☑ Yes ☐ No
Checked by: by:	**Date:**
Print Name >	
Reviewed by:	**Date:**
Print Name >	
Approved by:	**Date:**
Print Name >	

General Notes:
Simplification of H349000-1000-70-0008 4160 V and 600 V Feeder Ground-Fault Voltage Calculation in support of application for a Station Exemption.

Revisions

Rev.	Date	Prepared by	Checked by	Approved by	Description
A	2013-10-31	B. Perkins	N/A	M. Jagani	Final

Superseded by Calculation No. **Date:**

Reason voided:

HATCH™

CALCULATION SHEET

SHEET NO. 1 OF 7

DESCRIPTION	PROJECT NO	MADE BY	CHECKED BY
MILNE PORT GFV/GPR	349000	DATE 2013-10	MJ DATE 2013-10

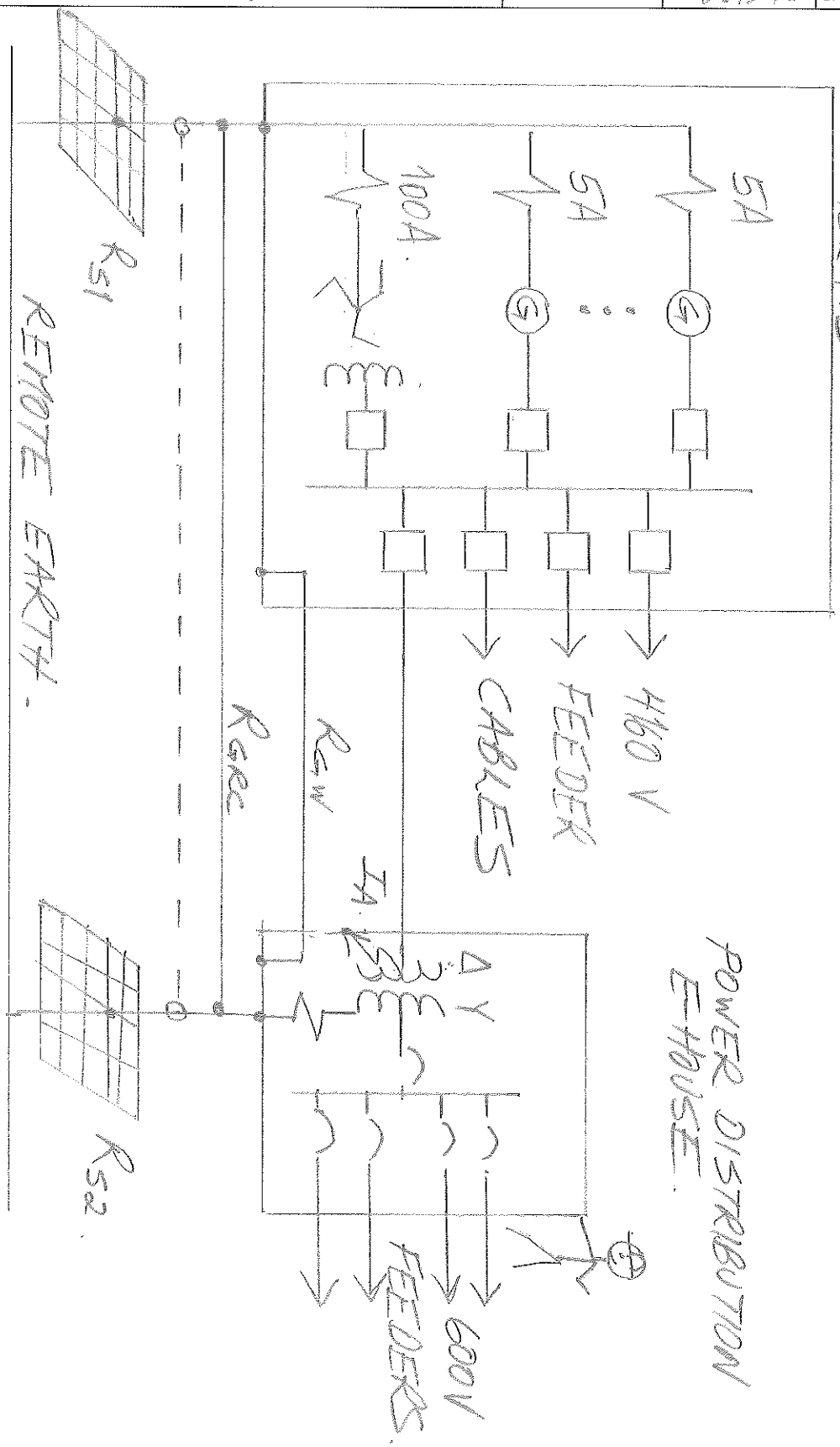


FIGURE A.1 FROM CSA M421 ADAPTED TO MILNE PORT PRIMARY DISTRIBUTION.

NOTE THAT THE REQUNDANT GROUND REINFORCING CONDUCTOR IS SHOWN AS DASHED.

R_{GW} = RESISTANCE OF 4160 V FEEDER GROUND WIRE.

R_{GRC} = RESISTANCE OF GROUND REINFORCING CONDUCTOR (GRC) B/W STATION GROUNDS.

R_S = 'STATION' GROUND ELECTRODE RESISTANCE TO REMOTE EARTH.

CONSIDER A GROUND FAULT AT THE POWER DISTRIBUTION E-HOUSE AS SHOWN WHERE

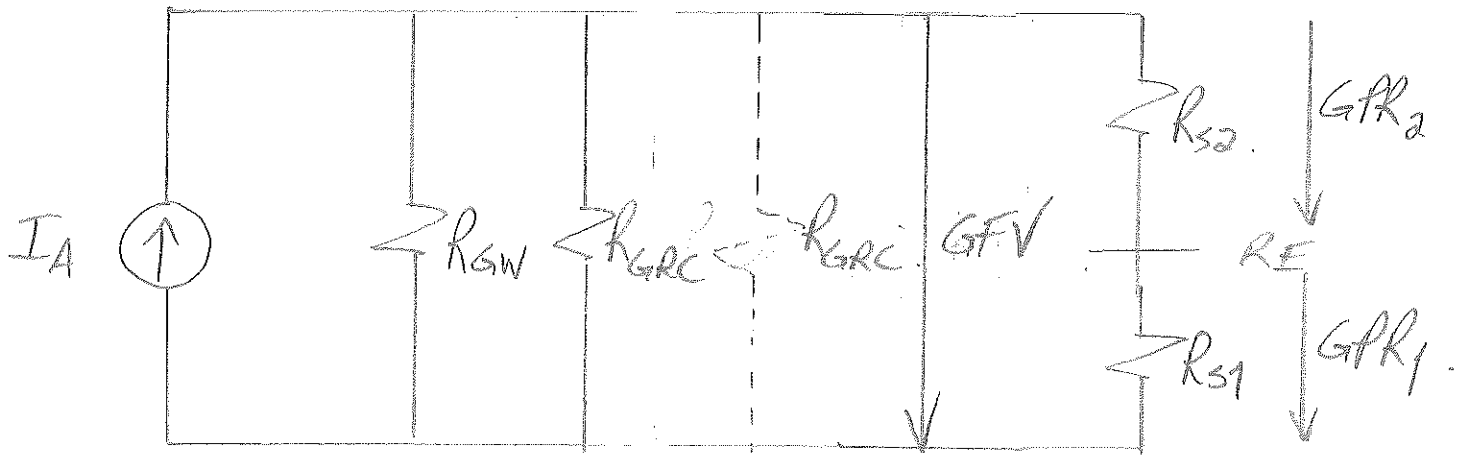
I_A = PROSPECTIVE GROUND FAULT CURRENT

GROUND FAULT VOLTAGE (GFV) AND GROUND POTENTIAL RISE (GPR) ARE DEFINED AS FOLLOWS:

GFV = THE VOLTAGE TRANSFERED B/W THE POWER GENERATION ISLAND AND THE POWER DISTRIBUTION E-HOUSE DURING A GROUND FAULT.

GPR = THE VOLTAGE DEVELOPED FROM THE STATION GROUND ELECTRODE TO REMOTE EARTH (RE).

CONSIDER THE FOLLOWING EQUIVALENT CIRCUIT:



NOTE THAT IN RESISTANCE-GROUNDED SYSTEMS IT IS STANDARD PRACTICE TO CONSIDER ONLY THE NGRS TO CALCULATE I_A.

HATCH™

CALCULATION SHEET

SHEET NO. 4 OF 7

DESCRIPTION	PROJECT NO	MADE BY	CHECKED BY
MILNE PORT GFV/GPR	349000	BKP DATE 2013-10	MJ DATE 2013-10

FROM BASIC CIRCUIT THEORY

$$GFV < R_{GRC} \cdot I_A$$

AND

$$GPR_1, GPR_2 < GFV$$

THIS RESULT SAYS THAT SO LONG AS WE HAVE ONE GROUND REINFORCING CONDUCTOR IN THE CIRCUIT THE GFV CANNOT EXCEED THE ABOVE VALUE. AND THAT THE GPR CANNOT EXCEED THE GFV.

FOR THE MILNE INKET SITE I_A VARIES BETWEEN 105 A AND 140 A FOR 1 TO 8 GENERATORS WHERE 8 IS THE MAX FUTURE UNITS.

USE $I_A = 140$ A.

THE GRC IS A 4/0 CU CONDUCTOR HAVING

$$R_{GRC} = 0.0579\ \Omega/1000\ ft$$

50

$$GFV < 8.11\ V/1000\ ft$$

HATCH™

CALCULATION SHEET

SHEET NO. 5 OF 7

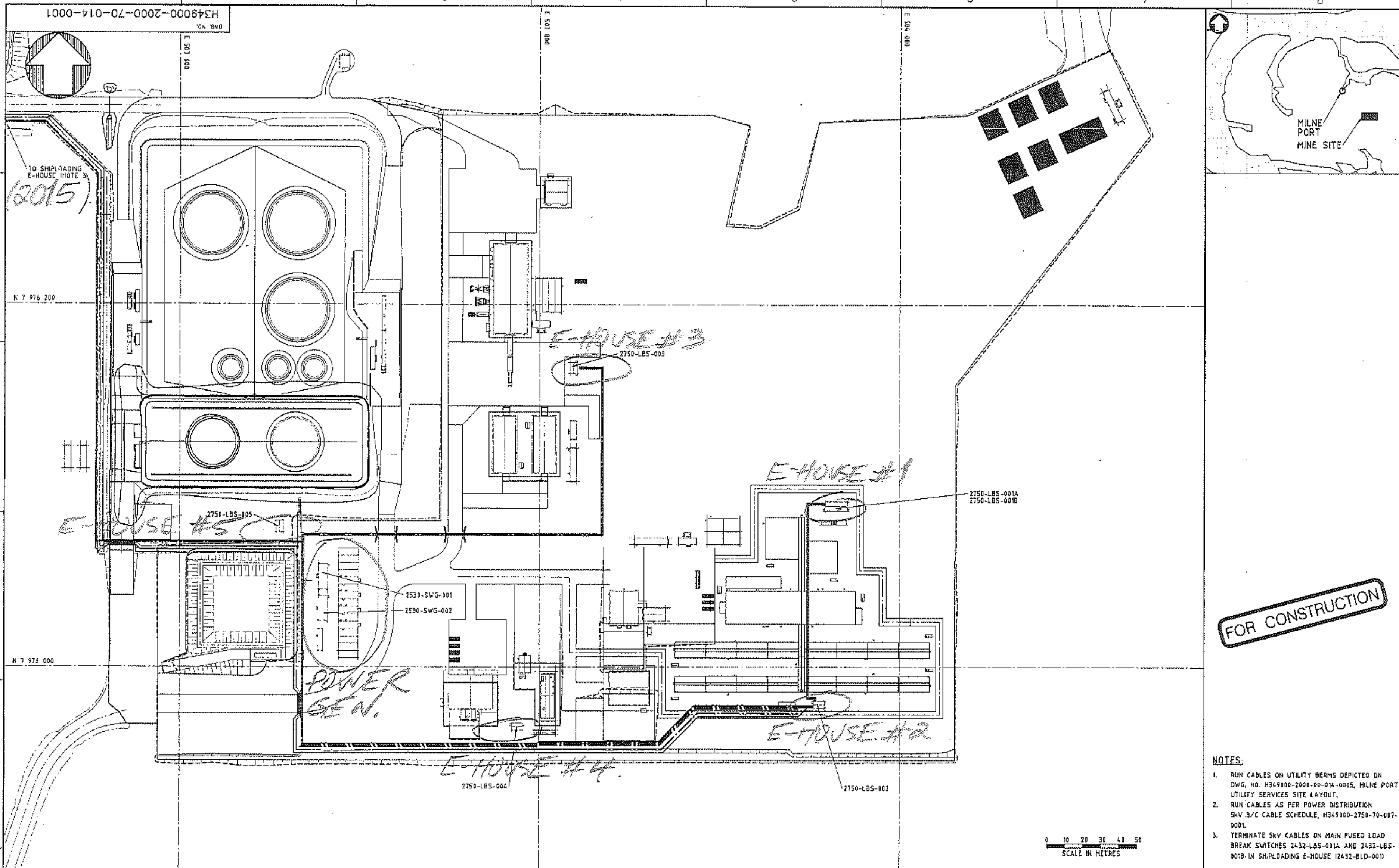
DESCRIPTION	PROJECT NO	MADE BY	CHECKED BY
MILNE PORT GFV/GPR	34900	DATE 2013-10	DATE 2013-10

CONSIDERING THE VARIOUS POWER DISTRIBUTION E-HOUSES.

E-HOUSE	GRC LENGTH	MAX GFV
#1	2600 ft.	21.1 V.
#2	1840 ft.	14.9 V
#3	1310 ft.	10.6 V.
#4	1100 ft.	8.9 V.
#5	390 ft.	3.2 V.

THE MAX. GFV OF 21.1 V OCCURS AT E-HOUSE #1. AS NOTED BEFORE, THE GPR (TO REMOTE EARTH) CANNOT EXCEED THE GFV (GRC VOLTAGE DROP).

6/7



FOR CONSTRUCTION

NOTES:

1. RUN CABLES ON UTILITY BERMS DEPICTED ON DWG. NO. H349000-2000-00-014-0005, MILNE PORT UTILITY SERVICES SITE LAYOUT.
2. RUN CABLES AS PER POWER DISTRIBUTION 5KV 3/C CABLE SCHEDULE, H349000-2750-70-007-0001.
3. TERMINATE 5KV CABLES ON MAIN FUSED LOAD BREAK SWITCHES 2432-LBS-001A AND 2432-LBS-001B IN SHIPLOADING E-HOUSE (2432-BLD-001)

DRAWING NO.	DRAWING TITLE
H349000-2750-70-007-0001	MILNE PORT - POWER DIST. 5KV 3/C CABLE SCHEDULE
H349000-2000-00-014-0005	MILNE PORT - UTILITY SERVICES SITE LAYOUT
H349000-2000-00-014-0004	MILNE PORT - INFRASTRUCTURE SITE LAYOUT

REFERENCE DRAWINGS

PERMIT TO PRACTICE
HATCH LTD.
Date 2013-09-09
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

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

REVISIONS

REGISTERED PROFESSIONAL ENGINEER
D.K. PERKINS
LICENSEE
NT/NU

REV.	ISSUE FOR	AUTH. BY		DATE
0	CONSTRUCTION	BP	JC	2013-09-09

ISSUE AUTHORIZATION

HATCH

DESIGNED BY A. HUSSAINI DATE 2013-05-28 | DRAWN BY J. SAINI DATE 2013-06-28
CHECKED BY H. JAGANI DATE 2013-09-05 | DISCIP. ENGR. B. PERKINS DATE 2013-09-09
PROJ. DES. COORD. T. CHERTELL DATE 2013-09-09 | PROJ. ENGR. B. SIETANEN DATE 2013-09-09
PROJ. MGR. S. PERRY DATE 2013-09-09

Baffinland

MARY RIVER PROJECT

MILNE PORT
5KV 3/C CABLE TIE-INS
POWER DISTRIBUTION LAYOUT

SCALE 1:1000 OR AS NOTED | DWG. NO. H349000-2000-70-014-0001 | REV. 0

ORIGINAL SHEET SIZE: ISO A1 (841 x 594)

DWG. NO. H349000-2000-70-014-0001

sain54349
09/09/2013 1:55:43 PM
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7.2 DC AND AC RESISTANCE OF COPPER CONDUCTORS

Table 7.2–DC and AC Resistance of Copper Conductors, Nominal Ohms Per 1,000 ft.

Size (AWG/kcmil)	20°C Conductor Temperature DC	60°C Conductor Temperature DC	60°C 60 Hz AC *Single Cond.	60°C 60 Hz AC †Multi Cond.	75°C Conductor Temperature DC	75°C 60 Hz AC *Single Cond.	75°C 60 Hz AC †Multi Cond.	90°C Conductor Temperature DC	90°C 60 Hz AC *Single Cond.	90°C 60 Hz AC †Multi Cond.
40	1,080.0	1,250.0	–	–	1,314.0	–	–	1,378.0	–	–
38	648.6	750.7	–	–	789.1	–	–	827.3	–	–
36	414.8	480.1	–	–	504.6	–	–	529.1	–	–
34	260.9	302.0	–	–	317.4	–	–	332.8	–	–
32	164.1	189.9	–	–	199.6	–	–	209.3	–	–
30	103.2	119.4	–	–	125.5	–	–	131.6	–	–
28	64.9	75.1	–	–	79.0	–	–	82.8	–	–
26	40.8	47.2	–	–	49.7	–	–	52.1	–	–
24	26.1	30.2	–	–	31.8	–	–	33.3	–	–
22	16.4	19.0	–	–	20.0	–	–	20.9	–	–
20	10.3	11.9	–	–	12.5	–	–	13.1	–	–
18	6.54	7.57	–	–	7.96	–	–	8.34	–	–
16	4.1	4.75	–	–	4.99	–	–	5.23	–	–
14	2.57	2.98	2.98	2.98	3.14	3.14	3.14	3.29	3.29	3.29
12	1.62	1.88	1.88	1.88	1.97	1.97	1.97	2.07	2.07	2.07
10	1.17	1.18	1.18	1.18	1.24	1.24	1.24	1.31	1.31	1.31
8	0.638	0.744	0.744	0.744	0.783	0.783	0.783	0.822	0.822	0.822
6	0.403	0.466	0.466	0.466	0.491	0.491	0.491	0.515	0.515	0.515
4	0.253	0.295	0.295	0.295	0.310	0.310	0.31	0.325	0.325	0.325
2	0.159	0.184	0.184	0.185	0.195	0.194	0.196	0.203	0.203	0.205
1	0.126	0.147	0.147	0.148	0.154	0.154	0.155	0.162	0.162	0.163
1/0	0.1	0.116	0.116	0.118	0.122	0.122	0.124	0.128	0.128	0.13
2/0	0.0794	0.0923	0.0923	0.0950	0.0971	0.0971	0.1	0.102	0.102	0.105
3/0	0.0629	0.073	0.073	0.0759	0.0769	0.0769	0.0799	0.0807	0.0807	0.0839
4/0	0.05	0.0579	0.0579	0.0608	0.061	0.061	0.064	0.0639	0.0639	0.0671
250	0.0423	0.049	0.0492	0.0519	0.0516	0.0518	0.0547	0.0541	0.0543	0.0573
300	0.0353	0.0409	0.0411	0.0437	0.0431	0.0433	0.0461	0.0452	0.0454	0.0483

Continued on next page >>

Sheridan Science and Technology Park, 2800 Speakman Drive
Mississauga, Ontario, Canada L5K 2R7
Tel. 905 855 7600 ◆ Fax: 905 855 8270 ◆ www.hatch.ca

2013-11-07

Michael Anderson
Vice President Operations

Baffinland Iron Mines Corporation
2275 Upper Middle Road East, Suite 300
Oakville, ON
L6H 0C3

Dear Mr. Anderson

Subject: Milne Port - Request for Deviation per CEC 2-030

Item 6 of the Report of an Inspector of Mines dated 2013-10-28 identified insufficient clearance for 4160/600 V transformer ventilation as required by CEC 26-248 (1) (Dry-core, open-ventilated type transformers). With specific reference to the unit in Milne Port Power Generation E-House #2, this can be addressed by moving the unit an additional 4" (100 mm) from the 4160 V switchgear.

This can be readily done in the field, however it will encroach by 4" (100 mm) on the 1000 mm clearance to the black-start generator required by CEC 2-308 (1) (Working space around electrical equipment). The requirements of CEC 2-310 (Entrance to, and exit from, working space) will continue to be met as the transformer relocation would not restrict the means of egress to less than 750 mm as per NBCC 3.3.1.23 and 9.9.5.5.

We therefore request a deviation as per CEC 2-030 given that the clearance in question is for maintenance and not operating access to the black-start generator as the control panel is located on the other side of the unit as indicated in the attached drawing. If this deviation is not accepted the transformer will be left in its original position, de-energized and locked-out until a viable solution can be found.

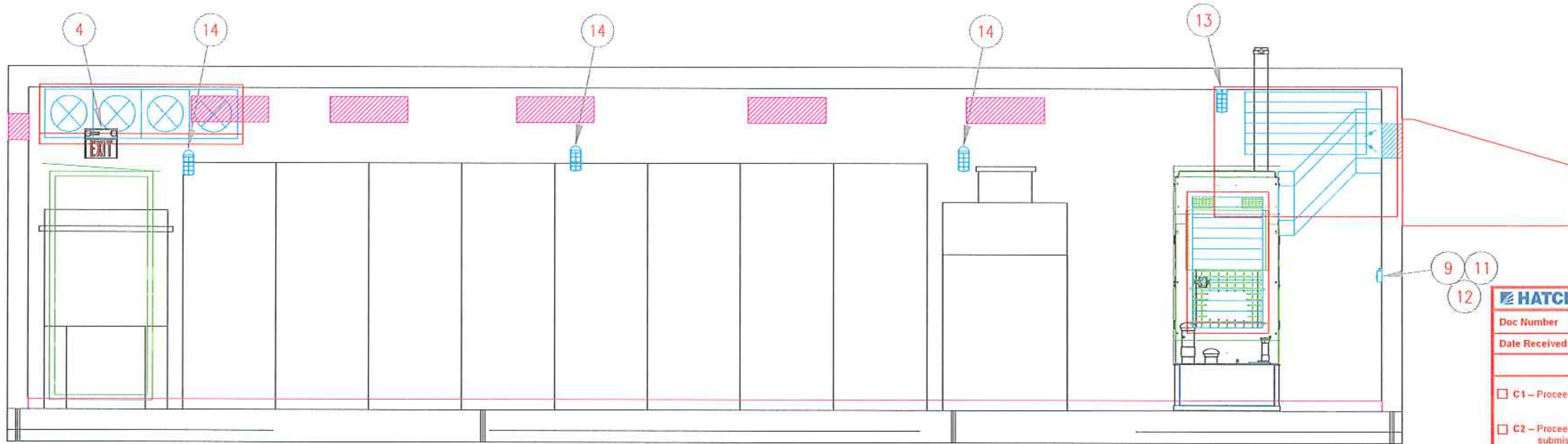
Yours faithfully,

Brian Perkins, P.Eng. (ON, NWT & NU)
BP:prj
Attachment: E349000-PE001-70-095-0004 Milne Port Electrical Layout Walk-in Building "D"

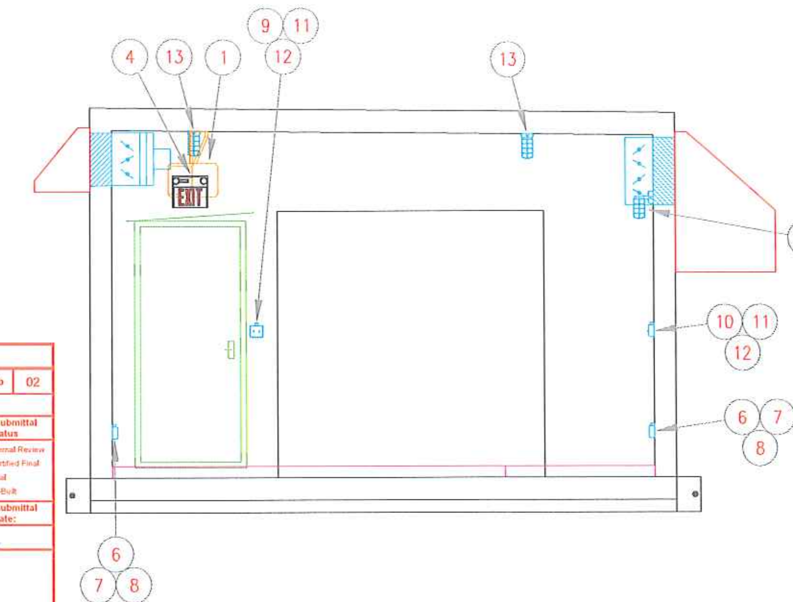
REGISTERED PROFESSIONAL ENGINEER
B.K. PERKINS
LICENSEE
2013-11-11
NT/NU

cc: Glen Hein - BIM
Bikash Paul - BIM
Steven Perry - Hatch

Safety • Quality • Sustainability • Innovation



ELEVATION VIEW



SIDE ELEVATION VIEW

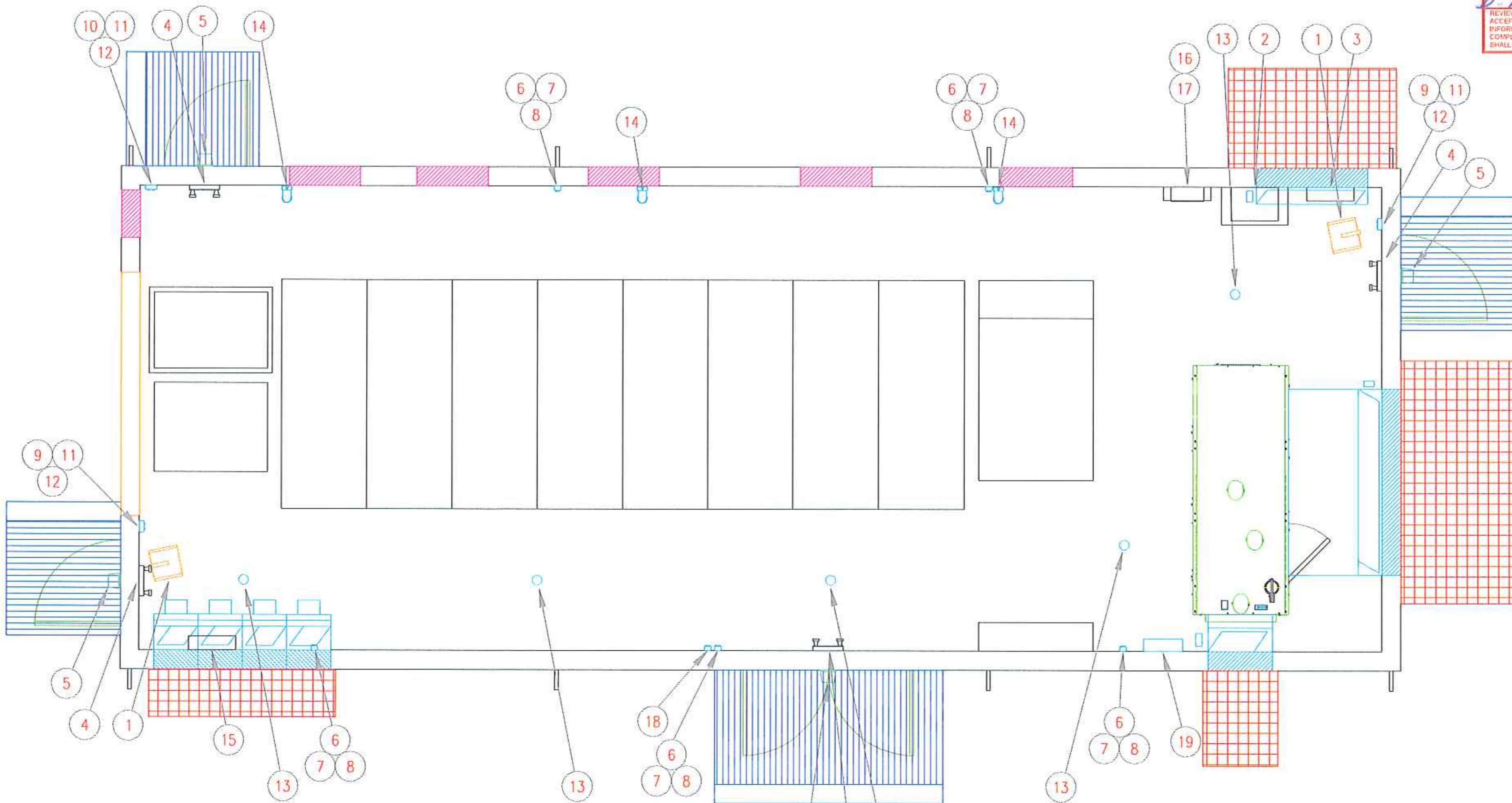
HATCH — VENDOR DATA REVIEW

Doc Number	E349000-PE001-70-095-0004	Sub	02
Date Received	2013-10-18		

Review Grade	Next Submittal Status
☐ C1 – Proceed to next submission & status	☐ Internal Review ☐ Certified Final ☐ Final ☐ As-Built
☐ C2 – Proceed with exceptions as noted to next submission & status	Next Submittal Date:
☐ C3 – Do not proceed, revise as noted & resubmit	
☑ C4 - No further submission required - Complete ☑ No further submission required - Cancelled ☐ No further submission required - Superseded ☐	

Package Coordinator: Name, signature and Date: B. Perkins BKP 2013-10-18

REVIEWED ONLY FOR GENERAL CONFORMITY WITH THE SPECIFICATIONS. ACCEPTANCE BY THE ENGINEER DOES NOT WARRANT OR REPRESENT THAT THE INFORMATION CONTAINED ON THIS DRAWING/DOCUMENT IS EITHER ACCURATE OR COMPLETE. THE SOLE RESPONSIBILTY FOR CORRECT DESIGN, DETAILS & DIMENSIONS SHALL REMAIN WITH THE PARTY SUBMITTING THE DRAWING/DOCUMENT.



PLAN VIEW

BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	COMPANY	ORDERING NUMBER
1	2	UNIT HEATER 4000W, 600V WITH INTEGRATED RELAY	OUELLET	OAS04036-R
2	1	DISTRIBUTION TRANSFORMER 45kVA, 3ø, 600 – 120/208V, NEMA 1	DELTA	----
3	1	DISTRIBUTION PANEL 120/208V, 3ø, 4W 200A, 30 CIRCUITS, NEMA 1	SQUARE D	NQ430L2-MH32
4	4	EXIT SIGN WITH 2 HEADS, WALL MOUNTED, 6V, 72W	LUMACELL	7LMCE-2-MT9W
5	4	OUTDOOR SECURITY LIGHTING, HPS WITH PHOTOCONTROL	RAB	WLG-70HPS-120NPF-BRZ-PC
6	5	HEAVY DUTY 15A, DUPLEX RECEPTACLE, BROWN	HUBBELL	HBL5262
7	5	ELECTRICAL BOX FOR RECEPTACLE, 1 7/8" DEEP, CAST ALUMINIUM	IBERVILLE	CIFS-1G-1/2
8	5	ONE DUPLEX RECEPTACLE COVER, CAST ALUMINIUM	IBERVILLE	FS-6
9	4	HEAVY DUTY 15A, LIGHTING SWITCH, 3 WAY, BROWN	HUBBELL	HBL1203
10	2	HEAVY DUTY 15A, LIGHTING SWITCH, 4 WAY, BROWN	HUBBELL	HBL1204
11	3	ELECTRICAL BOX FOR 2 SWITCH, 1 7/8" DEEP, CAST ALUMINIUM	IBERVILLE	CIFS-2G-3/4
12	3	TWO SWITCH COVER, CAST ALUMINIUM	IBERVILLE	FS-92
13	5	WEATHER PROOF LIGHT, 120V, 100W, CEILING MOUNT	RAB	DVAKS100CG
14	3	WEATHER PROOF LIGHT, 120V, 100W, WALL MOUNT	RAB	DVBKS100CG
15	1	DISTRIBUTION PANEL 125VDC, 100A, 18 CIRCUITS, MAIN 70A, NEMA 1	SIEMENS	P2
16	1	DISTRIBUTION PANEL 600V, 3ø, 200A, 30 CIRCUITS, NEMA 1	SQUARE D	NF330L2-
17	1	VENT & HEAT CONTROL PANEL ENCLOSURE	CUMMINS	SEE 9205-010-180-03-B
18	1	THERMOSTAT TO CONTROL AIR OUTLET, LOUVERS AND HEATER	HONEYWELL	T775M2030/U
19	1	RELEASE PANEL	FIRELITE	SEE DWG : ID13D08A

NOTE :
SEE DRAWING NUMBER ID13D08A FOR FIRE SUPPRESSION SYSTEM COMPONENTS

REV.NO	REVISION	VÉRIFIÉ PAR / CHECKED BY	REVISÉ PAR / REVISED BY	DATE
B	FINAL DRAWING	A.B.	A.B.	2013/09/18
A	ISSUED FOR APPROVAL	A.B.	A.B.	2013/06/07

TOLERANCES, SAUF INDICATION CONTRAIRE / TOLERANCE UNLESS OTHERWISE SPECIFIED
.xxx ±.005, .xx ±.010 — Machining
0 – 23.99 ±1/16, 24 – 95.99 ±1/8, 96 & + ±1/4 — Welding
ANG.: ±1°

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Cummins Eastern Canada

MARY RIVER PROJECT MILNE PORT ELECTRICAL LAYOUT WALK-IN BUILDING "D"

DESSIN PAR/DRAWN BY: A. BYRNS	DATE: 2013/05/15	CLIENT: BAFFINLAND IRON MINE
VÉRIFIÉ PAR/CHECKED BY: A. BYRNS	DATE: 2013/05/15	PROJET(VP): 9205 — PAGE: 1/1 — REV: B
APPROUVÉ PAR/APPROVED BY: E. OLIVER	DATE: 2013/05/15	
ECHELLE/SCALE: NTS	1"[25.4mm] — DESSIN EN POUCE / INCH DRAWING — AutoCAD *.DWG	NO DESSIN/DRAWING NO: 9205-010-180-04-D

Sheridan Science and Technology Park, 2800 Speakman Drive
Mississauga, Ontario, Canada L5K 2R7
Tel. 905 855 7600 ◆ Fax: 905 855 8270 ◆ www.hatch.ca

2013-11-15

Michael Anderson
Vice President Operations

Baffinland Iron Mines Corporation
2275 Upper Middle Road East, Suite 300
Oakville, ON
L6H 0C3

Dear Mr. Anderson

Subject: Mine Site - Request for Station Exemption

Pursuant to Item 1.3.3 raised by the Electrical Inspector in the WSCC Report of an Inspector of Mines dated 2013-10-28, this letter and supporting calculation form a Request for Station Exemption for the Mine Site. A similar request for Milne Port was issued under a separate cover.

The highest facility operating voltage of 4160 V falls under Section 36 (High-voltage installations) of CSA C22.1 (The Canadian Electrical Code). The facilities that fall under the definition of 'Stations' under this section of the code include the Power Generation and Power Distribution E-Houses. Notwithstanding the requirement of CSA M421 (Use of Electricity in Mines) Section 4.6.4 which states that the Station Exemption allowed under CEC 36-306 does not apply in permafrost conditions, an agreement was reached with Hatch whereby a station exemption would be granted provided that all energized parts and conductors are enclosed in grounded metal and that the Ground Fault Potential does not exceed 100 volts. It was also requested to verify that the requirements of CEC 36-308 (3) are met – namely that the Step and Touch Potentials do not exceed the tolerable values specified in Table 52 – as building perimeter ground loops are not installed.

The attached calculation H349000-4000-70-125-0006 (Mine Site E-House Ground-Fault Voltage/Ground Potential Rise) is based on the simple circuit model of CSA M421 Annex A adapted to the Milne Port resistance grounded configuration. The calculation indicates that the maximum Ground Fault Voltage/Ground Potential Rise does not exceed 100 V due to the action of the so-called Ground Reinforcing Conductor (GRC) installed between Power Generation and Power Distribution E-Houses. Note that 100 V threshold is almost exceeded due to the over 4000 m distance between the power generation island and the farthest unit substation E-House. The calculation is based on the action of a single Ground Reinforcing Conductor (GRC) though two are installed for redundancy.

As the Ground Potential Rise does not exceed the Step and Touch Potentials set forth in Table 52, the requirements of CEC 36-308 (3) are also met thereby negating the requirement for building perimeter ground loops.

Note that this finding supporting a relatively modest grounding system is not without precedent. In Beck, R.T. and Yu, L., 'Design Considerations for Arctic Grounding Systems', IEEE Transactions on Industry Applications, Vol. 24, No. 6, November/December 1988, the authors state:

"In a recent design, one particular production complex is totally isolated from all other utility systems and depends entirely upon its own generation, with no overhead lines anywhere in the complex. Under these circumstances, and with no lightning current, there is no need for high-current capacity earth connections. An actual earth connection is less essential in such a modular environment but is still an NEC requirement which must be satisfied".

REGISTERED PROFESSIONAL ENGINEER
B.K. PERKINS
LICENSEE
2013-11-15
NT/NU

Yours faithfully,

Brian K. Perkins

Brian Perkins, P.Eng. (ON, NWT & NU)
BP:prj
Attachment: H349000-4000-70-125-0006 (Mine Site E-House Ground-Fault Voltage/Ground Potential Rise)

cc: Glen Hein - BIM
Bikash Paul - BIM
S. Perry - Hatch

HATCH™ Baffinland Iron Mines Corporation

Calculation Cover Sheet

Client:	Baffinland Iron Mines Corporation
Project Title:	Mary River Project - ERP
Discipline:	Electrical
Calculation No.:	H349000-4000-70-125-0006 **File No:** **Number of Sheets:** 10(incl.)

Description:
Mine Site E-House Ground-Fault Voltage/Ground Potential Rise Calculation

Category of calculation verification required *tick box* ☐ 1 ☐ 2 ☐ 3 ☑ 4

Prepared by: BKR **Date:** 2013-11-12
Print Name > B. Perkins

Preliminary Review by: M.Jagani **Date:** 2013-11-12
Print Name > M. Jagani

Can the calculation now be released for work? ☐ Yes ☑ No **To the Client?** ☐ Yes ☑ No

Checked by: by: **Date:**
Print Name >

Reviewed by: **Date:**
Print Name >

Approved by: **Date:**
Print Name >

General Notes:
Simplification of H349000-1000-70-0008 4160 V and 600 V Feeder Ground-Fault Voltage Calculation in support of application for a Station Exemption.

Revisions

Rev.	Date	Prepared by	Checked by	Approved by	Description
A	2013-11-12	B. Perkins	N/A	M. Jagani	Final

Superseded by Calculation No. **Date:**

Reason voided:

HATCH™

CALCULATION SHEET

SHEET NO. 1 OF 9

DESCRIPTION	PROJECT NO	MADE BY	CHECKED BY
MINE SITE GFI/GPR.	349000	BKP DATE 2013-11	MJ DATE 2013-11-13

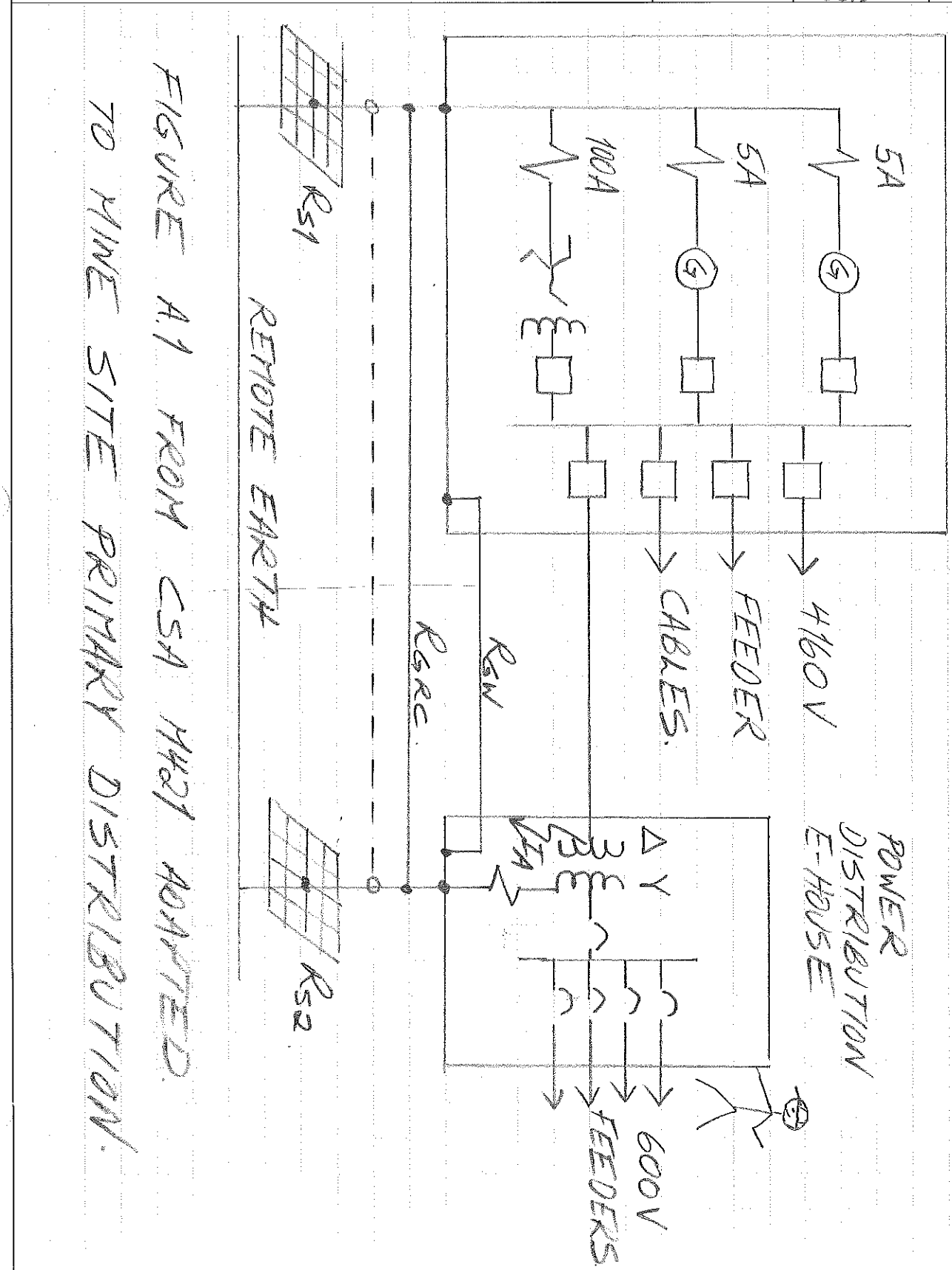


FIGURE A.1 FROM CSA M421 ADAPTED TO MINE SITE PRIMARY DISTRIBUTION.

DESCRIPTION	PROJECT NO	MADE BY	CHECKED BY
MINE SITE GFV/GPR	349000	BKP DATE 2013-11	MJ DATE 2013-11-13

NOTE THAT THE REDUNDANT GROUND REINFORCING CONDUCTOR IS SHOWN AS DASHED.

R_{GW} = RESISTANCE OF 4160V FEEDER GROUND WIRE

R_{GRC} = RESISTANCE OF GROUND REINFORCING CONDUCTOR (GRC) BETWEEN STATION GROUNDS

R_S = 'STATION' GROUND ELECTRODE RESISTANCE TO REMOTE EARTH.

CONSIDER A GROUND FAULT AT THE POWER DISTRIBUTION E-HOUSE AS SHOWN WHERE

I_A = PROSPECTIVE GROUND FAULT CURRENT

GROUND FAULT VOLTAGE (GFV) AND GROUND POTENTIAL RISE (GPR) ARE DEFINED AS FOLLOWS:

HATCH™

CALCULATION SHEET

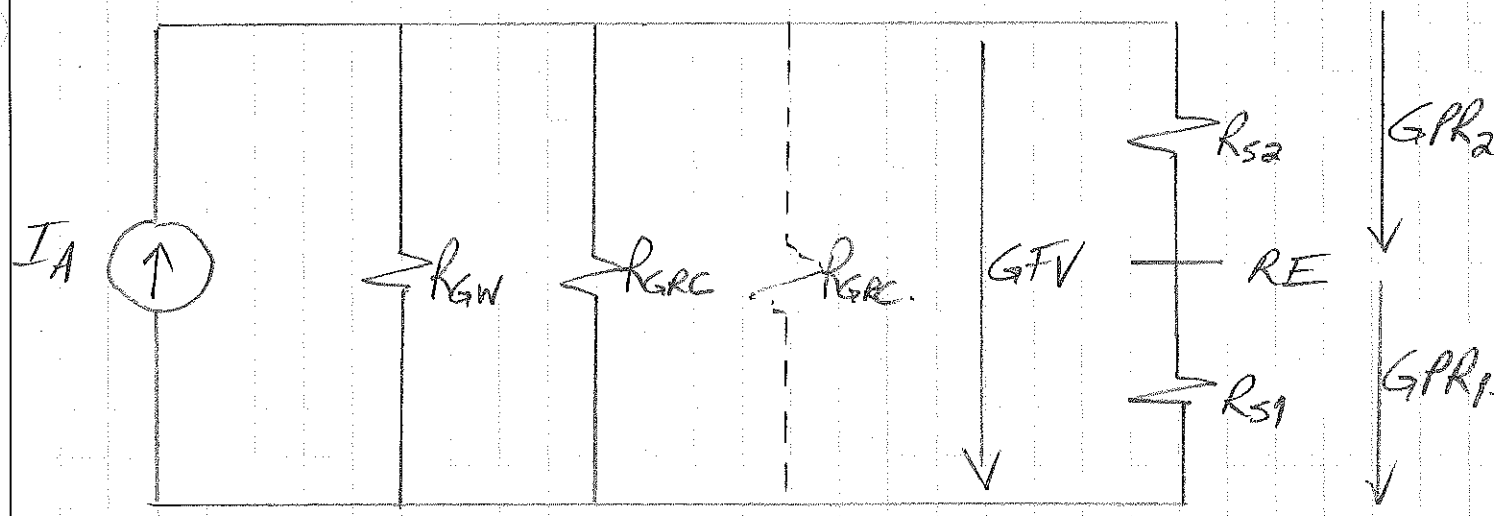
SHEET NO. 3 OF 9

DESCRIPTION	PROJECT NO	MADE BY	CHECKED BY
MINE SITE GFV/GPR	349000	BKP DATE 2013-11	MJ DATE 2013-11-13

GFV = THE VOLTAGE TRANSFERED BETWEEN THE POWER GENERATION ISLAND AND THE POWER DISTRIBUTION E-HOUSE DURING A GROUND FAULT.

GPR = THE VOLTAGE DEVELOPED FROM THE STATION GROUND ELECTRODE TO REMOTE EARTH (RE).

CONSIDER THE FOLLOWING EQUIVALENT CIRCUIT:



NOTE THAT IN RESISTANCE-GROUNDED SYSTEMS IT IS STANDARD PRACTICE TO CONSIDER ONLY THE NGR'S TO CALCULATE I_A.

HATCH™

CALCULATION SHEET

SHEET NO. 4 OF 9

DESCRIPTION	PROJECT NO	MADE BY	CHECKED BY
MINE SITE GFV/GPR	349000	DATE 2013-11	MJ DATE 2013-11-13

FROM BASIC CIRCUIT THEORY

$$GFV < R_{GRC} \cdot I_A$$

AND.

$$GPR_1, GPR_2 < GFV$$

THIS RESULT SAYS THAT SO LONG AS WE HAVE ONE GROUND REINFORCING CONDUCTOR IN THE CIRCUIT THE GFV CANNOT EXCEED THE ABOVE VALUE AND THAT THE GPR CANNOT EXCEED THE GFV.

FOR THE MINE SITE I_A VARIES BETWEEN 105A AND 130A FOR 1 TO 6 GENERATORS WHERE 6 IS THE MAX.

USE $I_A = 130\ A$

THE GRC IS A 4/0 CU CONDUCTOR HAVING.

$R_{GRC} = 0.05\ \Omega/1000\ ft$ @ 20°C.

$R_{GRC} = 0.00579\ \Omega/1000\ ft$ @ 60°C

AS THE GRC IS NOT A CURRENT-CARRYING CONDUCTOR, ITS MAXIMUM.

HATCH™

CALCULATION SHEET

SHEET NO. 5 OF 9

DESCRIPTION	PROJECT NO	MADE BY	CHECKED BY
MINE SITE GFV/GPR	349000	BKP DATE 2013-11	MT DATE 2013-11-13

TEMPERATURE WILL BE THE MAX. SITE AMBIENT OF 25°C. INTERPOLATING THE ABOVE YIELDS.

$$R_{GRC} = 0.05 + \frac{0.0579 - 0.05}{60 - 20}(25 - 20)$$

$$\boxed{R_{GRC} = 0.051\ \Omega/1000\ ft}.$$

SO

$$\boxed{GFV < 6.63\ V/1000\ ft}.$$

CONSIDER THE VARIOUS POWER DISTRIBUTION E-HOUSES.

HATCH™

CALCULATION SHEET

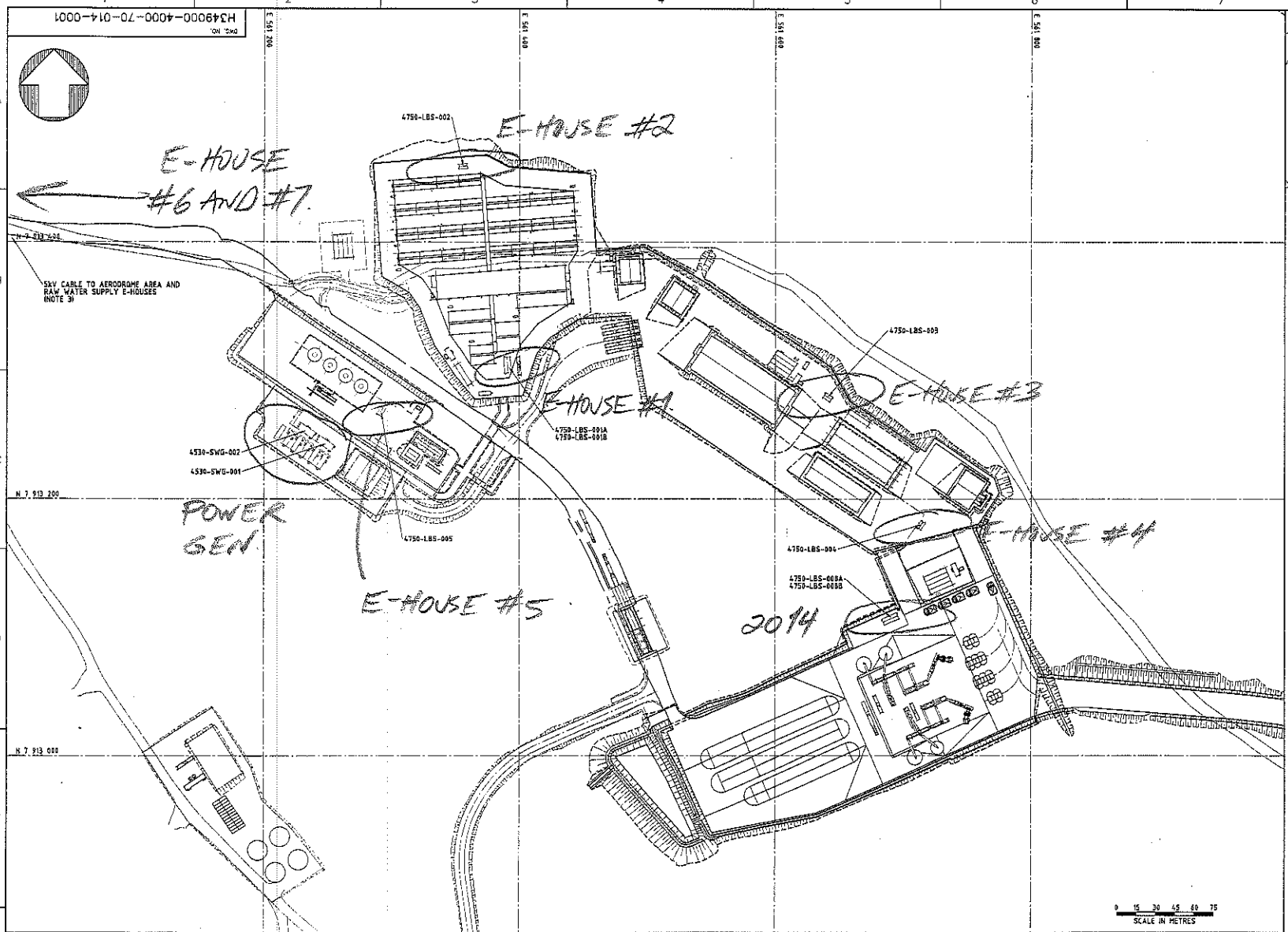
SHEET NO. 6 OF 9

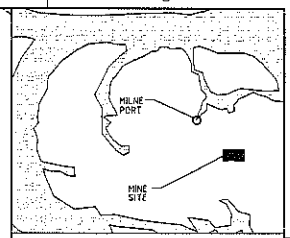
DESCRIPTION	PROJECT NO	MADE BY	CHECKED BY
MINE SITE GFV/GPR	349000	BKP DATE 2013-11-	MJ DATE 2013-11-13

E-HOUSE	GRC LENGTH	MAX GFV
#1	1040 ft	6.9V
#2	1750 ft	11.6V
#3	2600 ft	17.2V
#4	3330 ft	22.1V
#5	310 ft	2.1V
#6	9510 ft	63.1V
#7	15,080 ft	100V

THE MAX. GFV OF 100 V OCCURS AT E-HOUSE #7. AS NOTED BEFORE, THE GPR (TO REMOTE EARTH) CANNOT EXCEED THE GFV (GRC VOLTAGE DROP).

DWG. NO. H349000-4000-70-014-0001





KEY PLAN

FOR CONSTRUCTION

NOTES:

1. INSTALL CABLES ON UTILITY BERMS DEPICTED ON DWG. NO. H349000-4000-00-014-0004, MINE SITE UTILITY SERVICES SITE LAYOUT.
2. RUN CABLES AS PER POWER DISTRIBUTION 5kV 3/C CABLE SCHEDULE, H349000-4750-70-007-0001.
3. TERMINATE 5kV CABLES ON MAIN FUSED LOAD BREAK SWITCHES 4750-LBS-006 AND 4750-LBS-007 IN AERODROME AREA E-HOUSE (4750-BLD-006) AND RAW WATER SUPPLY E-HOUSE (4750-BLD-007) RESPECTIVELY.

DRAWING NO.	DRAWING TITLE
H349000-4750-7C-007-0001	MINE SITE – POWER DIST. 5kV 3/C CABLE SCHEDULE
H349000-4000-00-014-0004	MINE SITE – UTILITY SERVICES SITE LAYOUT
H349000-4000-00-014-0003	MINE SITE – INFRASTRUCTURE SITE LAYOUT

REFERENCE DRAWINGS

PERMIT TO PRACTICE
MANITOBA LTD.
Signature
Date 2013-09-17
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of Manitoba

NO.	DESCRIPTION	BY	CHK'D	APP'D	DATE

REVISIONS

PROFESSIONAL ENGINEER
B.G. PETRUNIA
LICENCE
MANITOBA

REV.	ISSUE FOR	AUTH.	BY	DATE
0	CONSTRUCTION	BP	JC	2013-09-17

ISSUE AUTHORIZATION

HATCH

DESIGNED BY	DRAWN BY
A. HUSSAINI	J. SAINI
DATE 2013-06-28	DATE 2013-06-28
CHECKED BY	CHK'D BY
M. JACAB	B. PETRUNIA
DATE 2013-09-11	DATE 2013-09-17
PROJ. DES. COORD.	PROJ. ENGR.
T. THERRIEN	J. CLEGHORN
DATE 2013-09-17	DATE 2013-09-17
PROJ. MGR.	
S. PERRY	
DATE 2013-09-17	

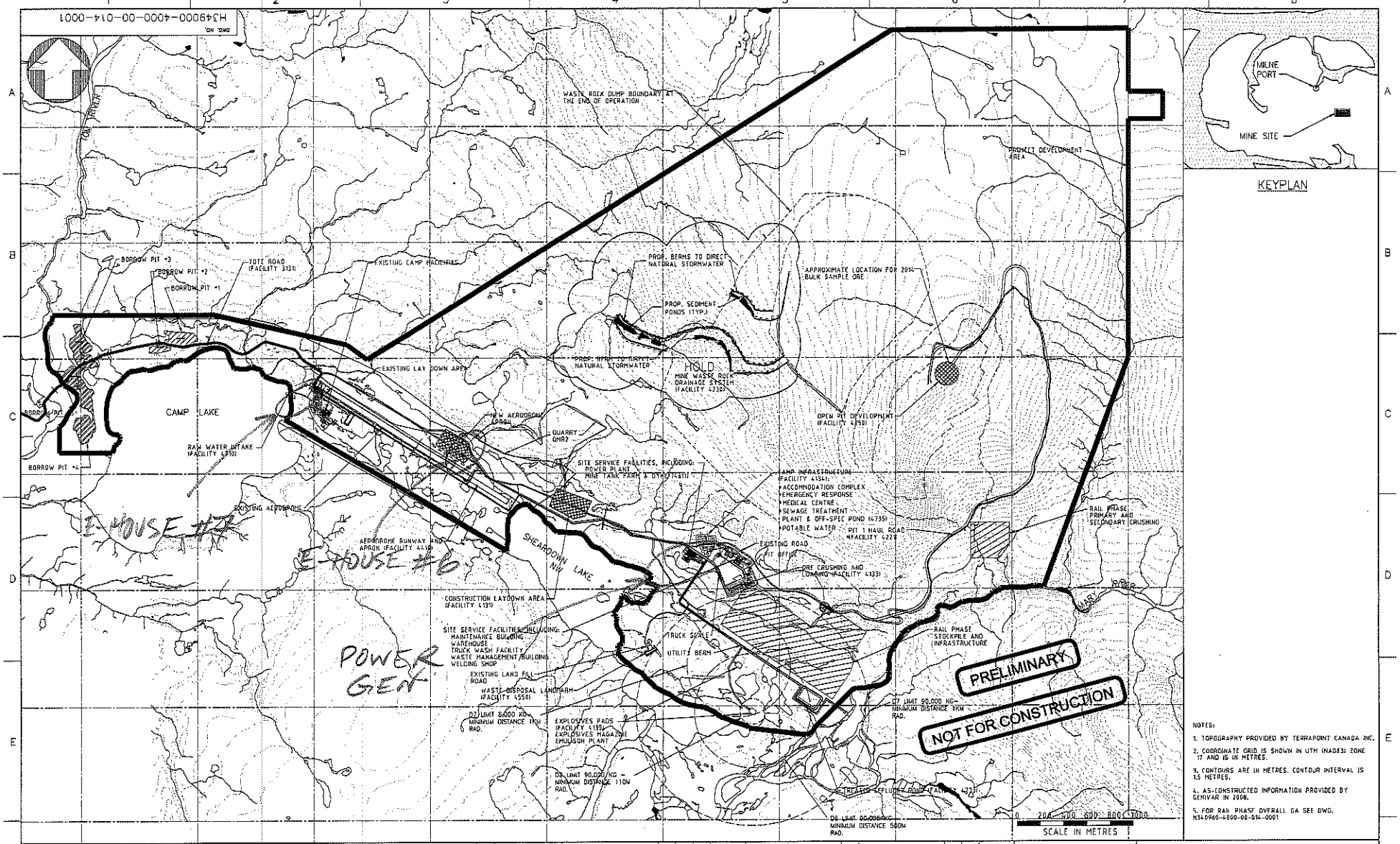
Baffinland

MARY RIVER PROJECT

MINE SITE
5KV 3/C CABLE TIE-INS
POWER DISTRIBUTION LAYOUT

SCALE	DWG. NO.	REV.
1:1500	H349000-4000-70-014-0001	0
OR AS NOTED		

ORIGINAL SHEET SIZE: ISO A1 (841 x 594)



NOTES:

1. TOPOGRAPHY PROVIDED BY TERRAPOINT CANADA INC.
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METRES.
3. CONTOURS ARE IN METRES. CONTOUR INTERVAL IS 5 METRES.
4. AS-CONSTRUCTED INFORMATION PROVIDED BY GENIVAR IN 2008.
5. FOR RAIL PHASE OVERALL GA SEE DWG. H349960-4000-00-014-0001

DRAWING NO.	DRAWING TITLE

REFERENCE DRAWINGS

NO.	DESCRIPTION	BY	CHK'D	APP'D	DATE

REVISIONS

REV.	ISSUE FOR	AUTH. BY	DATE
B	FOR INFORMATION	T.T.	2013-04-01
A	FOR INFORMATION	T.T.	

ISSUE AUTHORIZATION

HATCH

DESIGNED BY		DRAWN BY	T THERRELL
DATE		DATE	2013-02-01
CHECKED BY		DISCIP. ENGR.	
DATE		DATE	
PROJ. DES. COORD.		PROJ. ENGR.	
DATE		DATE	
PROJ. MGR.			
DATE			

Baffinland

MARY RIVER PROJECT – ERP

MINE SITE
EARLY REVENUE PHASE
SITE LAYOUT

SCALE	DWG. NO.	REV.
1:15000 OR AS NOTED	H349000-4000-00-014-0001	B

7.2 DC AND AC RESISTANCE OF COPPER CONDUCTORS

Table 7.2–DC and AC Resistance of Copper Conductors, Nominal Ohms Per 1,000 ft.

Size	20°C Nominal Temperature	50°C Nominal Temperature			75°C Nominal Temperature			90°C Nominal Temperature		
	DC	DC	60 Hz AC		DC	60 Hz AC		DC	60 Hz AC	
			Shield (Ferrous)	Shield (Copper)		Shield (Ferrous)	Shield (Copper)		Shield (Ferrous)	Shield (Copper)
(AWG/kcmil)										
40	1,080.0	1,250.0	—	—	1,314.0	—	—	1,378.0	—	—
38	648.6	750.7	—	—	789.1	—	—	827.3	—	—
36	414.8	480.1	—	—	504.6	—	—	529.1	—	—
34	260.9	302.0	—	—	317.4	—	—	332.8	—	—
32	164.1	189.9	—	—	199.6	—	—	209.3	—	—
30	103.2	119.4	—	—	125.5	—	—	131.6	—	—
28	64.9	75.1	—	—	79.0	—	—	82.8	—	—
26	40.8	47.2	—	—	49.7	—	—	52.1	—	—
24	26.1	30.2	—	—	31.8	—	—	33.3	—	—
22	16.4	19.0	—	—	20.0	—	—	20.9	—	—
20	10.3	11.9	—	—	12.5	—	—	13.1	—	—
18	6.54	7.57	—	—	7.96	—	—	8.34	—	—
16	4.1	4.75	—	—	4.99	—	—	5.23	—	—
14	2.57	2.98	2.98	2.98	3.14	3.14	3.14	3.29	3.29	3.29
12	1.62	1.88	1.88	1.88	1.97	1.97	1.97	2.07	2.07	2.07
10	1.17	1.18	1.18	1.18	1.24	1.24	1.24	1.31	1.31	1.31
8	0.638	0.744	0.744	0.744	0.783	0.783	0.783	0.822	0.822	0.822
6	0.403	0.466	0.466	0.466	0.491	0.491	0.491	0.515	0.515	0.515
4	0.253	0.295	0.295	0.295	0.310	0.310	0.31	0.325	0.325	0.325
2	0.159	0.184	0.184	0.185	0.195	0.194	0.196	0.203	0.203	0.205
1	0.126	0.147	0.147	0.148	0.154	0.154	0.155	0.162	0.162	0.163
1/0	0.1	0.116	0.116	0.118	0.122	0.122	0.124	0.128	0.128	0.13
2/0	0.0794	0.0923	0.0923	0.0950	0.0971	0.0971	0.1	0.102	0.102	0.105
3/0	0.0629	0.073	0.073	0.0759	0.0769	0.0769	0.0799	0.0807	0.0807	0.0839
4/0	0.05	0.0579	0.0579	0.0608	0.061	0.061	0.064	0.0639	0.0639	0.0671
250	0.0423	0.049	0.0492	0.0519	0.0516	0.0518	0.0547	0.0541	0.0543	0.0573
300	0.0353	0.0409	0.0411	0.0437	0.0431	0.0433	0.0461	0.0452	0.0454	0.0483

Continued on next page >>

Baffinland

November 27, 2013

Mr. Martin Van Rooy
Mine Inspector
Worker's Compensation Board
Nunavut
PO Box 669
Iqaluit, Nunavut
XOA 0H0

Dear Martin,

In follow-up to your October 28, 2013 inspection report and our November 18 response, please find below responses to the remaining inspection findings.

Noticed at Milne Inlet two supervisors were working without a current St. John Ambulance Standard first aid with CPR certification or an equivalent 16-hour first aid qualification. These men were told they could not supervise until they had passed their St. John Ambulance first aid course or an equivalent 16-hour first aid course. Their work was shutdown until a qualified supervisor arrived from Mary River.

1. ***Please ensure before a supervisor is dispatched to site they have a current St. John Ambulance standard first aid with CPR or equivalent 16-hour first aid certification and the person may not supervise until they have their first aid qualification.***

Response:

Baffinland and Hatch superintendents have been reminded of the requirement that supervisors (including lead hands) have their St. John Ambulance Standard First Aid with CPR (or equivalent) and to review their crews to ensure this is in place. We have also recently contracted an additional medic to float between Mary River and Milne Inlet. One of the responsibilities of this medic is to provide first aid training (2 day course) to employees and contractors as required. To date, 34 persons have been trained by the contracted medic.

Noticed there are about 200 people stationed at Milne Inlet and about 150 at Mary River. These sites are about a two-hour drive apart however, there is no emergency response system in place at each location to handle an emergency on site or on the road between these sites.

2. ***Please ensure 60 people are trained as emergency responders at each of the Milne Inlet and Mary River sites in order to provide at least 20-trained emergency responders readily available at each site, to attend to any emergency that may occur on site or on the road between the sites.***

Response:

Baffinland has contracted Workplace Safety North (WSN) to deliver mine rescue training to our employees. Alex Gryska, Director Mine Rescue for WSN was in contact with Peter Bengts regarding the scope of the training and offered that WSCC send one of their inspectors to review/audit the program. WSN will provide the course curriculum to Peter Bengts to determine whether additional follow-up is required for WSN trainers to be mine rescue trainer certified.

Two training courses (6 day courses) have already been delivered, with 19 employees trained. We are planning another training course in December with additional courses early in the new year. However, instead of training 60 people at both Mary River and Milne Inlet, approximately 25% of the Baffinland workforce at site, we are proposing to have enough employees trained by May 31, 2014 to ensure at least 20-trained emergency responders are readily available at each site. Baffinland will achieve this requirement by training additional employees and managing shift and vacation schedules.

Noticed new equipment parked at the Milne Inlet and Mary River site.

3. ***Please submit an up-to-date equipment list of all the equipment on site including the certification and or recertification of all cranes, manlifts and other non-destructive testing of load bearing components on the equipment.***

Response:

The up to date mechanical equipment list for equipment on site is attached to this response. In addition, inspection certificates for the Manitowoc 2250 Crawler Crane, Terex RT780 RT Crane, Terex RT130 RT Crane, Kalmar DRF450-65S5 Container Handlers, and a variety of man lifts and scissor lifts are also attached to this response.

Should you have any questions regarding this submission please contact Michael Anderson by phone at 416.814.3163 or email at Michael.Anderson@Baffinland.com.

Best Regards,

Erik Madsen
Vice President
Sustainable Development, Health, Safety and Environment

Attachments:
Mechanical Equipment List
Certificates of Inspection

cc. Michael Anderson
Glen Hein

Mechanical Equipment List

H-349000 Baffinland Iron Mines Corporation

		Identification											Technical																	Procurement			
													Design Data								Power			Supp. Information			Diagrams						
X	Equip Rev	Area	EWP	CWP	Tag No	Description	Equip Code	Equipment Type	Part Of	EngStatus	Const. Type	Package Engineer	Design Code	Dimension (mm) l x w x h	Dry Weight (Kg)	Material	Operating Mode	Equipment Size	Design Capacity	Drive Type	Design Load (kW)	Name Plate	Emerg Req	Remarks	Assembly on Delivery	Sealift	PFD No	PID No	Datasheet No	Enquiry No	Model Number	Manufacturer	Notes
	0	2140	502-2000		2140-MO-001	PICKUP TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 6274 W: 2665 H: 2032	6350		INTERMITTENT		3300 KG PAYLOAD							2013				PM111	F350	FORD F350	Sent 2013
	0	2140	502-2000		2140-MO-002	PICKUP TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 6274 W: 2665 H: 2032	6350		INTERMITTENT		3300 KG PAYLOAD							2013				PM111	F350	FORD F350	Sent 2013
	0	2140	502-2000		2140-MO-003	PICKUP TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 6274 W: 2665 H: 2032	6350		INTERMITTENT		3300 KG PAYLOAD							2013				PM111	F350	FORD F350	Sent 2013
	0	2140	502-2000		2140-MO-004	PICKUP TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 6274 W: 2665 H: 2032	6350		INTERMITTENT		3300 KG PAYLOAD							2013				PM111	F350	FORD F350	Sent 2013
	0	2142	502-2000		2142-MO-003	STOCKPILE, FRONT END LOADER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	TOROMONT		L: 10390 W: 3600 H: 4115	43400		INTERMITTENT		4.5 - 5.4 M3 BUCKET					ETA JULY 25, 2013		2013				PM102	988H	CAT 988H	Sent 2013
	0	2142	502-2000		2142-MO-004	STOCKPILE, FRONT END LOADER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	TOROMONT		L: 10390 W: 3600 H: 4115	43400		INTERMITTENT		4.5 - 5.4 M3 BUCKET							2013				PM102	988H	CAT 988H	Sent 2013
	0	2142	502-2000		2142-MO-005	STOCKPILE, FRONT END LOADER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 10390 W: 3600 H: 4115	43400		INTERMITTENT		4.5 - 5.4 M3 BUCKET					WITH 96" FORKS AND QUICK COUPLER		2013				PM102	988H	CAT 988H	Sent 2013
	0	2142	502-2000		2142-MO-006	STOCKPILE, FRONT END LOADER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 10390 W: 3600 H: 4115	43400		INTERMITTENT		4.5 - 5.4 M3 BUCKET					WITH 96" FORKS AND QUICK COUPLER		2013				PM102	988H	CAT 988H	Sent 2013
	0	2142	502-2000		2142-MO-009	NIGHT WORK AREA, LIGHT PLANTS	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4623 W: 2007 H: 9000	925		INTERMITTENT		4000W			10.8 hp	No	4 X 1000W LIGHTS		2013				PM106	AL4	TEREX AL4	Sent 2013
	0	2142	502-2000		2142-MO-010	NIGHT WORK AREA, LIGHT PLANTS	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4623 W: 2007 H: 9000	925		INTERMITTENT		4000W			10.8 hp	No	4 X 1000W LIGHTS		2013				PM106	AL4	TEREX AL4	Sent 2013
	0	2142	502-2000		2142-MO-011	NIGHT WORK AREA, LIGHT PLANTS	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4623 W: 2007 H: 9000	925		INTERMITTENT		4000W			10.8 hp	No	4 X 1000W LIGHTS		2013				PM106	AL4	TEREX AL4	Sent 2013
	0	2142	502-2000		2142-MO-012	NIGHT WORK AREA, LIGHT PLANTS	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4623 W: 2007 H: 9000	925		INTERMITTENT		4000W			10.8 hp	No	4 X 1000W LIGHTS		2013				PM106	AL4	TEREX AL4	Sent 2013
	0	2142	502-2000		2142-MO-013	NIGHT WORK AREA, LIGHT PLANTS	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4623 W: 2007 H: 9000	925		INTERMITTENT		4000W			10.8 hp	No	4 X 1000W LIGHTS		2013				PM106	AL4	TEREX AL4	Sent 2013
	0	2142	502-2000		2142-MO-014	NIGHT WORK AREA, LIGHT PLANTS	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4623 W: 2007 H: 9000	925		INTERMITTENT		4000W			10.8 hp	No	4 X 1000W LIGHTS		2013				PM106	AL4	TEREX AL4	Sent 2013
	0	2142	502-2000		2142-MO-015	NIGHT WORK AREA, LIGHT PLANTS	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4623 W: 2007 H: 9000	925		INTERMITTENT		4000W			10.8 hp	No	4 X 1000W LIGHTS		2013				PM106	AL4	TEREX AL4	Sent 2013
	0	2142	502-2000		2142-MO-016	NIGHT WORK AREA, LIGHT PLANTS	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4623 W: 2007 H: 9000	925		INTERMITTENT		4000W			10.8 hp	No	4 X 1000W LIGHTS		2013				PM106	AL4	TEREX AL4	Sent 2013
	0	2142	502-2000		2142-MO-017	NIGHT WORK AREA, LIGHT PLANTS	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4623 W: 2007 H: 9000	925		INTERMITTENT		4000W			10.8 hp	No	4 X 1000W LIGHTS		2013				PM106	AL4	TEREX AL4	Sent 2013
	0	2142	502-2000		2142-MO-018	NIGHT WORK AREA, LIGHT PLANTS	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4623 W: 2007 H: 9000	925		INTERMITTENT		4000W			10.8 hp	No	4 X 1000W LIGHTS		2013				PM106	AL4	TEREX AL4	Sent 2013
	0	2142	502-2000		2142-MO-019	CONVEYOR CLEANUP/SNOW, REMOVAL ALL TERRAIN LOADER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 3277 W: 1676 H: 3810	3175		INTERMITTENT		885 KG OPERATING LOAD					C/W QUICK COUPLER, BUCKETS AND FORKS		2013				PM102	247B	CAT 247B	Sent 2013
	0	2142	502-2000		2142-MO-020	CONVEYOR CLEANUP/SNOW, REMOVAL ALL TERRAIN LOADER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 3277 W: 1676 H: 3810	3175		INTERMITTENT		885 KG OPERATING LOAD					C/W QUICK COUPLER, BUCKETS AND FORKS		2013				PM102	247B	CAT 247B	Sent 2013
	0	2143	502-2000		2143-MO-002	SITE MAINTENANCE, GRADER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	TOROMONT		L: 9412 W: 2791 H: 3535	24400		INTERMITTENT		2.28 M MAX SHOULD					2009, 16FT BLADE		2013				PM102	14M	CAT 14M	Sent 2013
	0	2143	502-2000		2143-MO-003	SITE MAINTENANCE, TRACK DOZER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4064 W: 2464 H: 2439	21600	E:NUNA	INTERMITTENT									2013				PM102	D6T XW	CAT D6T XW	Sent 2013
	0	2143	502-2000		2143-MO-004	PLANT AND MOBILE EQUIPMENT , MAINTENANCE SERVICE TRUCK	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 7264 W: 2418 H: 2022	7300	E:	INTERMITTENT		7000 LB TELESCOPING					VMAC CRANE		2013				PM130	F550	FORD F550	Sent 2013
	0	2143	502-2000		2143-MO-005	PLANT AND MOBILE EQUIPMENT , MAINTENANCE SERVICE TRUCK	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 7264 W: 2418 H: 2022	7300	E:	INTERMITTENT							10000# TELESCOPIC CRANE; AIR COMPRESSOR		2013				PM130	348	PETERBILT 348	Sent 2013
	0	2143	502-2000		2143-MO-006	SITE MAINTENANCE, SMALL LOADER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 6050 W: 2390 H: 3150	9600		INTERMITTENT		1.3 M3 BUCKET					QUICK COUPLERS/BUCKETS/FORKS		2013				PM102	930K	CAT 930K	Sent 2013
	0	2143	502-2000		2143-MO-007	SITE MAINTENANCE, MID SIZE EXCAVATOR	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	TOROMONT		L: 11910 W: 3490 H: 3770	45000		INTERMITTENT		345 HP, 3.5 M3 BUCKET							2013				PM102	345	CAT 345DL	Sent 2013
	0	2143	502-2000		2143-MO-008	MAINTENANCE FUEL/LUBE, TRUCK	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		1000 GAL FUEL TANK; 7					1000 GAL FUEL TANK; 7 PRODUCT TANKS; HEATED PRESSURIZED HOUSE		2013	H349000-2540-05-030-0001			PM130	T800	KENWORTH T800	Sent 2013
	0	2143	502-2000		2143-MO-009	MINE/TOTE ROAD MAINTENANCE, PLOW/SAND TRUCK	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT							TENCO CHASSIS MOUNT SPREADER; ONE WAY PLOW; RIGHT HAND SIDE DISCHARGE		2013				PM131	4700 SF	WESTERN STAR 4700 SF	Sent 2013
	0	2143	502-2000		2143-MO-011	SITE DEWATERING, PUMP	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 2057 W: 979 H: 1510	834		INTERMITTENT		4"				No	DIESEL C/W TRAILER AND SPILL KIT		2013				PM106	14C2-F3L	GORMAN-RUPP 14C2-F3L	Sent 2013
	0	2143	502-2000		2143-MO-012	SITE DEWATERING, PUMP	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 2057 W: 979 H: 1510	834		INTERMITTENT		4"				No	DIESEL C/W TRAILER AND SPILL KIT		2013				PM106	14C2-F3L	GORMAN-RUPP 14C2-F3L	Sent 2013
	0	2143	502-2000		2143-MO-013	MAINTENANCE, HOT BOX	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	SANJAY DAHIYA		L: 4877 W: 2235 H: 1829	1850		INTERMITTENT		1100000 BTU/H							2013				PM104	CUBE 1100	ECOBLAZE CUBE 1100	Sent 2013
	0	2143	502-2000		2143-MO-014	MAINTENANCE, HOT BOX	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	SANJAY DAHIYA		L: 4877 W: 2235 H: 1829	1850		INTERMITTENT		1100000 BTU/H							2013				PM104	CUBE 1100	ECOBLAZE CUBE 1100	Sent 2013
	0	2143	502-2000		2143-MO-015	MAINTENANCE, TRAILER WELDER	MO	MOBILE EQUIPMENT		PRELIMINARY	NEW	SANJAY DAHIYA					INTERMITTENT									2013				PM104			Sent 2013

Mechanical Equipment List

H-349000 Baffinland Iron Mines Corporation

		Identification											Technical																		Procurement			
													Design Data								Power			Supp. Information			Diagrams							
X	Equip Rev	Area	EWP	CWP	Tag No	Description	Equip Code	Equipment Type	Part Of	EngStatus	Const. Type	Package Engineer	Design Code	Dimension (mm) l x w x h	Dry Weight (Kg)	Material	Operating Mode	Equipment Size	Design Capacity	Drive Type	Design Load (kW)	Name Plate	Emerg Req	Remarks	Assembly on Delivery	Sealift	PFD No	PID No	Datasheet No	Enquiry No	Model Number	Manufacturer	Notes
	0	2143	502-2000		2143-MO-016	FREIGHT, TELEHANDLER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	TOROMONT		L: 6100 W: 2570 H: 2570	15800	E:NUNA	INTERMITTENT		4500 KG CAPACITY							2013				PM106	G10-55A	CAT TH514	Sent 2013
	0	2143	502-2000		2143-MO-017	TOTE ROAD MAINTENANCE, GRADER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	TOROMONT		L: 9412 W: 2791 H: 3535	24400		INTERMITTENT		2.28 M MAX SHOULD					2009 - WITH SNOW WINGS		2013				PM102	14M	CAT 14M	Sent 2013
	0	2143	502-2000		2143-MO-018	TOTE ROAD MAINTENANCE, GRADER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 9412 W: 2791 H: 3535	24400		INTERMITTENT		2.28 M MAX SHOULD					WITH NEW CRAIG SNOW WINGS		2013				PM102	14M	CAT 14M	Sent 2013
	0	2143	502-2000		2143-MO-019	TOTE ROAD MAINTENANCE, GRADER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	TOROMONT		L: 9412 W: 2791 H: 3535	24400		INTERMITTENT		2.28 M MAX SHOULD					WITH NEW CRAIG SNOW WINGS		2013				PM102	14M	CAT 14M	Sent 2013
	0	2143	502-2000		2143-MO-020	TOTE ROAD MAINTENANCE, COMPACTOR	MO	MOBILE EQUIPMENT		PRELIMINARY	USED	GRAHAM BURTON		L: 5860 W: 2300 H: 3070	12250	E:NUNA	INTERMITTENT		DRUM WIDTH: 2140 MM;					PURCHASED FROM NUNA		2013				PM102	CS56	CAT CS56	Sent 2013
	0	2143	502-2000		2143-MO-022	TOTE ROAD MAINTENANCE, MID SIZE EXCAVATOR	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 11910 W: 3490 H: 3770	45000		INTERMITTENT		345 HP, 3.5 M3 BUCKET							2013				PM102	345	CAT 345DL HEX	Sent 2013
	0	2143	502-2000		2143-MO-023	ROAD SNOW BLOWER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	TOROMONT		L: 6170 W: 2410 H: 3320	18338		INTERMITTENT		WITH SNOW BLOWER					C/W VOHL MODEL DV400 SNOW BLOWER		2013				PM102	950H	CAT 950H	Sent 2013
	0	2143	502-2000		2143-MO-024	MINI CRAWLER CRANE,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		2.9 T					DIESEL/ELECTRIC		2013				PM116		SPYDER CRANE URW295	Sent 2013
	0	2143	502-2000		2143-MO-025	FORKLIFT,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 2540 W: 1300 H: 2540	4800		INTERMITTENT		3500 KG					DIESEL		2013				PM106	FD35N	MITSUBISHI FD35N	Sent 2013
	0	2143	502-2000		2143-MO-026	SPILL RESPONSE TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON					INTERMITTENT							ROLL UP DOORS ON THE SIDE; 10 DOORS; 12 COMPARTMENTS		2013				PM130		STERLING M8500	Sent 2013
	0	2143	502-2000		2143-MO-027	FORKLIFT,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 3305 W: 1460 H: 2400	7160		INTERMITTENT		5000 KG					DIESEL		2013				PM106	DP50K	CAT DP50K	Sent 2013
	0	2143	502-2000		2143-MO-028	FORKLIFT,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 2000 W: 1100 H: 2040	3330		INTERMITTENT		3880 KG					ELECTRIC		2013				PM106	2ET4000	CAT 2ET4000	Sent 2013
	0	2144	502-2000		2144-MO-001	WATER TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		4000 GAL					TANDEM AXLE; INSULATED STAINLESS STEEL TANK; 3" PUMP		2013	H349000-4720-05-030-			PM101	348 AUTO S/S 100	PETERBILT 348 AUTO S/S 100 BBL	Sent 2013
	0	2144	502-2000		2144-MO-002	CONTAINER, HANDLER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON		L: 11684 W: 3454 H: 2146	72000		INTERMITTENT		50 TON CAPACITY					CAPABLE OF 20' & 40' ISO CONTAINERS		2013				PM101	DRF 450-6555 DRF 450-	KALMAR DRF 450-6555	Sent 2013
	0	2144	502-2000		2144-MO-003	PASSENGER , TRANSFER BUS	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 12192 W: 2440 H: 2900	14000		INTERMITTENT		48 PASSENGER; 2							2013				PM101	BBCV-DIESEL 3507A	BLUE BIRD BBCV DIESEL 3507A	Sent 2013
	0	2144	502-2000		2144-MO-004	WORKER , TRANSFER MINI BUS	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 7470 W: 2440 H: 1930	7080		INTERMITTENT		24 PASSENGER; 2							2013				PM101	BBCV-DIESEL-1910A	BLUE BIRD BBCV DIESEL 1910 A	Sent 2013
	0	2144	502-2000		2144-MO-005	WATER DELIVERY TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		5400 GAL					367 TRI-DRIVE W/ 36" SLEEPER; TRI-AXLE; INSULATED TANK; CAPABLE OF PULLING 5400 GAL PUP TRAILER		2013	H349000-2720-05-030-0001			PM101	367 TRI-DRIVE W/ 36"	PETERBILT 367 TRI-DRIVE	Sent 2013
	0	2144	502-2000		2144-MO-006	MILNE/MR FREIGHT , HAUL TRACTOR	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT							W/ WET KIT; HEADACHE RACK; FENDERS		2013				PM135	367	PETERBILT 367	Sent 2013
	0	2144	502-2000		2144-MO-007	MILNE/MR FREIGHT , HAUL TRACTOR	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT							W/ WET KIT; HEADACHE RACK; FENDERS		2013				PM135	367	PETERBILT 367	Sent 2013
	0	2144	502-2000		2144-MO-009	MILNE/MR FREIGHT , HAUL HIBOY TRAILER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 12192 W: 2438			INTERMITTENT		20' AND 40' ISO CONTIAN					CAPABLE OF CARRYING 20' AND 40' ISO SEA CONTAINERS		2013				PM143			Sent 2013
	0	2144	502-2000		2144-MO-010	MILNE/MR FREIGHT , HAUL HIBOY TRAILER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 12192 W: 2438			INTERMITTENT		20' AND 40' ISO CONTIAN					CAPABLE OF CARRYING 20' AND 40' ISO SEA CONTAINERS		2013				PM143			Sent 2013
	0	2144	502-2000		2144-MO-011	MILNE/MR FREIGHT , HAUL HIBOY TRAILER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 12192 W: 2438			INTERMITTENT		20' AND 40' ISO CONTIAN					CAPABLE OF CARRYING 20' AND 40' ISO SEA CONTAINERS		2013				PM143			Sent 2013
	0	2144	502-2000		2144-MO-013	GARBAGE TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON				E:	INTERMITTENT		CAPABLE OF 20-30 M3					60,000# ROLL ON-ROLL OFF HYRDAULIC TYPE		2013	H349000-2540-05-030-0001			PM132		PETERBILT 365	Sent 2013
	0	2144	502-2000		2144-MO-014	GARBAGE BIN - LARGE,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		30 M3							2013				PM132			Sent 2013
	0	2144	502-2000		2144-MO-015	GARBAGE BIN - LARGE,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		30 M3							2013				PM132			Sent 2013
	0	2144	502-2000		2144-MO-016	GARBAGE BIN - LARGE,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		30 M3							2013				PM132			Sent 2013
	0	2144	502-2000		2144-MO-017	GARBAGE BIN - LARGE,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		30 M3							2013				PM132			Sent 2013
	0	2144	502-2000		2144-MO-018	GARBAGE BIN - SMALL,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		20 M3							2013				PM132			Sent 2013
	0	2144	502-2000		2144-MO-019	GARBAGE BIN - SMALL,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		20 M3							2013				PM132			Sent 2013
	0	2144			2144-MO-025	WILDLIFE DETERGENT, GARBAGE BIN	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		6 M3					HYDRAULIC ASSISTEDS, SELF LOCKING LIDS		2013				PM132			Sent 2013
	0	2144			2144-MO-026	WILDLIFE DETERGENT, GARBAGE BIN	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		6 M3					HYDRAULIC ASSISTEDS, SELF LOCKING LIDS		2013				PM132			Sent 2013
	0	2144			2144-MO-027	WILDLIFE DETERGENT, GARBAGE BIN	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		6 M3					HYDRAULIC ASSISTEDS, SELF LOCKING LIDS		2013				PM132			Sent 2013
	0	2144	502-2000		2144-MO-030	HEATED/REFRIGERATED, SEA CONTAINER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 6096 W: 2440 H: 2440			CONTINUOUS		20 FOOT SEA CAN					20 FT SEA CONTAINER; INSULATED; CAN PROVIDE HEAT TO 12 C		2013				PM107			Sent 2013

		Identification											Technical																		Procurement			
													Design Data								Power			Supp. Information			Diagrams							
X	Equip Rev	Area	EWP	CWP	Tag No	Description	Equip Code	Equipment Type	Part Of	EngStatus	Const. Type	Package Engineer	Design Code	Dimension (mm) l x w x h	Dry Weight (Kg)	Material	Operating Mode	Equipment Size	Design Capacity	Drive Type	Design Load (kW)	Name Plate	Emerg Req	Remarks	Assembly on Delivery	Sealift	PFD No	PID No	Datasheet No	Enquiry No	Model Number	Manufacturer	Notes
	0	2144	502-2000		2144-MO-031	HEATED/REFRIGERATED, SEA CONTAINER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 6096 W: 2440 H: 2440			CONTINUOUS		20 FOOT SEA CAN					20 FT SEA CONTAINER; INSULATED; CAN PROVIDE HEAT TO 12 C		2013				PM107			Sent 2013
	0	2144	502-2000		2144-MO-032	REFRIGERATED, SEA CONTAINER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 6096 W: 2440 H: 2440			CONTINUOUS		20 FOOT SEA CAN					20 FT CONTAINER		2013				PM107			Sent 2013
	0	2144	502-2000		2144-MO-033	REFRIGERATED, SEA CONTAINER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 6096 W: 2440 H: 2440			CONTINUOUS		20 FOOT SEA CAN					20 FT CONTAINER		2013				PM107			Sent 2013
	0	2144	502-2000		2144-MO-034	REFRIGERATED, SEA CONTAINER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 6096 W: 2440 H: 2440			CONTINUOUS		20 FOOT SEA CAN					20 FT CONTAINER		2013				PM107			Sent 2013
	0	2144	502-2000		2144-MO-035	REFRIGERATED, SEA CONTAINER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 6096 W: 2440 H: 2440			CONTINUOUS		20 FOOT SEA CAN					20 FT CONTAINER		2013				PM107			Sent 2013
	0	2144	502-2000		2144-MO-036	REFRIGERATED, SEA CONTAINER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 6096 W: 2440 H: 2440			CONTINUOUS		20 FOOT SEA CAN					20 FT CONTAINER		2013				PM107			Sent 2013
	0	2144	502-2000		2144-MO-037	REFRIGERATED, SEA CONTAINER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 6096 W: 2440 H: 2440			CONTINUOUS		20 FOOT SEA CAN					20 FT CONTAINER		2013				PM107			Sent 2013
	0	2144	502-2000		2144-MO-038	REFRIGERATED, SEA CONTAINER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 6096 W: 2440 H: 2440			CONTINUOUS		20 FOOT SEA CAN					20 FT CONTAINER		2013				PM107			Sent 2013
	0	2340	502-2000		2340-GE-001	STOCKPILE , GENERATOR	GE	GENERATOR		PRELIMINARY	NEW	BRIAN PERKINS		L: 6070 W: 2440 H: 3760	29440		STANDBY		3214 L FUEL TANK			670 hp	No	DIMENSIONS INCLUDE TRAILER		2013				PE001	C500D6RG	CUMMINS C500DR6G	Sent 2013
	0	2341	502-2000		2341-FE-003	FINES STOCKPILE, MOBILE FEEDER	FE	FEEDER		FINAL	NEW	SANJAY DAHIYA					INTERMITTENT		DESIGN: 500 TPH	DIESEL POW		135 hp	No	NOMINAL: 375 TPH		2013	H349000-2340-05-030-0001			PM001		MASABA MINING EQUIPMENT	Sent 2013
	0	2341	502-2000		2341-FE-004	LUMPS STOCKPILE, MOBILE FEEDER	FE	FEEDER		FINAL	NEW	SANJAY DAHIYA					INTERMITTENT		DESIGN: 500 TPH	DIESEL POW		135 hp	No	NOMINAL: 375 TPH		2013	H349000-2340-05-030-0001			PM001		MASABA MINING EQUIPMENT	Sent 2013
	0	2341	502-2000		2341-FE-005	LUMPS STOCKPILE, MOBILE FEEDER	FE	FEEDER		FINAL	NEW	SANJAY DAHIYA					INTERMITTENT		DESIGN: 500 TPH	DIESEL POW		135 hp	No	NOMINAL: 375 TPH		2013	H349000-2340-05-030-0001			PM001		MASABA MINING EQUIPMENT	Sent 2013
	0	2341	502-2000		2341-ST-006	LUMPS STOCKPILE, MOBILE STACKER	ST	STACKER / STOCKPILE		FINAL	NEW	SANJAY DAHIYA					INTERMITTENT		DESIGN: 662 TPH	POWERED BY		25 hp	No	BELT SPEED 350 FPM @ 18 DEGREES		2013	H349000-2340-05-030-0001			PM001		MASABA MINING EQUIPMENT	Sent 2013
	0	2341	502-2000		2341-ST-007	LUMPS STOCKPILE, MOBILE STACKER	ST	STACKER / STOCKPILE		FINAL	NEW	SANJAY DAHIYA					INTERMITTENT		DESIGN: 662 TPH	POWERED BY		25 hp	No	BELT SPEED 350 FPM @ 18 DEGREES		2013	H349000-2340-05-030-0001			PM001		MASABA MINING EQUIPMENT	Sent 2013
	0	2341	502-2000		2341-ST-008	FINES STOCKPILE, MOBILE STACKER	ST	STACKER / STOCKPILE		FINAL	NEW	SANJAY DAHIYA					INTERMITTENT		DESIGN: 662 TPH	POWERED BY		25 hp	No	BELT SPEED 350 FPM @ 18 DEGREES		2013	H349000-2340-05-030-0001			PM001		MASABA MINING EQUIPMENT	Sent 2013
	0	2342	502-2000		2342-CV-023	JUMP CONVEYOR,	CV	CONVEYING	2342-CV-001	FINAL	NEW	SANJAY DAHIYA					INTERMITTENT						No			2013				PM001		MASABA MINING EQUIPMENT	Sent 2013
	0	2342	502-2000		2342-CV-024	JUMP CONVEYOR,	CV	CONVEYING	2342-CV-001	FINAL	NEW	SANJAY DAHIYA					INTERMITTENT			POWERED BY		25 hp	No			2013				PM001		MASABA MINING EQUIPMENT	Sent 2013
	0	2342	502-2000		2342-CV-025	JUMP CONVEYOR,	CV	CONVEYING	2342-CV-001	FINAL	NEW	SANJAY DAHIYA					INTERMITTENT			POWERED BY		25 hp	No			2013				PM001		MASABA MINING EQUIPMENT	Sent 2013
	0	2342	502-2000		2342-CV-030	JUMP CONVEYOR,	CV	CONVEYING	2342-CV-001	FINAL	NEW	SANJAY DAHIYA					INTERMITTENT			POWERED BY		25 hp	No			2013				PM001		MASABA MINING EQUIPMENT	Sent 2013
	0	2342	502-2000		2342-CV-031	JUMP CONVEYOR,	CV	CONVEYING	2342-CV-001	FINAL	NEW	SANJAY DAHIYA					INTERMITTENT			POWERED BY		25 hp	No			2013				PM001		MASABA MINING EQUIPMENT	Sent 2013
	0	2342	502-2000		2342-CV-032	JUMP CONVEYOR,	CV	CONVEYING	2342-CV-001	FINAL	NEW	SANJAY DAHIYA					INTERMITTENT			POWERED BY		25 hp	No			2013				PM001		MASABA MINING EQUIPMENT	Sent 2013
	0	2342	502-2000		2342-FE-002	MOBILE, FEEDER	FE	FEEDER		FINAL	NEW	SANJAY DAHIYA					INTERMITTENT		DESIGN: 2500 TPH	DIESEL POW		135 hp	No	NOMINAL: 1800 TPH		2013	H349000-2340-05-030-0001			PM001		MASABA MINING EQUIPMENT	Sent 2013
	0	2342	502-2000		2342-FE-003	MOBILE, FEEDER	FE	FEEDER		FINAL	NEW	SANJAY DAHIYA					INTERMITTENT		DESIGN: 2500 TPH	DIESEL POW		135 hp	No	NOMINAL: 1800 TPH		2013	H349000-2340-05-030-0001			PM001		MASABA MINING EQUIPMENT	Sent 2013
	0	2342	502-2000		2342-FE-004	MOBILE, FEEDER	FE	FEEDER		FINAL	NEW	SANJAY DAHIYA					INTERMITTENT		DESIGN: 2500 TPH	DIESEL POW		135 hp	No	NOMINAL: 1800 TPH		2013	H349000-2340-05-030-0001			PM001		MASABA MINING EQUIPMENT	Sent 2013
	0	2510	502-2000		2510-PP-001	RAW SEWAGE, LIFT STATION	PP	PUMP		PRELIMINARY	NEW	RUSI KAPADIA					INTERMITTENT						No			2013	H349000-2720-05-030-0002			PM009			Sent 2013
	0	2513	502-2000		2513-MO-001	AMBULANCE,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON		L: 5715 W: 1752 H: 2032	6350		INTERMITTENT							WHEELED COACH TYPE 1, 4X4; 7.3L POWER STROKE		2013				PM101	F350	FORD F350	Sent 2013
	0	2513	502-2000		2513-MO-002	FIRE TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON		L: 10540 W: 3100 H: 3810	16500		INTERMITTENT		1500 GAL WATER TANK					210 GAL FOAM TANK; 450 LB DRY CHEMICAL TANK; ARFF WITH SNOZZLE		2013				PM101	T1500	OSHKOSH T1500	Sent 2013
	0	2513	502-2000		2513-PP-005	EMERGENCY RESPONSE OFFICE, RAW WATER PUMP	PP	PUMP		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 483 W: 275 H: 267			INTERMITTENT		65 PSI	NOT DEFINED		0.5 hp	No	1/2 HP ELECTRIC PUMP		2013	H349000-2720-05-030-0003			PX001		SIMER JET PUMPS 2205C	Sent 2013
	0	2513	502-2000		2513-PP-021	MILNE EMERGENCY RESPONSE GARAGE, FUEL OIL PUMP (PUMP)	PP	PUMP		PRELIMINARY	NEW	KENTARO IMAI					INTERMITTENT		25 PSI	NOT DEFINED		0.5 hp	No	DUPLEX FUEL OIL PUMPS, POSITIVE DISPLACEMENT ROTARY		2013				PX002		VIKING DUPLEX OIL SYSTEMS	Sent 2013
	0	2513	502-2000		2513-PP-022	MILNE EMERGENCY RESPONSE GARAGE, FUEL OIL PUMP (STANDBY)	PP	PUMP		PRELIMINARY	NEW	KENTARO IMAI					INTERMITTENT		25 PSI	NOT DEFINED		0.5 hp	No	DUPLEX FUEL OIL PUMPS, POSITIVE DISPLACEMENT ROTARY		2013				PX002		VIKING DUPLEX OIL SYSTEMS	Sent 2013
	0	2513	502-2000		2513-SQ-010	DRY CHEMICAL, REFILL STATION	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO					INTERMITTENT						No	DRY POWDER CHEMICAL HANDLING SYSTEM		2013				PM104		TYCO FIRE PROTECTION	Sent 2013
	0	2513	502-2000		2513-TK-003	EMERGENCY RESPONSE OFFICE, SEWAGE COLLECTION TANK	TK	TANK		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 3791 W: 1829 H: 610			INTERMITTENT		1000 GAL					RECTANGULAR TANK		2013	H349000-2720-05-030-0003			PX001		LAGRANGE MECHANICAL SERVICES	Sent 2013
	0	2513	502-2000		2513-TK-004	EMERGENCY RESPONSE OFFICE, RAW WATER TANK	TK	TANK		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 1613 W: 737 H: 1676			CONTINUOUS		400 GAL TANK					FREESTANDING WATER TANK		2013	H349000-2720-05-030-0003			PX001		NORWESCO	Sent 2013

		Identification											Technical																		Procurement			
													Design Data								Power			Supp. Information			Diagrams							
X	Equip Rev	Area	EWP	CWP	Tag No	Description	Equip Code	Equipment Type	Part Of	EngStatus	Const. Type	Package Engineer	Design Code	Dimension (mm) l x w x h	Dry Weight (Kg)	Material	Operating Mode	Equipment Size	Design Capacity	Drive Type	Design Load (kW)	Name Plate	Emerg Req	Remarks	Assembly on Delivery	Sealift	PFD No	PID No	Datasheet No	Enquiry No	Model Number	Manufacturer	Notes
	0	2513	502-2000		2513-TK-023	MILNE EMERGENCY RESPONSE GARAGE, DIESEL FUEL TANK	TK	TANK		PRELIMINARY	NEW	KENTARO IMAI					CONTINUOUS		10000 L					DOUBLE WALLED HORIZONTAL ABOVE GRADE TANK		2013				PX002		DTE ULC601-07	Sent 2013
	0	2521	502-2000		2521-PP-003	MAINTENANCE BUILDING, FUEL OIL PUMP (DUTY)	PP	PUMP		PRELIMINARY	NEW	KENTARO IMAI					INTERMITTENT		25 PSI	NOT DEFINED		0.5 hp	No	DUPLEX FUEL OIL PUMPS, POSITIVE DISPLACEMENT ROTARY		2013				PX002		VIKING DUPLEX OIL SYSTEMS	Sent 2013
	0	2521	502-2000		2521-PP-004	MAINTENANCE BUILDING, FUEL OIL PUMP (STANDBY)	PP	PUMP		PRELIMINARY	NEW	KENTARO IMAI					INTERMITTENT		25 PSI	NOT DEFINED		0.5 hp	No	DUPLEX FUEL OIL PUMPS, POSITIVE DISPLACEMENT ROTARY		2013				PX002		VIKING DUPLEX OIL SYSTEMS	Sent 2013
	0	2521	502-2000		2521-PP-011	MILNE WELDING SHOP, FUEL OIL PUMP (DUTY)	PP	PUMP		PRELIMINARY	NEW	KENTARO IMAI					INTERMITTENT		25 PSI	NOT DEFINED		0.5 hp	No	DUPLEX FUEL OIL PUMPS, POSITIVE DISPLACEMENT ROTARY		2013				PX002		VIKING DUPLEX OIL SYSTEMS	Sent 2013
	0	2521	502-2000		2521-PP-012	MILNE WELDING SHOP, FUEL OIL PUMP (STANDBY)	PP	PUMP		PRELIMINARY	NEW	KENTARO IMAI					INTERMITTENT		25 PSI	NOT DEFINED		0.5 hp	No	DUPLEX FUEL OIL PUMPS, POSITIVE DISPLACEMENT ROTARY		2013				PX002		VIKING DUPLEX OIL SYSTEMS	Sent 2013
	0	2521	502-2000		2521-PP-051	WORKSHOP OFFICE WASHCAR, RAW WATER PUMP	PP	PUMP		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 483 W: 275 H: 267			INTERMITTENT		65 PSI	NOT DEFINED		0.5 hp	No	1/2 HP ELECTRIC PUMP		2013	H349000-2720-05-030-0003			PX001		SIMER JET PUMPS 2205C	Sent 2013
	0	2521	502-2000		2521-TK-005	MILNE WELDING SHOP, DIESEL FUEL TANK	TK	TANK		PRELIMINARY	NEW	KENTARO IMAI					CONTINUOUS		10000 L					DOUBLE WALLED HORIZONTAL ABOVE GRADE TANK		2013				PX002		DTE ULC601-07	Sent 2013
	0	2521	502-2000		2521-TK-013	MAINTENANCE BUILDING, DIESEL FUEL TANK	TK	TANK		PRELIMINARY	NEW	KENTARO IMAI					CONTINUOUS		20000 L					DOUBLE WALLED HORIZONTAL ABOVE GRADE TANK		2013				PX002		DTE ULC601-07	Sent 2013
	0	2521	502-2000		2521-TK-050	WORKSHOP OFFICE WASHCAR, RAW WATER TANK	TK	TANK		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 1803 W: 1245 H: 1346			CONTINUOUS		525 GAL TANK					HORIZONTAL TANK WITH >48 HOURS SUPPLY		2013	H349000-2720-05-030-0003			PX001		PLASTIC-MART 866-310-2556	Sent 2013
	0	2521	502-2000		2521-TK-053	WORKSHOP OFFICE WASHCAR, SEWAGE COLLECTION TANK	TK	TANK		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 3791 W: 1829 H: 610			INTERMITTENT		1000 GAL					RECTANGULAR TANK		2013	H349000-2720-05-030-0003			PX001		LAGRANGE MECHANICAL SERVICES	Sent 2013
	0	2522	502-2000		2522-SQ-001	EVAC TANK,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO		L: 1118 W: 508 H: 1093	200		INTERMITTENT		60 GAL TANK				No	SAGE OIL VAC FLUID RECOVERY SYSTEM - 120 GALLONS - Waste oil Storage		2013				PM104	30070V	NORTHERN TOOL 30070V	Sent 2013
	0	2522	502-2000		2522-SQ-003	DRILL PRESS,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO		L: 508 W: 356 H: 1778	120		INTERMITTENT		CHUCK CAPACITY 15.9			2.7 hp	No	LENGTH AND WIDTH ARE TABLE DIMENSIONS; 22" WITH LASER		2013				PM104	DPE18-900L	AG - DPE18-900	Sent 2013
	0	2522	502-2000		2522-SQ-005	OIL FILTER PRESS,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO		L: 1524 W: 914 H: 2640	680		INTERMITTENT		32 TON CRUSHING FORCE			3.4 hp	No	57 SECOND CYCLE TIME		2013				PM104	P300	OBERG P300	Sent 2013
	0	2522	502-2000		2522-SQ-009	WELDING MACHINE,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO		L: 965 W: 584 H: 762	192		INTERMITTENT					54 hp	No	452 MIGRUNNER DIMENSION PACKAGE - 500 AMP		2013				PM104	MLW951-277	AG - MLW951-277	Sent 2013
	0	2522	502-2000		2522-SQ-010	WELDING MACHINE,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO		L: 965 W: 584 H: 762	192		INTERMITTENT					54 hp	No	452 MIGRUNNER DIMENSION PACKAGE - 500 AMP		2013				PM104	MLW951-277	AG - MLW951-277	Sent 2013
	0	2522	502-2000		2522-SQ-011	PORTABLE WELDING, FUME EXTRACTOR	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO			73		INTERMITTENT		35 M2 FILTER AREA			1 hp	No			2013				PM104	NED12634345	AG - NED12634345	Sent 2013
	0	2522	502-2000		2522-SQ-012	PORTABLE WELDING, SPARK PROTECTOR	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO					INTERMITTENT						No			2013				PM104	NED12375241	AG - NED12375241	Sent 2013
	0	2522	502-2000		2522-SQ-014	SWEEPER,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO					INTERMITTENT					4.7 hp	No	ELECTRIC - AREA 20000 FT2		2013				PM104		AG	Sent 2013
	0	2522	502-2000		2522-SQ-018	TIRE CHANGER,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO					INTERMITTENT					2.03 hp	No	RIM DIAMATERS: EXTERNAL 9"-30", INTERNAL DIAMETER 11"-32"		2013				PM104	APX80A	COATS APX80A	Sent 2013
	0	2522	502-2000		2522-SQ-022	BULK FLUID DISTRIBUTION SYSTEM,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO					INTERMITTENT						No	OILS, LUBRICANT, COOLANT, GREASE,WATER (WASHDOWN)		2013				PM104		AG	Sent 2013
	0	2522	502-2000		2522-SQ-023	EVAC TANK,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO		L: 1118 W: 508 H: 1093	200		INTERMITTENT		60 GAL TANK				No	SAGE OIL VAC FLUID RECOVERY SYSTEM - 120 GALLONS - Waste oil Storage		2013				PM104	30070V	NORTHERN TOOL 30070V	Sent 2013
	0	2522	502-2000		2522-SQ-025	WELDING MACHINE,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO		L: 965 W: 584 H: 762	192		INTERMITTENT					54 hp	No	452 MIGRUNNER DIMENSION PACKAGE - 500 AMP		2013				PM104	MLW951-277	AG - MLW951-277	Sent 2013
	0	2522	502-2000		2522-SQ-026	PARTS WASHER,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO		L: 1070 W: 560 H: 406	84		INTERMITTENT		40 GAL TANK CAPACIT			2.03 hp	No	DIMENSIONS ARE FOR THE TANK ITSELF; SOLV DELUXE HANDIKLEEN		2013				PM104	GRYPL422A	AG - GRYPL422A	Sent 2013
	0	2522	502-2000		2522-SQ-027	PARTS WASHER,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO		L: 1070 W: 560 H: 406	84		INTERMITTENT		40 GAL TANK CAPACIT			2.03 hp	No	DIMENSIONS ARE FOR THE TANK ITSELF; SOLV DELUXE HANDIKLEEN		2013				PM104	GRYPL422A	AG - GRYPL422A	Sent 2013
	0	2522	502-2000		2522-SQ-028	TIRE SPREADER,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO					INTERMITTENT		MAX TIRE: 18R 22.5"			2.7 hp	No	AIR POWERED WITH LYING BASE. 220V MAX. 18R/22.5 INCH		2013				PM104	TR-S825	ZHUHAI TEAMROC TR-S825	Sent 2013
	1	2530	502-2000		2530-GE-001	GENERATOR,	GE	GENERATOR		CERTIFIED FINAL	NEW	BRIAN PERKINS					CONTINUOUS			DIESEL POW		1840 hp	No			2013				PE001			Sent 2013
	1	2530	502-2000		2530-GE-002	GENERATOR,	GE	GENERATOR		CERTIFIED FINAL	NEW	BRIAN PERKINS					CONTINUOUS			DIESEL POW		1840 hp	No			2013				PE001			Sent 2013
	1	2530	502-2000		2530-GE-003	GENERATOR,	GE	GENERATOR		CERTIFIED FINAL	NEW	BRIAN PERKINS					CONTINUOUS			DIESEL POW		1840 hp	No			2013				PE001			Sent 2013
	1	2530	502-2000		2530-GE-004	GENERATOR,	GE	GENERATOR		CERTIFIED FINAL	NEW	BRIAN PERKINS					CONTINUOUS			DIESEL POW		1840 hp	No			2013				PE001			Sent 2013
	1	2530	502-2000		2530-GE-005	GENERATOR,	GE	GENERATOR		CERTIFIED FINAL	NEW	BRIAN PERKINS					CONTINUOUS			DIESEL POW		1840 hp	No			2013				PE001			Sent 2013
	0	2540	502-2000		2540-PP-002	MILNE WASTE MANAGEMENT BUILDING, FUEL OIL PUMP (DUTY)	PP	PUMP		PRELIMINARY	NEW	KENTARO IMAI					INTERMITTENT		25 PSI	NOT DEFINED		0.5 hp	No	DUPLEX FUEL OIL PUMPS, POSITIVE DISPLACEMENT ROTARY		2013				PX002		VIKING DUPLEX OIL SYSTEMS	Sent 2013
	0	2540	502-2000		2540-PP-003	MILNE WASTE MANAGEMENT BUILDING, FUEL OIL PUMP (STANDBY)	PP	PUMP		PRELIMINARY	NEW	KENTARO IMAI					INTERMITTENT		25 PSI	NOT DEFINED		0.5 hp	No	DUPLEX FUEL OIL PUMPS, POSITIVE DISPLACEMENT ROTARY		2013				PX002		VIKING DUPLEX OIL SYSTEMS	Sent 2013
	0	2540	502-2000		2540-SQ-002	AEROSOL CAN, RECYCLING SYSTEM	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO			5		INTERMITTENT		CAPABLE OF 76, 114, AND				No			2013				PM104	SAYCPU03	AG - SAYCPU03	Sent 2013

		Identification											Technical																			Procurement			
													Design Data								Power			Supp. Information			Diagrams								
X	Equip Rev	Area	EWP	CWP	Tag No	Description	Equip Code	Equipment Type	Part Of	EngStatus	Const. Type	Package Engineer	Design Code	Dimension (mm) l x w x h	Dry Weight (Kg)	Material	Operating Mode	Equipment Size	Design Capacity	Drive Type	Design Load (kW)	Name Plate	Emerg Req	Remarks	Assembly on Delivery	Sealift	PFD No	PID No	Datasheet No	Enquiry No	Model Number	Manufacturer	Notes
	0	2540	502-2000		2540-SQ-003	DRUM CRUSHER,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO			650		INTERMITTENT		38000 LBS OF CRUSHIN			6.8 hp	No	CRUSHES 55 GAL DRUMS TO 6" HIGH; RESETS IN 25 SECONDS		2013				PM104	VESHDC 900IDC	AG - VESHDC900IDC	Sent 2013
	0	2540	502-2000		2540-TK-003	MILNE WASTE MANAGEMENT BUILDING, DIESEL FUEL TANK	TK	TANK		PRELIMINARY	NEW	KENTARO IMAI					CONTINUOUS		20000 L					DOUBLE WALLED HORIZONTAL ABOVE GRADE TANK		2013				PX002		DTE ULC601-07	Sent 2013
	0	2540	502-2000		2540-VP-001	WASTE INCINERATOR, VENDOR PACKAGE	VP	VENDOR PACKAGE		PRELIMINARY	NEW	MATTHEW BUYKX					-									2013	H349000-2540-05-030-0001			TX001			Sent 2013
	0	2610	502-2000		2610-PP-001	OIL WATER SEPARATOR, FEED PUMP	PP	PUMP		CERTIFIED FINAL	NEW	GRAHAM BURTON					CONTINUOUS						No			2013				PM005			Sent 2013
	0	2610	502-2000		2610-PP-002	OIL WATER SEPARATOR, FEED PUMP	PP	PUMP		CERTIFIED FINAL	NEW	GRAHAM BURTON					CONTINUOUS						No			2013				PM005			Sent 2013
	0	2613	502-2000		2613-FD-013	EXISTING DIESEL FUEL , DISPENSING MODULE	FD	FUEL DISPENSER		PRELIMINARY	NEW	FLOYD BUTTS					INTERMITTENT						No			2013				PM004			Sent 2013
	0	2613	502-2000		2613-FD-014	DIESEL FUEL , DISPENSING MODULE	FD	FUEL DISPENSER		PRELIMINARY	NEW	RUSI KAPADIA					INTERMITTENT						No			2013				PM004			Sent 2013
	0	2613	502-2000		2613-TK-001	ARCTIC DIESEL, TANK	TK	TANK		PRELIMINARY	NEW	FLOYD BUTTS		W: 27800 DI H: 15250			CONTINUOUS		12 ML							2013				PM004			Sent 2013
	0	2613	502-2000		2613-TK-002	ARCTIC DIESEL, TANK	TK	TANK		PRELIMINARY	NEW	FLOYD BUTTS		W: 27800 DI H: 15250			CONTINUOUS		12 ML							2013				PM004			Sent 2013
	0	2613	502-2000		2613-TK-003	ARCTIC DIESEL, TANK	TK	TANK		PRELIMINARY	NEW	FLOYD BUTTS		W: 27800 DI H: 15250			CONTINUOUS		12 ML							2013				PM004			Sent 2013
	0	2613	502-2000		2613-TK-004	ARCTIC DIESEL, TANK	TK	TANK		PRELIMINARY	NEW	FLOYD BUTTS		W: 27800 DI H: 15250			CONTINUOUS		12 ML							2013				PM004			Sent 2013
	0	2614	502-2000		2614-FD-011	JET-A1 FUEL, DISPENSING MODULE	FD	FUEL DISPENSER		PRELIMINARY	NEW	FLOYD BUTTS					INTERMITTENT						No			2013				PM004			Sent 2013
	0	2614	502-2000		2614-TK-007	JET-A1 , TANK	TK	TANK		PRELIMINARY	NEW	FLOYD BUTTS		W: 10250 DI H: 9140			CONTINUOUS		750 kL							2013				PM004			Sent 2013
	0	2614	502-2000		2614-TK-008	JET-A1 , TANK	TK	TANK		PRELIMINARY	NEW	FLOYD BUTTS		W: 10250 DI H: 9140			CONTINUOUS		750 kL							2013				PM004			Sent 2013
	0	2614	502-2000		2614-TK-009	JET-A1 , TANK	TK	TANK		PRELIMINARY	NEW	FLOYD BUTTS		W: 10250 DI H: 9140			CONTINUOUS		750 kL							2013				PM004			Sent 2013
	0	2720	502-2000		2720-PP-002	RAW WATER, DISTRIBUTION PUMP	PP	PUMP		PRELIMINARY	NEW	MATTHEW BUYKX					CONTINUOUS						No			2013	H349000-2720-05-030-0001			TX001			Sent 2013
	0	2720	502-2000		2720-PP-002	RAW WATER, DISTRIBUTION PUMP	PP	PUMP		PRELIMINARY	NEW	MATTHEW BUYKX					CONTINUOUS						No			2013	H349000-2720-05-030-0001			TX001			Sent 2013
	0	2720	502-2000		2720-PP-003	RAW WATER , DISTRIBUTION PUMP	PP	PUMP		PRELIMINARY	NEW	MATTHEW BUYKX					STANDBY						No			2013	H349000-2720-05-030-0001			TX001			Sent 2013
	0	2720	502-2000		2720-PP-004	DIESEL FIRE, WATER PUMP	PP	PUMP		PRELIMINARY	NEW	MATTHEW BUYKX					INTERMITTENT						No			2013	H349000-2720-05-030-0001			TX001			Sent 2013
	0	2720	502-2000		2720-PP-005	ELECTRIC FIRE, WATER PUMP	PP	PUMP		PRELIMINARY	NEW	MATTHEW BUYKX					STANDBY						No			2013	H349000-2720-05-030-0001			TX001			Sent 2013
	0	2720	502-2000		2720-PP-006	JOCKEY, PUMP	PP	PUMP		PRELIMINARY	NEW	MATTHEW BUYKX					STANDBY						No			2013	H349000-2720-05-030-0001			TX001			Sent 2013
	0	2720	502-2000		2720-PP-009	POTABLE WATER, DISCHARGE PUMP NO.1	PP	PUMP		PRELIMINARY	NEW	MATTHEW BUYKX					INTERMITTENT						No			2013	H349000-2720-05-0002			TX001			Sent 2013
	0	2720	502-2000		2720-PP-010	POTABLE WATER, DISCHARGE PUMP NO.2	PP	PUMP		PRELIMINARY	NEW	MATTHEW BUYKX					INTERMITTENT						No			2013	H349000-2720-05-0002			TX001			Sent 2013
	0	2720	502-2000		2720-PP-012	BACKWASH, SLURRY PUMP	PP	PUMP		PRELIMINARY	NEW	MATTHEW BUYKX					INTERMITTENT						No			2013	H349000-2720-05-030-0002			TX001			Sent 2013
	0	2720	502-2000		2720-PP-013	CLEAN, BACKWASH PUMP	PP	PUMP		PRELIMINARY	NEW	MATTHEW BUYKX					INTERMITTENT						No			2013	H349000-2720-05-030-0002			TX001			Sent 2013
	0	2720	502-2000		2720-PP-021	RAW WATER, UNLOADING PUMP	PP	PUMP		CERTIFIED FINAL	NEW	GRAHAM BURTON					CONTINUOUS						No	3" x 3"		2013				PM010		HAYWARD GORDON S-3	Sent 2013
	0	2720	502-2000		2720-PP-031	MILNE WATER BUILDING, FUEL OIL PUMP (DUTY)	PP	PUMP		PRELIMINARY	NEW	KENTARO IMAI					INTERMITTENT		25 PSI	NOT DEFINED		0.5 hp	No	DUPLEX FUEL OIL PUMPS, POSITIVE DISPLACEMENT ROTARY		2013				PX002		VIKING DUPLEX OIL SYSTEMS	Sent 2013
	0	2720	502-2000		2720-PP-032	MILNE WATER BUILDING, FUEL OIL PUMP (STANDBY)	PP	PUMP		PRELIMINARY	NEW	KENTARO IMAI					INTERMITTENT		25 PSI	NOT DEFINED		0.5 hp	No	DUPLEX FUEL OIL PUMPS, POSITIVE DISPLACEMENT ROTARY		2013				PX002		VIKING DUPLEX OIL SYSTEMS	Sent 2013
	0	2720	502-2000		2720-TK-001	RAW, WATER TANK	TK	TANK		PRELIMINARY	NEW	MATTHEW BUYKX					CONTINUOUS									2013	H349000-2720-05-030-0001			TX001			Sent 2013
	0	2720	502-2000		2720-TK-007	FIRE, WATER TANK	TK	TANK		PRELIMINARY	NEW	MATTHEW BUYKX					CONTINUOUS									2013	H349000-2720-05-030-0001			TX001			Sent 2013
	0	2720	502-2000		2720-TK-008	POTABLE WATER, STORAGE TANK	TK	TANK		PRELIMINARY	NEW	MATTHEW BUYKX					CONTINUOUS									2013	H349000-2720-05-030-0002			TX001			Sent 2013
	0	2720	502-2000		2720-TK-011	BACKWASH, SETTLING TANK	TK	TANK		PRELIMINARY	NEW	MATTHEW BUYKX					INTERMITTENT									2013	H349000-2720-05-0002			TX001			Sent 2013
	0	2720	502-2000		2720-TK-033	MILNE WATER BUILDING, DIESEL FUEL TANK	TK	TANK		PRELIMINARY	NEW	KENTARO IMAI					CONTINUOUS		10000 L					DOUBLE WALLED HORIZONTAL ABOVE GRADE TANK		2013				PX002		DTE ULC601-07	Sent 2013
	0	2720	502-2000		2720-VP-020	POTABLE WATER TREATMENT PLANT, VENDOR PACKAGE VENDOR PACKAGE	VP	VENDOR PACKAGE		PRELIMINARY	NEW	RUSI KAPADIA					-									2013				TX001			Sent 2013

		Identification											Technical																		Procurement			
													Design Data								Power			Supp. Information			Diagrams							
X	Equip Rev	Area	EWP	CWP	Tag No	Description	Equip Code	Equipment Type	Part Of	EngStatus	Const. Type	Package Engineer	Design Code	Dimension (mm) l x w x h	Dry Weight (Kg)	Material	Operating Mode	Equipment Size	Design Capacity	Drive Type	Design Load (kW)	Name Plate	Emerg Req	Remarks	Assembly on Delivery	Sealift	PFD No	PID No	Datasheet No	Enquiry No	Model Number	Manufacturer	Notes
	0	2731	502-2000		2731-PP-003	TREATED EFFLUENT, DISCHARGE PUMP NO.1	PP	PUMP		PRELIMINARY	NEW	RUSI KAPADIA					INTERMITTENT						No			2013				PM009			Sent 2013
	0	2731	502-2000		2731-PP-004	TREATED EFFLUENT, DISCHARGE PUMP NO.2	PP	PUMP		PRELIMINARY	NEW	RUSI KAPADIA					INTERMITTENT						No			2013				PM009			Sent 2013
	0	2731	502-2000		2731-SC-001	SCREEN,	SC	SCREEN		PRELIMINARY	NEW	RUSI KAPADIA					INTERMITTENT									2013				PM009			Sent 2013
	0	2731	502-2000		2731-TK-002	TREATED EFFLUENT, TANK	TK	TANK		PRELIMINARY	NEW	RUSI KAPADIA					INTERMITTENT									2013				PM009			Sent 2013
	0	2731	502-2000		2731-VP-005	SEWAGE TREATMENT PLANT, VENDOR PACKAGE	VP	VENDOR PACKAGE		PRELIMINARY	NEW	RUSI KAPADIA					-									2013				PM009			Sent 2013
	0	2732	502-2000		2732-PP-001	MILNE SEWAGE TRUCK BUILDING, FUEL OIL PUMP (DUTY)	PP	PUMP		PRELIMINARY	NEW	KENTARO IMAI					INTERMITTENT		25 PSI	NOT DEFINED		0.5 hp	No	DUPLEX FUEL OIL PUMPS, POSITIVE DISPLACEMENT ROTARY		2013				PX002		VIKING DUPLEX OIL SYSTEMS	Sent 2013
	0	2732	502-2000		2732-PP-002	MILNE SEWAGE TRUCK BUILDING, FUEL OIL PUMP (STANDBY)	PP	PUMP		PRELIMINARY	NEW	KENTARO IMAI					INTERMITTENT		25 PSI	NOT DEFINED		0.5 hp	No	DUPLEX FUEL OIL PUMPS, POSITIVE DISPLACEMENT ROTARY		2013				PX002		VIKING DUPLEX OIL SYSTEMS	Sent 2013
	0	2732	502-2000		2732-TK-003	MILNE SEWAGE TRUCK BUILDING, DIESEL FUEL TANK	TK	TANK		PRELIMINARY	NEW	KENTARO IMAI					CONTINUOUS		10000 L					DOUBLE WALLED HORIZONTAL ABOVE GRADE TANK		2013				PX002		DTE ULC601-07	Sent 2013
	0	4141	504-2200		4141-MO-005	MOBILE CRUSHER, FRONT-END LOADER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 10390 W: 3600 H: 4115	43400		INTERMITTENT		4.5 - 5.4 M3 BUCKET					HIGH LIFT SPEC. - TO BE DELIVERED BY JULY 5TH W/ STANDARD BUCKETS		2013	H349000-4380-05-030-0001			PM102	988H	CAT 988H	Sent 2013
	0	4141	504-2200		4141-MO-006	MOBILE CRUSHER, FRONT-END LOADER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 10390 W: 3600 H: 4115	43400		INTERMITTENT		4.5 - 5.4 M3 BUCKET					HIGH LIFT SPEC. - TO BE DELIVERED BY JULY 5TH W/ STANDARD BUCKETS		2013	H349000-4380-05-030-0001			PM102	988H	CAT 988H	Sent 2013
	0	4141	504-2200		4141-MO-007	MINE HAUL, TRUCK	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 10445 W: 6706 H: 5840	75200		INTERMITTENT		RATED PAYLOAD 90 TON					ETA JULY 15, 2013		2013	H349000-4380-05-030-0001			PM102	777G	CAT 777G	Sent 2013
	0	4141	504-2200		4141-MO-008	MINE HAUL, TRUCK	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 10445 W: 6706 H: 5840	75200		INTERMITTENT		RATED PAYLOAD 90 TON					ETA JULY 18, 2013		2013	H349000-4380-05-030-0001			PM102	777G	CAT 777G	Sent 2013
	0	4141	504-2200		4141-MO-009	MINE HAUL, TRUCK	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 10445 W: 6706 H: 5840	75200		INTERMITTENT		RATED PAYLOAD 90 TON					ETA JULY 12, 2013		2013	H349000-4380-05-030-0001			PM102	777G	CAT 777G	Sent 2013
	0	4141	504-2200		4141-MO-010	MINE HAUL, TRUCK	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 10445 W: 6706 H: 5840	75200		INTERMITTENT		RATED PAYLOAD 90 TON							2013	H349000-4380-05-030-0001			PM102	777G	CAT 777G	Sent 2013
	0	4141	504-2200		4141-MO-024	MINE SITE, LARGE EXCAVATOR	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 13470 W: 3500 H: 4782	85000		INTERMITTENT		530 HP, 5.4 M3 BUCKET					MASS HEX, IRON ORE BUCKET - ETA JULY 19, 2013		2013	H349000-4380-05-030-0001			PM102	390DL	CAT 390DL	Sent 2013
	0	4141	504-2200		4141-MO-025	PICKUP TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 6274 W: 2665 H: 2032	6350		INTERMITTENT		3300 KG PAYLOAD							2013				PM111	F350	FORD F350	Sent 2013
	0	4141	504-2200		4141-MO-026	PICKUP TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 6274 W: 2665 H: 2032	6350		INTERMITTENT		3300 KG PAYLOAD							2013				PM111	F350	FORD F350	Sent 2013
	0	4141	504-2200		4141-MO-027	PICKUP TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 6274 W: 2665 H: 2032	6350		INTERMITTENT		3300 KG PAYLOAD							2013				PM111	F350	FORD F350	Sent 2013
	0	4141	504-2200		4141-MO-028	PICKUP TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 6274 W: 2665 H: 2032	6350		INTERMITTENT		3300 KG PAYLOAD							2013				PM111	F350	FORD F350	Sent 2013
	0	4141	504-2200		4141-MO-029	PICKUP TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 6274 W: 2665 H: 2032	6350		INTERMITTENT		3300 KG PAYLOAD							2013				PM111	F350	FORD F350	Sent 2013
	0	4141	504-2200		4141-MO-030	SINGLE PASS, PRODUCTION DRILL	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT			56800		INTERMITTENT							ETA SEPT. 10TH		2013				PM100	MD6290	CAT MD6290	Sent 2013
	0	4141	504-2200		4141-MO-033	SECONDARY DRILL,	MO	MOBILE EQUIPMENT		PRELIMINARY	USED	GLACIER				E:	INTERMITTENT									2013				PM100		TAMROCK 800	Sent 2013
	0	4141	504-2200		4141-MO-035	DRILL DUST SUPPRESSION , WATER/METHANOL TRUCK	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON				E:	INTERMITTENT							NON-INSULATED		2013				PM130		KENWORTH T800H	Sent 2013
	0	4142	504-2200		4142-MO-001A	TOTE ROAD, ORE HAUL TRUCK - TRACTOR	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 10080 W: 3060 H: 3900	11400		INTERMITTENT		600 HP, 150T (2 75T)					6 WHEEL DRIVE, PLANETARY GEAR, 3" PIN		2013	H349000-4380-05-030-0001			PM103	6900 XD	WESTERN STAR 6900XD	Sent 2013
	0	4142	504-2200		4142-MO-001B	TOTE ROAD, ORE HAUL TRUCK - LEAD TRAILER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 10240 W: 3060 H: 4210	34500		INTERMITTENT		75 T					DOUBLE TRAIN SIDE DUMP.		2013	H349000-4380-05-030-0001			PM113	S4 (75 T)	SMITHCO S4 (75T)	Sent 2013
	0	4142	504-2200		4142-MO-001C	TOTE ROAD, ORE HAUL TRUCK - PUP TRAILER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 10240 W: 3060 H: 4210	34500		INTERMITTENT		75 T					DOUBLE TRAIN SIDE DUMP.		2013	H349000-4380-05-030-0001			PM113	S4 (75 T)	SMITHCO S4 (75T)	Sent 2013
	0	4142	504-2200		4142-MO-002A	TOTE ROAD, ORE HAUL TRUCK - TRACTOR	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 10080 W: 3060 H: 3900	11400		INTERMITTENT		600 HP, 150T (2 75T)					6 WHEEL DRIVE, PLANETARY GEAR, 3" PIN		2013	H349000-4380-05-030-0001			PM103	6900 XD	WESTERN STAR 6900XD	Sent 2013
	0	4142	504-2200		4142-MO-002B	TOTE ROAD, ORE HAUL TRUCK - LEAD TRAILER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 10240 W: 3060 H: 4210	34500		INTERMITTENT		75 T					DOUBLE TRAIN SIDE DUMP.		2013	H349000-4380-05-030-0001			PM113	S4 (75 T)	SMITHCO S4 (75T)	Sent 2013
	0	4142	504-2200		4142-MO-002C	TOTE ROAD, ORE HAUL TRUCK - PUP TRAILER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 10240 W: 3060 H: 4210	34500		INTERMITTENT		75 T					DOUBLE TRAIN SIDE DUMP.		2013	H349000-4380-05-030-0001			PM113	S4 (75 T)	SMITHCO S4 (75T)	Sent 2013
	0	4142	504-2200		4142-MO-003A	TOTE ROAD, ORE HAUL TRUCK - TRACTOR	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 10080 W: 3060 H: 3900	11400		INTERMITTENT		600 HP, 150T (2 75T)					6 WHEEL DRIVE, PLANETARY GEAR, 3" PIN		2013	H349000-4380-05-030-0001			PM103	6900 XD	WESTERN STAR 6900XD	Sent 2013
	0	4142	504-2200		4142-MO-003B	TOTE ROAD, ORE HAUL TRUCK - LEAD TRAILER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 10240 W: 3060 H: 4210	34500		INTERMITTENT		75 T					DOUBLE TRAIN SIDE DUMP.		2013	H349000-4380-05-030-0001			PM113	S4 (75 T)	SMITHCO S4 (75T)	Sent 2013
	0	4142	504-2200		4142-MO-003C	TOTE ROAD, ORE HAUL TRUCK - PUP TRAILER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 10240 W: 3060 H: 4210	34500		INTERMITTENT		75 T					DOUBLE TRAIN SIDE DUMP.		2013	H349000-4380-05-030-0001			PM113	S4 (75 T)	SMITHCO S4 (75T)	Sent 2013
	0	4142	504-2200		4142-MO-004A	TOTE ROAD, ORE HAUL TRUCK - TRACTOR	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 10080 W: 3060 H: 3900	11400		INTERMITTENT		600 HP, 150T (2 75T)					6 WHEEL DRIVE, PLANETARY GEAR, 3" PIN		2013	H349000-4380-05-030-0001			PM103	6900 XD	WESTERN STAR 6900XD	Sent 2013

		Identification											Technical																		Procurement			
													Design Data								Power			Supp. Information			Diagrams							
X	Equip Rev	Area	EWP	CWP	Tag No	Description	Equip Code	Equipment Type	Part Of	EngStatus	Const. Type	Package Engineer	Design Code	Dimension (mm) l x w x h	Dry Weight (Kg)	Material	Operating Mode	Equipment Size	Design Capacity	Drive Type	Design Load (kW)	Name Plate	Emerg Req	Remarks	Assembly on Delivery	Sealift	PFD No	PID No	Datasheet No	Enquiry No	Model Number	Manufacturer	Notes
	0	4142	504-2200		4142-MO-004B	TOTE ROAD, ORE HAUL TRUCK - LEAD TRAILER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 10240 W: 3060 H: 4210	34500		INTERMITTENT		75 T					DOUBLE TRAIN SIDE DUMP.		2013	H349000-4380-05-030-0001			PM113	S4 (75 T)	SMITHCO S4 (75T)	Sent 2013
	0	4142	504-2200		4142-MO-004C	TOTE ROAD, ORE HAUL TRUCK - PUP TRAILER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 10240 W: 3060 H: 4210	34500		INTERMITTENT		75 T					DOUBLE TRAIN SIDE DUMP.		2013	H349000-4380-05-030-0001			PM113	S4 (75 T)	SMITHCO S4 (75T)	Sent 2013
	0	4142	504-2200		4142-MO-005C	TOTE ROAD, ORE HAUL TRUCK - PUP TRAILER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 10240 W: 3060 H: 4210	34500		INTERMITTENT		75 T					DOUBLE TRAIN SIDE DUMP.		2013	H349000-4380-05-030-0001			PM113	S4 (75 T)	SMITHCO S4 (75T)	Sent 2013
	0	4142	504-2200		4142-MO-021	MINE SITE, TRACK DOZER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 6630 W: 4310 H: 3815	42700		INTERMITTENT		BLADE WIDTH 4310 MM					ETA JULY 18, 2013		2013				PM102	D9T	CAT D9T	Sent 2013
	0	4142	504-2200		4142-MO-022	MINE SITE, TRACK DOZER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 6630 W: 4310 H: 3815	78000		INTERMITTENT		BLADE WIDTH 4310 MM							2013				PM102	D9T	CAT D9T	Sent 2013
	0	4142	504-2200		4142-MO-024	GRADER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	TOROMONT		L: 9963 W: 3096 H: 3718	30400		INTERMITTENT		2.6 M MAX SHOULD					MADE IN 2002; SECONDARY STEER, RIPPER, HIGH CAB - NO WING - ETA JULY 12, 2013		2013				PM102	16H	CAT 16H	Sent 2013
	0	4142	504-2200		4142-MO-026	PRODUCTION, FRONT END LOADER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 16877 W: 6000 H: 7000	100000		INTERMITTENT		14 - 36 M3 BUCKET					ETA JULY 25, 2013 - IRON ORE BUCKET DELIVERY IN SEPT.		2013	H349000-4380-05-030-0001			PM102	992K	CAT 992K	Sent 2013
	0	4142	504-2200		4142-MO-027	PRODUCTION, LARGE EXCAVATOR	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	TOROMONT		L: 13470 W: 3500 H: 4782	85000		INTERMITTENT		530 HP, 5.4 M3 BUCKET					MASS HEX, IRON ORE BUCKET		2013	H349000-4380-05-030-0001			PM102	390DL	CAT 390DL	Sent 2013
	0	4142	504-2200		4142-MO-028	NIGHT WORK AREA, LIGHT PLANTS	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4623 W: 2007 H: 9000	925		INTERMITTENT		4000W			10.8 hp	No	4 X 1000W LIGHTS		2013				PM106	AL4	TEREX AL4	Sent 2013
	0	4142	504-2200		4142-MO-029	NIGHT WORK AREA, LIGHT PLANTS	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4623 W: 2007 H: 9000	925		INTERMITTENT		4000W			10.8 hp	No	4 X 1000W LIGHTS		2013				PM106	AL4	TEREX AL4	Sent 2013
	0	4142	504-2200		4142-MO-030	NIGHT WORK AREA, LIGHT PLANTS	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4623 W: 2007 H: 9000	925		INTERMITTENT		4000W			10.8 hp	No	4 X 1000W LIGHTS		2013				PM106	AL4	TEREX AL4	Sent 2013
	0	4142	504-2200		4142-MO-031	NIGHT WORK AREA, LIGHT PLANTS	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4623 W: 2007 H: 9000	925		INTERMITTENT		4000W			10.8 hp	No	4 X 1000W LIGHTS		2013				PM106	AL4	TEREX AL4	Sent 2013
	0	4142	504-2200		4142-MO-032	NIGHT WORK AREA, LIGHT PLANTS	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4623 W: 2007 H: 9000	925		INTERMITTENT		4000W			10.8 hp	No	4 X 1000W LIGHTS		2013				PM106	AL4	TEREX AL4	Sent 2013
	0	4142	504-2200		4142-MO-033	NIGHT WORK AREA, LIGHT PLANTS	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4623 W: 2007 H: 9000	925		INTERMITTENT		4000W			10.8 hp	No	4 X 1000W LIGHTS		2013				PM106	AL4	TEREX AL4	Sent 2013
	0	4142	504-2200		4142-MO-034	NIGHT WORK AREA, LIGHT PLANTS	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4623 W: 2007 H: 9000	925		INTERMITTENT		4000W			10.8 hp	No	4 X 1000W LIGHTS		2013				PM106	AL4	TEREX AL4	Sent 2013
	0	4142	504-2200		4142-MO-035	NIGHT WORK AREA, LIGHT PLANTS	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4623 W: 2007 H: 9000	925		INTERMITTENT		4000W			10.8 hp	No	4 X 1000W LIGHTS		2013				PM106	AL4	TEREX AL4	Sent 2013
	0	4142	504-2200		4142-MO-036	NIGHT WORK AREA, LIGHT PLANTS	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4623 W: 2007 H: 9000	925		INTERMITTENT		4000W			10.8 hp	No	4 X 1000W LIGHTS		2013				PM106	AL4	TEREX AL4	Sent 2013
	0	4142	504-2200		4142-MO-037	NIGHT WORK AREA, LIGHT PLANTS	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4623 W: 2007 H: 9000	925		INTERMITTENT		4000W			10.8 hp	No	4 X 1000W LIGHTS		2013				PM106	AL4	TEREX AL4	Sent 2013
	0	4143	504-2200		4143-MO-001	MAINTENANCE, SERVICE TRUCK	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON				E:	INTERMITTENT		7000 LB TELESCOPING					VMAC CRANE		2013				PM130	F550	FORD F550	Sent 2013
	0	4143	504-2200		4143-MO-003	MAINTENANCE, FUEL/LUBE TRUCK	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON				E:	INTERMITTENT		1000 GAL FUEL TANK; 7					1000 GAL FUEL TANK; 7 PRODUCT TANKS; HEATED PRESSURIZED HOUSE		2013	H349000-4540-05-030-0001			PM130	T800	KENWORTH T800	Sent 2013
	0	4143	504-2200		4143-MO-004	LOWBED, TRACTOR	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT							W/ WET KIT; HEADACHE RACK; FENDERS		2013				PM135	367	PETERBILT 367	Sent 2013
	0	4143	504-2200		4143-MO-005	LOWBED, TRACTOR	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT							W/ WET KIT; HEADACHE RACK; FENDERS		2013				PM135	367	PETERBILT 367	Sent 2013
	0	4143	504-2200		4143-MO-006	TIRE HANDLER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT			5900		INTERMITTENT		20000 LBS					TO FIT ON CAT 988H LOADER - ESTIMATED DELIVERY AUG 25, 2013		2013				PM102	T20P-S	WBM T20P-S	Sent 2013
	0	4143	504-2200		4143-MO-008	FREIGHT HANDLING, FRONT END LOADER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 6050 W: 2390 H: 3150	9600		INTERMITTENT		1.3 M3 BUCKET					QUICK COUPLERS/BUCKETS/FORKS		2013				PM102	930K	CAT 930K	Sent 2013
	0	4143	504-2200		4143-MO-010	CLEANUP/SNOW REMOVAL, ALL TERRAIN FRONT END LOADER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 3277 W: 1676 H: 3810	3175		INTERMITTENT		885 KG OPERATING LOAD					C/W QUICK COUPLER, BUCKET AND FORKS		2013				PM102	247B	CAT 247B	Sent 2013
	0	4143	504-2200		4143-MO-011	CLEANUP/SNOW REMOVAL, ALL TERRAIN FRONT END LOADER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 3277 W: 1676 H: 3810	3175		INTERMITTENT		885 KG OPERATING LOAD					C/W QUICK COUPLER, BUCKET AND FORKS		2013				PM102	247B	CAT 247B	Sent 2013
	0	4143	504-2200		4143-MO-013	CRUSHER MAINTENANCE, KNUCKLE CRANE	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON					INTERMITTENT		9000 KG					TANDEM AXLE; STEEL DECK; PALFINGER PK32080 KNUCKLE CRANE		2013				PM116	T800	KENWORTH T800	Sent 2013
	0	4143	504-2200		4143-MO-015	MAINTENANCE, CRANE	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON		L: 15240 W: 7920 H: 3970	60500		INTERMITTENT		130 T					HYDRAULICS, ROUGH TERRAIN		2013				PM101	RT130	TEREX RT130	Sent 2013
	0	4143	504-2200		4143-MO-016	WAREHOUSE, FORK LIFT	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	TOROMONT		L: 2790 W: 1290 H: 2500	4763		INTERMITTENT		3 T					DIESEL ENGINE W/ SCRUBBER		2013				PM106	P7000-D	CAT P7000-D	Sent 2013
	0	4143	504-2200		4143-MO-017	MAINTENANCE, FORK LIFT	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	TOROMONT		L: 4240 W: 2390 H: 2845	14320		INTERMITTENT		10 T					DIESEL ENGINE W/ SCRUBBER, 96" FORKS		2013				PM106	P20000	CAT P20000	Sent 2013
	0	4143	504-2200		4143-MO-018	FREIGHT, TELEHANDLER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	TOROMONT		L: 6100 W: 2570 H: 2570	15800	E:NUNA	INTERMITTENT		4500 KG CAPACITY							2013				PM106	G10-55A	CAT TH514	Sent 2013
	0	4143	504-2200		4143-MO-019	RUN-OFF CONTROL, DEWATERING PUMP	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT					INTERMITTENT		6"					DIESEL W/ TRAILER AND SPILL KIT		2013				PM106	T6A60S-C4.4T	GORMAN RUPP T6A60S-C4.4T	Sent 2013
	0	4143	504-2200		4143-MO-020	RUN-OFF CONTROL, DEWATERING PUMP	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT					INTERMITTENT		6"					DIESEL W/ TRAILER AND SPILL KIT		2013				PM106	T6A60S-C4.4T	GORMAN RUPP T6A60S-C4.4T	Sent 2013

HATCH

Mechanical Equipment List

H-349000 Baffinland Iron Mines Corporation

iPas ER

		Identification											Technical																Procurement			
													Design Data								Power			Supp. Information			Diagrams						
X	Equip Rev	Area	EWP	CWP	Tag No	Description	Equip Code	Equipment Type	Part Of	EngStatus	Const. Type	Package Engineer	Design Code	Dimension (mm) l x w x h	Dry Weight (Kg)	Material	Operating Mode	Equipment Size	Design Capacity	Drive Type	Design Load (kW)	Name Plate	Emerg Req	Remarks	Assembly on Delivery	Sealift	PFD No	PID No	Datasheet No	Enquiry No	Model Number	Manufacturer	Notes
	0	4143	504-2200		4143-MO-021	MAINTENANCE, HOT BOX	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	SANJAY DAHIYA		L: 4877 W: 2235 H: 1829	1850		INTERMITTENT		1100000 BTU/H							2013				PM104	CUBE 1100	ECOBLAZE CUBE 1100	Sent 2013
	0	4143	504-2200		4143-MO-022	MAINTENANCE, HOT BOX	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	SANJAY DAHIYA		L: 4877 W: 2235 H: 1829	1850		INTERMITTENT		1100000 BTU/H							2013				PM104	CUBE 1100	ECOBLAZE CUBE 1100	Sent 2013
	0	4143	504-2200		4143-MO-023	MAINTENANCE, HOT BOX	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	SANJAY DAHIYA		L: 4877 W: 2235 H: 1829	1850		INTERMITTENT		1100000 BTU/H							2013				PM104	CUBE 1100	ECOBLAZE CUBE 1100	Sent 2013
	0	4143	504-2200		4143-MO-024	YARD MAINTENANCE, PLOW/SAND TRUCK	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT							TENCO CHASSIS MOUNT SPREADER; ONE WAY PLOW; RIGHT HAND SIDE DISCHARGE		2013				PM131	7600	INTERNATIONAL 7600	Sent 2013
	0	4143	507-3200		4143-MO-025	GRADER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 9994 W: 3077 H: 3524	24400	E:	INTERMITTENT		2.31 M MAX REACH					2012		2013				PM102	16M	CAT 16M	Sent 2013
	0	4143	504-2200		4143-MO-026	YARD/TOTE ROAD MAINTENANCE, TRACK DOZER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4064 W: 2464 H: 2439	21600		INTERMITTENT									2013				PM102	D6T XW	CAT D6T XW	Sent 2013
	0	4143	504-2200		4143-MO-027	MAINTENANCE, TRAILER WELDER	MO	MOBILE EQUIPMENT		PRELIMINARY	NEW	GRAHAM BURTON					INTERMITTENT									2013				PM104			Sent 2013
	0	4143	504-2200		4143-MO-029	MAN LIFT,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON		L: 2500 W: 1170 H: 1970	6010		INTERMITTENT		51' WORKING					DIESEL		2013				PM140		JLG450AJ	Sent 2013
	0	4143	504-2200		4143-MO-030	SCISSOR LIFT,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON		L: 3500 W: 2200 H: 2900	4917		INTERMITTENT		47' WORKING					DIESEL		2013				PM140	SJ8841	SKYJACK 8841	Sent 2013
	0	4143	504-2200		4143-MO-031	ORE HAUL TRUCK, RECOVERY TOW TRUCK	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON					INTERMITTENT		55T					WITH JERR DAN 110/530 WRECKER		2013				PM133	T800	KENWORTH T800	Sent 2013
	0	4143	504-2200		4143-MO-032	TOTE ROAD CULVERT MAINTENANCE, STEAM TRUCK	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		(2) 600 GAL TANKS							2013				PM101	T/A STEAM TRUCK	PETERBILT T/A STEAM TRUCK	Sent 2013
	0	4143	504-2200		4143-MO-033	PICKUP TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 6274 W: 2665 H: 2032	6350		INTERMITTENT		3300 KG PAYLOAD							2013				PM111	F350	FORD F350	Sent 2013
	0	4143	504-2200		4143-MO-034	PICKUP TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 6274 W: 2665 H: 2032	6350		INTERMITTENT		3300 KG PAYLOAD							2013				PM111	F350	FORD F350	Sent 2013
	0	4143	504-2200		4143-MO-035	PICKUP TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 6274 W: 2665 H: 2032	6350		INTERMITTENT		3300 KG PAYLOAD							2013				PM111	F350	FORD F350	Sent 2013
	0	4143	504-2200		4143-MO-038	FORKLIFT,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 3050 W: 1090 H: 2050	3500		INTERMITTENT		1800 KG					ELECTRIC		2013				PM106	FB20PNT	MITSUBISHI FB20PNT	Sent 2013
	0	4143	504-2200		4143-MO-039	MINI CRAWLER CRANE,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON					INTERMITTENT		6.75T					DIESEL/ELECTRIC		2013				PM116	URW706	SPYDER CRANE URW706	Sent 2013
	0	4143	504-2200		4143-MO-040	SPILL RESPONSE TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON					INTERMITTENT							ROLL UP DOORS ON THE SIDE; 10 DOORS; 12 COMPARTMENTS		2013				PM130		STERLING M8500	Sent 2013
	0	4144	504-2200		4144-MO-001	WATER TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		4000 GAL					TANDEM AXLE; INSULATED STAINLESS STEEL TANK; 3" PUMP		2013				PM101	348 AUTO S/S 100	PETERBILT 348 AUTO S/S 100 BBL	Sent 2013
	0	4144	504-2200		4144-MO-002	CONTAINER, HANDLER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON		L: 11684 W: 3454 H: 2146	72000		INTERMITTENT		50 TON CAPACITY					CAPABLE OF 20' & 40' ISO CONTAINERS		2013				PM101	DRF 450-6555	KALMAR DRF 450-6555	Sent 2013
	0	4144	504-2200		4144-MO-003	PASSENGER, TRANSFER BUS	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 12192 W: 2440 H: 2900	14000		INTERMITTENT		48 PASSENGER; 2							2013				PM101	BBCV DIESEL 3507-A	BLUE BIRD BBCV DIESEL 3507A	Sent 2013
	0	4144	504-2200		4144-MO-004	PASSENGER, TRANSFER BUS	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 12192 W: 2440 H: 2900	14000		INTERMITTENT		48 PASSENGER; 2							2013				PM101	BBCV DIESEL 3507-A	BLUE BIRD BBCV DIESEL 3507A	Sent 2013
	0	4144	504-2200		4144-MO-005	WORKER, TRANSFER MINI BUS	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 7470 W: 2440 H: 1930	7080		INTERMITTENT		24 PASSENGER; 2							2013				PM101	BBCV DIESEL 1910 A	BLUE BIRD BBCV DIESEL 1910 A	Sent 2013
	0	4144	504-2200		4144-MO-006	SEWAGE HOLDING TANK, SKID MOUNTED VACUUM UNIT	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		12 M3 CONTAINER					12 M3 CONTAINER CAPACITY; SKID MOUNTED SYSTEM		2013	H349000-4731-05-030-			PM132		TEXLA	Sent 2013
	0	4144	504-2200		4144-MO-007	FREIGHT DELIVERY, HIBOY TRAILER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 14630 W: 2438			INTERMITTENT		60 T							2013				PM143			Sent 2013
	0	4144	504-2200		4144-MO-008	DIESEL FUEL, TRAILER TRACTOR	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		305 HP ENGINE					B-TRAIN CAPABLE CLASS 8 TRACTOR FOR WATER AND FUEL TRAILER SETS		2013				PM101	4900FA	WESTERN STAR 4900FA	Sent 2013
	0	4144	504-2200		4144-MO-009	JET-A1 FUEL , DELIVERY TRUCK	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 8052 W: 2960 H: 3589			INTERMITTENT		4400 GAL					TANDEM AXLE; 40" LOW ROOF SLEEPER; TC406 COMPLIANT TANK		2013				PM101	GU813	MACK/INNOCAR GU813	Sent 2013
	0	4144	504-2200		4144-MO-010	DIESEL FUEL, DELIVERY TRAILER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 24384 W: 2590 H: 4013			INTERMITTENT		62 kL (33k L LEAD +					TC406 COMPLIANT; 5 COMPARTMENTS		2013				PM101	TC406 SUPER B-TRAIN	TREMCAR TC406 SUPER B-TRAIN	Sent 2013
	0	4144	504-2200		4144-MO-012	GARBAGE TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		20-30 M3 GARBAGE BIN					60,000# ROLL ON-ROLL OFF HYDRAULIC TYPE		2013	H349000-4540-05-030-0001			PM132		PETERBILT 365	Sent 2013
	0	4144	504-2200		4144-MO-013	GARBAGE BIN - LARGE,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		30 M3							2013				PM132			Sent 2013
	0	4144	504-2200		4144-MO-014	GARBAGE BIN - LARGE,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		30 M3							2013				PM132			Sent 2013
	0	4144	504-2200		4144-MO-024	ARTICULATED, WATER/SAND TRUCK	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	TOROMONT					INTERMITTENT		8000 GAL WATER TANK					WITH WATER CANNON AND SPRAY BARS; CYLINDERS AND TAILGATE - IN FABRICATION PROCESS - ETA		2013				PM136	740	CAT 740	Sent 2013
	0	4144			4144-MO-025	DIESEL FUEL, DELIVERY TRAILER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON					INTERMITTENT		56000L					QUAD AXLE; ALUMINUM; 5 COMPARTMENTS		2013				PM101		ADVANCE	Sent 2013
	0	4144	504-2200		4144-MO-026	SEWAGE HOLDING TANK, SKID MOUNTED VACUUM UNIT	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		12 M3 CONTAINER					12 M3 CONTAINER CAPACITY; SKID MOUNTED SYSTEM		2013	H349000-4731-05-030-			PM132		TEXLA	Sent 2013

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Mechanical Equipment List

H-349000 Baffinland Iron Mines Corporation

iPas ER

		Identification											Technical																		Procurement			
													Design Data								Power			Supp. Information			Diagrams							
X	Equip Rev	Area	EWP	CWP	Tag No	Description	Equip Code	Equipment Type	Part Of	EngStatus	Const. Type	Package Engineer	Design Code	Dimension (mm) l x w x h	Dry Weight (Kg)	Material	Operating Mode	Equipment Size	Design Capacity	Drive Type	Design Load (kW)	Name Plate	Emerg Req	Remarks	Assembly on Delivery	Sealift	PFD No	PID No	Datasheet No	Enquiry No	Model Number	Manufacturer	Notes
	0	4144	504-2200		4144-MO-030	HEATED/REFRIGERATED, SEA CONTAINER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 6096 W: 2440 H: 2440			CONTINUOUS		20 FOOT SEA CAN					20 FT SEA CONTAINER; INSULATED; CAN PROVIDE HEAT TO 12 C		2013				PM107			Sent 2013
	0	4144	504-2200		4144-MO-031	HEATED/REFRIGERATED, SEA CONTAINER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 6096 W: 2440 H: 2440			CONTINUOUS		20 FOOT SEA CAN					20 FT SEA CONTAINER; INSULATED; CAN PROVIDE HEAT TO 12 C		2013				PM107			Sent 2013
	0	4144	504-2200		4144-MO-032	REFRIGERATED, SEA CONTAINER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 6096 W: 2440 H: 2440			CONTINUOUS		20 FOOT SEA CAN					20 FT CONTAINER		2013				PM107			Sent 2013
	0	4144	504-2200		4144-MO-033	REFRIGERATED, SEA CONTAINER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 6096 W: 2440 H: 2440			CONTINUOUS		20 FOOT SEA CAN					20 FT CONTAINER		2013				PM107			Sent 2013
	0	4144	504-2200		4144-MO-034	REFRIGERATED, SEA CONTAINER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 6096 W: 2440 H: 2440			CONTINUOUS		20 FOOT SEA CAN					20 FT CONTAINER		2013				PM107			Sent 2013
	0	4144	504-2200		4144-MO-035	REFRIGERATED, SEA CONTAINER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 6096 W: 2440 H: 2440			CONTINUOUS		20 FOOT SEA CAN					20 FT CONTAINER		2013				PM107			Sent 2013
	0	4144	504-2200		4144-MO-036	REFRIGERATED, SEA CONTAINER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 6096 W: 2440 H: 2440			CONTINUOUS		20 FOOT SEA CAN					20 FT CONTAINER		2013				PM107			Sent 2013
	0	4144	504-2200		4144-MO-037	REFRIGERATED, SEA CONTAINER	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 6096 W: 2440 H: 2440			CONTINUOUS		20 FOOT SEA CAN					20 FT CONTAINER		2013				PM107			Sent 2013
	0	4144			4144-MO-040	WILDLIFE DETERGENT, GARBAGE BIN	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		6 M3					HYDRAULIC ASSISTEDS, SELF LOCKING LIDS		2013				PM132			Sent 2013
	0	4144			4144-MO-041	WILDLIFE DETERGENT, GARBAGE BIN	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		6 M3					HYDRAULIC ASSISTEDS, SELF LOCKING LIDS		2013				PM132			Sent 2013
	0	4144			4144-MO-042	WILDLIFE DETERGENT, GARBAGE BIN	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		6 M3					HYDRAULIC ASSISTEDS, SELF LOCKING LIDS		2013				PM132			Sent 2013
	0	4144			4144-MO-043	WILDLIFE DETERGENT, GARBAGE BIN	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		6 M3					HYDRAULIC ASSISTEDS, SELF LOCKING LIDS		2013				PM132			Sent 2013
	0	4144			4144-MO-044	WILDLIFE DETERGENT, GARBAGE BIN	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		6 M3					HYDRAULIC ASSISTEDS, SELF LOCKING LIDS		2013				PM132			Sent 2013
	0	4144			4144-MO-045	WILDLIFE DETERGENT, GARBAGE BIN	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		6 M3					HYDRAULIC ASSISTEDS, SELF LOCKING LIDS		2013				PM132			Sent 2013
	0	4381	504-2200		4381-CR-001	PRIMARY CRUSHING PLANT, LINE 1	CR	CRUSHER		FINAL	NEW	SANJAY DAHIYA		L: 3470 W: 4100 H: 3440	38000		CONTINUOUS		600 TPH			293 hp	No	JAW CRUSHER		2013	H349000-4380-05-030-0001			PM001	C125	METSO C125	Sent 2013
	0	4381	504-2200		4381-CR-003	SECONDARY CRUSHING PLANT, LINE 1	CR	CRUSHER		FINAL	NEW	SANJAY DAHIYA		L: 2370 W: 2370 H: 1600	23000		CONTINUOUS		600 TPH			490 hp	No	CONE CRUSHER		2013	H349000-4380-05-030-0001			PM001	HP 400	METSO HP400	Sent 2013
	0	4381	504-2200		4381-CR-005	TERTIARY CRUSHING PLANT, LINE 1	CR	CRUSHER		FINAL	NEW	SANJAY DAHIYA		L: 2370 W: 2370 H: 1600	23000		CONTINUOUS		600 TPH			490 hp	No	CONE CRUSHER		2013	H349000-4380-05-030-0001			PM001	HP 400	METSO HP400	Sent 2013
	0	4381	504-2200		4381-CR-006	PRIMARY CRUSHING PLANT, LINE 2	CR	CRUSHER		FINAL	NEW	SANJAY DAHIYA		L: 3470 W: 4100 H: 3440	38000		CONTINUOUS		600 TPH			293 hp	No	JAW CRUSHER		2013	H349000-4380-05-030-0001			PM001	C125	METSO C125	Sent 2013
	0	4381	504-2200		4381-CR-008	SECONDARY CRUSHING PLANT, LINE 2	CR	CRUSHER		FINAL	NEW	SANJAY DAHIYA		L: 2370 W: 2370 H: 1600	23000		CONTINUOUS		600 TPH			490 hp	No	CONE CRUSHER		2013	H349000-4380-05-030-0001			PM001	HP 400	METSO HP400	Sent 2013
	0	4381	504-2200		4381-CR-010	TERTIARY CRUSHING PLANT, LINE 2	CR	CRUSHER		FINAL	NEW	SANJAY DAHIYA		L: 2370 W: 2370 H: 1600	23000		CONTINUOUS		600 TPH			490 hp	No	CONE CRUSHER		2013	H349000-4380-05-030-0001			PM001	HP 400	METSO HP400	Sent 2013
	0	4381	504-2200		4381-CV-011	LINK CONVEYOR,	CV	CONVEYING	4381-CR-001	FINAL	NEW	SANJAY DAHIYA					CONTINUOUS						No			2013				PM001		MASABA MINING EQUIPMENT	Sent 2013
	0	4381	504-2200		4381-CV-012	LINK CONVEYOR,	CV	CONVEYING	4381-CR-001	FINAL	NEW	SANJAY DAHIYA					CONTINUOUS						No			2013				PM001		MASABA MINING EQUIPMENT	Sent 2013
	0	4381	504-2200		4381-CV-013	LINK CONVEYOR,	CV	CONVEYING	4381-CR-003	FINAL	NEW	SANJAY DAHIYA					CONTINUOUS						No			2013				PM001		MASABA MINING EQUIPMENT	Sent 2013
	0	4381	504-2200		4381-CV-014	LINK CONVEYOR,	CV	CONVEYING	4381-CR-005	FINAL	NEW	SANJAY DAHIYA					CONTINUOUS						No			2013				PM001		MASABA MINING EQUIPMENT	Sent 2013
	0	4381	504-2200		4381-CV-015	LINK CONVEYOR,	CV	CONVEYING	4381-CR-006	FINAL	NEW	SANJAY DAHIYA					CONTINUOUS						No			2013				PM001		MASABA MINING EQUIPMENT	Sent 2013
	0	4381	504-2200		4381-CV-016	LINK CONVEYOR,	CV	CONVEYING	4381-CR-006	FINAL	NEW	SANJAY DAHIYA					CONTINUOUS						No			2013				PM001		MASABA MINING EQUIPMENT	Sent 2013
	0	4381	504-2200		4381-CV-017	LINK CONVEYOR,	CV	CONVEYING	4381-CR-008	FINAL	NEW	SANJAY DAHIYA					CONTINUOUS						No			2013				PM001		MASABA MINING EQUIPMENT	Sent 2013
	0	4381	504-2200		4381-CV-018	LINK CONVEYOR,	CV	CONVEYING	4381-CR-010	FINAL	NEW	SANJAY DAHIYA					CONTINUOUS						No			2013				PM001		MASABA MINING EQUIPMENT	Sent 2013
	0	4381	504-2200		4381-SC-002	PRIMARY SCREEN, LINE 1	SC	SCREEN		FINAL	NEW	SANJAY DAHIYA		L: 2700 W: 6900	9000		CONTINUOUS		600 TPH			121.5 hp	No			2013	H349000-4380-05-030-0001			PM001	FS 302	METSO FS302	Sent 2013
	0	4381	504-2200		4381-SC-004	SECONDARY SCREEN, LINE 1	SC	SCREEN		FINAL	NEW	SANJAY DAHIYA		L: 3000 W: 6900	14500		CONTINUOUS		600 TPH			175 hp	No			2013	H349000-4380-05-030-0001			PM001	FS 353	METSO FS 353	Sent 2013
	0	4381	504-2200		4381-SC-007	PRIMARY SCREEN, LINE 2	SC	SCREEN		FINAL	NEW	SANJAY DAHIYA		L: 2700 W: 6900	9000		CONTINUOUS		600 TPH			121.5 hp	No			2013	H349000-4380-05-030-0001			PM001	FS 302	METSO FS302	Sent 2013
	0	4381	504-2200		4381-SC-009	SECONDARY SCREEN, LINE 2	SC	SCREEN		FINAL	NEW	SANJAY DAHIYA		L: 3000 W: 6900	14500		CONTINUOUS		600 TPH			175 hp	No			2013	H349000-4380-05-030-0001			PM001	FS 353	METSO FS 353	Sent 2013
	0	4385	504-2200		4385-PP-001	CRUSHER STOCKPILE RUNOFF , POND DISCHARGE PUMP	PP	PUMP		CERTIFIED FINAL	NEW	GRAHAM BURTON					CONTINUOUS						No			2013	H349000-4380-05-030-0001			PM010		LOBE PRO SM68	Sent 2013

HATCH

Mechanical Equipment List

H-349000 Baffinland Iron Mines Corporation

iPas ER

		Identification											Technical																	Procurement			
													Design Data								Power			Supp. Information			Diagrams						
X	Equip Rev	Area	EWP	CWP	Tag No	Description	Equip Code	Equipment Type	Part Of	EngStatus	Const. Type	Package Engineer	Design Code	Dimension (mm) l x w x h	Dry Weight (Kg)	Material	Operating Mode	Equipment Size	Design Capacity	Drive Type	Design Load (kW)	Name Plate	Emerg Req	Remarks	Assembly on Delivery	Sealift	PFD No	PID No	Datasheet No	Enquiry No	Model Number	Manufacturer	Notes
	0	4385	504-2200		4385-PP-002	CRUSHER STOCKPILE RUNOFF , POND DISCHARGE PUMP	PP	PUMP		CERTIFIED FINAL	NEW	GRAHAM BURTON					STANDBY						No			2013	H349000-4380-05-030-0001			PM010		LOBE PRO SM68	Sent 2013
	0	4431	504-2200		4431-PP-002	AERODROME OFFICE, RAW WATER PUMP	PP	PUMP		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 483 W: 275 H: 267			INTERMITTENT		65 PSI	NOT DEFINED		0.5 hp	No	1/2 HP ELECTRIC PUMP		2013	H349000-4720-05-030-0003			PX001		SIMER JET PUMPS 2205C	Sent 2013
	0	4431	504-2200		4431-TK-001	AERODROME OFFICE, RAW WATER TANK	TK	TANK		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 1613 W: 737 H: 1676			CONTINUOUS		400 GAL TANK					FREESTANDING WATER TANK		2013	H349000-4720-05-030-0003			PX001		NORWESCO	Sent 2013
	0	4431	504-2200		4431-TK-004	AERODROME OFFICE, SEWAGE COLLECTION TANK	TK	TANK		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 3791 W: 1829 H: 610			INTERMITTENT		1000 GAL					RECTANGULAR TANK		2013	H349000-4720-05-030-0003			PX001		LAGRANGE MECHANICAL SERVICES	Sent 2013
	0	4433	504-2200		4433-AE-001	SECURITY X-RAY, MACHINE	AE	AERODROME EQUIPMENT		PRELIMINARY	NEW	KENTARO IMAI		L: 2282 W: 1030 H: 1467			INTERMITTENT						No			2013				PM008	622XR		Sent 2013
	0	4433	504-2200		4433-AE-015	AIRCRAFT, GROUND POWER UNIT	AE	AERODROME EQUIPMENT		PRELIMINARY	NEW	KENTARO IMAI					INTERMITTENT		90 KVA WITH 28.5 VDC							2013				PM008			Sent 2013
	0	4433	504-2200		4433-AE-023	AIRCRAFT, PASSENGER STAIRS	AE	AERODROME EQUIPMENT		PRELIMINARY	NEW	KENTARO IMAI		L: 9906 W: 2565 H: 3048			INTERMITTENT						No			2013				PM008			Sent 2013
	0	4434	504-2200		4434-MO-002	AIRPORT MAINTENANCE, DE-ICING TRUCK	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON					INTERMITTENT		1800 GAL					47 FT NOZZLE REACH HEIGHT; TYPE I AND TYPE II DE-ICE FLUID; 3 MILLION BTU (3) HEATER DESIGN		2013				PM101	SUPERIOR	FORD SUPERIOR	Sent 2013
	0	4510	504-2200		4510-PP-001	RAW SEWAGE, LIFT STATION	PP	PUMP		PRELIMINARY	NEW	RUSI KAPADIA					INTERMITTENT						No			2013	H349000-4720-05-030-0002			PM009			Sent 2013
	0	4513	504-2200		4513-MO-001	AMBULANCE,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON		L: 6680 W: 2438 H: 2024	6350		INTERMITTENT							WHEELED COACH TYPE I, 4X4; TURBO DIESEL		2013				PM101	F450	FORD F450	Sent 2013
	0	4513	504-2200		4513-MO-002	FIRE TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON		L: 10922 W: 2921 H: 3607	39000 GVWR		INTERMITTENT		3000 GAL WATER TANK					420 GAL FOAM TANK; 450 LB DRY CHEMICAL TANK; ARFF WITH SNOZZLE		2013				PM101	TI3000	OSHKOSH TI3000	Sent 2013
	0	4513	504-2200		4513-MO-003	SNOW RESCUE VEHICLE,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON		L: 6900 W: 1870 H: 2400	6580		INTERMITTENT							17 PASSENGER		2013				PM101	BV206	HAGGLUND BV206	Sent 2013
	0	4513	504-2200		4513-PP-006	EMERGENCY RESPONSE OFFICE, RAW WATER PUMP	PP	PUMP		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 483 W: 275 H: 267			INTERMITTENT		65 PSI	NOT DEFINED		0.5 hp	No	1/2 HP ELECTRIC PUMP		2013	H349000-4720-05-030-0003			PX001		SIMER JET PUMPS 2205C	Sent 2013
	0	4513	504-2200		4513-PP-021	MINE EMERGENCY RESPONSE GARAGE, FUEL OIL PUMP (PUMP)	PP	PUMP		PRELIMINARY	NEW	KENTARO IMAI					INTERMITTENT		25 PSI	NOT DEFINED		0.5 hp	No	DUPLEX FUEL OIL PUMPS, POSITIVE DISPLACEMENT ROTARY		2013				PX002		VIKING DUPLEX OIL SYSTEMS	Sent 2013
	0	4513	504-2200		4513-PP-022	MINE EMERGENCY RESPONSE GARAGE, FUEL OIL PUMP (STANDBY)	PP	PUMP		PRELIMINARY	NEW	KENTARO IMAI					INTERMITTENT		25 PSI	NOT DEFINED		0.5 hp	No	DUPLEX FUEL OIL PUMPS, POSITIVE DISPLACEMENT ROTARY		2013				PX002		VIKING DUPLEX OIL SYSTEMS	Sent 2013
	0	4513	504-2200		4513-SQ-010	DRY CHEMICAL, REFILL STATION	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO					INTERMITTENT						No	DRY POWDER CHEMICAL HANDLING SYSTEM		2013				PM104		TYCO FIRE PROTECTION	Sent 2013
	0	4513	504-2200		4513-TK-004	EMERGENCY RESPONSE OFFICE, SEWAGE COLLECTION TANK	TK	TANK		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 3791 W: 1829 H: 610			INTERMITTENT		1000 GAL					RECTANGULAR TANK		2013	H349000-4720-05-030-0003			PX001		LAGRANGE MECHANICAL SERVICES	Sent 2013
	0	4513	504-2200		4513-TK-005	EMERGENCY RESPONSE OFFICE, RAW WATER TANK	TK	TANK		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 1613 W: 737 H: 1676			CONTINUOUS		400 GAL TANK					FREESTANDING WATER TANK		2013	H349000-4720-05-030-0003			PX001		NORWESCO	Sent 2013
	0	4513	504-2200		4513-TK-023	MINE EMERGENCY RESPONSE GARAGE, DIESEL FUEL TANK	TK	TANK		PRELIMINARY	NEW	KENTARO IMAI					CONTINUOUS		10000 L					DOUBLE WALLED HORIZONTAL ABOVE GRADE TANK		2013				PX002		DTE ULC601-07	Sent 2013
	0	4521	504-2200		4521-PP-003	WELDING SHOP, FUEL OIL PUMP (DUTY)	PP	PUMP		PRELIMINARY	NEW	KENTARO IMAI					INTERMITTENT		25 PSI	NOT DEFINED		0.5 hp	No	DUPLEX FUEL OIL PUMPS, POSITIVE DISPLACEMENT ROTARY		2013				PX002		VIKING DUPLEX OIL SYSTEMS	Sent 2013
	0	4521	504-2200		4521-PP-004	WELDING SHOP, FUEL OIL PUMP (STANDBY)	PP	PUMP		PRELIMINARY	NEW	KENTARO IMAI					INTERMITTENT		25 PSI	NOT DEFINED		0.5 hp	No	DUPLEX FUEL OIL PUMPS, POSITIVE DISPLACEMENT ROTARY		2013				PX002		VIKING DUPLEX OIL SYSTEMS	Sent 2013
	0	4521	504-2200		4521-PP-051	WORKSHOP OFFICE WASHCAR, RAW WATER PUMP	PP	PUMP		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 483 W: 275 H: 267			INTERMITTENT		65 PSI	NOT DEFINED		0.5 hp	No	1/2 HP ELECTRIC PUMP		2013	H349000-4720-05-030-0003			PX001		SIMER JET PUMPS 2205C	Sent 2013
	0	4521	504-2200		4521-TK-005	WELDING SHOP, DIESEL FUEL TANK	TK	TANK		PRELIMINARY	NEW	KENTARO IMAI					CONTINUOUS		20000 L					DOUBLE WALLED HORIZONTAL ABOVE GRADE TANK		2013				PX002		DTE ULC601-07	Sent 2013
	0	4521	504-2200		4521-TK-050	WORKSHOP OFFICE WASHCAR, RAW WATER TANK	TK	TANK		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 1803 W: 1245 H: 1346			CONTINUOUS		525 GAL TANK					HORIZONTAL TANK WITH >48 HOURS SUPPLY		2013	H349000-4720-05-030-0003			PX001		PLASTIC-MART 866-310-2556	Sent 2013
	0	4521	504-2200		4521-TK-053	WORKSHOP OFFICE WASHCAR, SEWAGE COLLECTION TANK	TK	TANK		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 3791 W: 1829 H: 610			INTERMITTENT		1000 GAL					RECTANGULAR TANK		2013	H349000-4720-05-030-0003			PX001		LAGRANGE MECHANICAL SERVICES	Sent 2013
	0	4522	504-2200		4522-SQ-001	INDUSTRIAL FREEZER,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO		L: 1525 W: 715 H: 1250	290		INTERMITTENT		20 CU.FT.			0.35 hp	No	RANGE -45C TO -80C. 20 FT3		2013				PM104	80-12	ONTARIO OVENS 80-12	Sent 2013
	0	4522	504-2200		4522-SQ-002	KIDNEY LOOP,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO			50		INTERMITTENT		10 GPM FLOW			1.62 hp	No	OPERATING TEMP -40 DEG C TO 66 DEG C; HYDRAULIC FILTER CART 10 MFP		2013				PM104	DYE10MFP240SA10QBV	AG - DYE10MFP240SA10QBV	Sent 2013
	0	4522	504-2200		4522-SQ-003	LARGE SHOP PRESS,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO		L: 1295 W: 1727 H: 3125	1970		INTERMITTENT		150 TON				No			2013				PM104	OTC1866	AG - OTC1866	Sent 2013
	0	4522	504-2200		4522-SQ-004	LATHE,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO		W: 44 H: 64			INTERMITTENT		20 INCH	NOT DEFINED		10.13 hp	No	THREE LENGTHS: 94" (4730 LBS) / 114" (5590 LBS) / 134" (6800 LBS)		2013				PM104		SUMMIT MACHINE TOOL	Sent 2013
	0	4522	504-2200		4522-SQ-006	LINE BORING MACHINE,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO		L: 1830 W: 330 H: 280	205		INTERMITTENT		BORING DIA. 12" (OPT.			10.1 hp	No	BORING DIAMETERS 1.5" - 2"		2013				PM104	BB5000	CLIMAX BB5000	Sent 2013
	0	4522	504-2200		4522-SQ-008	IRON WORKER,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO		L: 1525 W: 915 H: 1985	2300		INTERMITTENT		84 TON PUNCH STATION			3.4 hp	No	HYDRAULIC SW-84 / SHIPS IN THREE (3) SEPERATE PACKAGES		2013				PM104	001-99777	BAILEIGH INDUSTRIAL 001-99777	Sent 2013
	0	4522	504-2200		4522-SQ-009	HEAVY TRUCK RAMP,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO		L: 13360 W: 4980 H: 3990			INTERMITTENT		27 TON LIFTING CAPACIT			4.1 hp	No	COMPLETE WITH ROLLING JACK AND ROLLING DRAIN PAN		2013				PM104	ROTARY 60000HDL	ROTARY 60000HDL	Sent 2013
	0	4522	504-2200		4522-SQ-010	LIGHT TRUCK RAMP,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO		H: 6990			INTERMITTENT		8 TON LIFTING CAPACIT			4.1 hp	No	COMPLETE WITH ROLLING JACK AND ROLLING DRAIN PAN		2013				PM104	ROTARY SM18LO-X	ROTARY SM18LO-X	Sent 2013

		Identification											Technical																		Procurement			
													Design Data								Power			Supp. Information			Diagrams							
X	Equip Rev	Area	EWP	CWP	Tag No	Description	Equip Code	Equipment Type	Part Of	EngStatus	Const. Type	Package Engineer	Design Code	Dimension (mm) l x w x h	Dry Weight (Kg)	Material	Operating Mode	Equipment Size	Design Capacity	Drive Type	Design Load (kW)	Name Plate	Emerg Req	Remarks	Assembly on Delivery	Sealift	PFD No	PID No	Datasheet No	Enquiry No	Model Number	Manufacturer	Notes
	0	4522	504-2200		4522-SQ-012	AIR FILTER CLEANER,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO		L: 1830 W: 1830 H: 2650			INTERMITTENT		55 GAL DUST DRUM			6.8 hp	No	REQUIRES COMPRESSED AIR AT 90 PSI		2013				PM104		DIVERSI-TECH	Sent 2013
	0	4522	504-2200		4522-SQ-018	EVAC TANK,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO		L: 1118 W: 508 H: 1093	200		INTERMITTENT		60 GAL TANK				No	SAGE OIL VAC FLUID RECOVERY SYSTEM - 120 GALLONS - Waste oil Storage		2013				PM104	30070V	NORTHERN TOOL 30070V	Sent 2013
	0	4522	504-2200		4522-SQ-019	EVAC TANK,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO		L: 1118 W: 508 H: 1093	200		INTERMITTENT		60 GAL TANK				No	SAGE OIL VAC FLUID RECOVERY SYSTEM - 120 GALLONS - Waste oil Storage		2013				PM104	30070V	NORTHERN TOOL 30070V	Sent 2013
	0	4522	504-2200		4522-SQ-021	DRILL PRESS,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO		L: 508 W: 356 H: 1778	120		INTERMITTENT		CHUCK CAPACITY 15.9			2.7 hp	No	LENGTH AND WIDTH ARE TABLE DIMENSIONS; 22" WITH LASER		2013				PM104	DPE18-900L	AG - DPE18-900	Sent 2013
	0	4522	504-2200		4522-SQ-023	OIL FILTER PRESS,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO		L: 1524 W: 914 H: 2640	680		INTERMITTENT		32 TON CRUSHING FORCE			3.4 hp	No	57 SECOND CYCLE TIME		2013				PM104	P300	OBERG P300	Sent 2013
	0	4522	504-2200		4522-SQ-026	WELDING MACHINE,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO		L: 965 W: 584 H: 762	192		INTERMITTENT					54 hp	No	452 MIGRUNNER DIMENSION PACKAGE - 500 AMP		2013				PM104	MLW951-277	AG - MLW951-277	Sent 2013
	0	4522	504-2200		4522-SQ-027	WELDING MACHINE,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO		L: 965 W: 584 H: 762	192		INTERMITTENT					54 hp	No	452 MIGRUNNER DIMENSION PACKAGE - 500 AMP		2013				PM104	MLW951-277	AG - MLW951-277	Sent 2013
	0	4522	504-2200		4522-SQ-028	PORTABLE WELDING , FUME EXTRACTOR	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO			73		INTERMITTENT		35 M2 FILTER AREA			1 hp	No			2013				PM104	NED12634345	AG - NED12634345	Sent 2013
	0	4522	504-2200		4522-SQ-029	PORTABLE WELDING , SPARK PROTECTOR	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO					INTERMITTENT						No			2013				PM104	NED12375241	AG - NED12375241	Sent 2013
	0	4522	504-2200		4522-SQ-031	SWEEPER,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO					INTERMITTENT					4.7 hp	No	ELECTRIC - AREA 20000 FT2		2013				PM104		AG	Sent 2013
	0	4522	504-2200		4522-SQ-036	TIRE CHANGER,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO					INTERMITTENT					2.03 hp	No	RIM DIAMATERS: EXTERNAL 9"-30", INTERNAL DIAMETER 11"-32"		2013				PM104	APX80A	COATS APX80A	Sent 2013
	0	4522	504-2200		4522-SQ-041	BULK FLUID DISTRIBUTION SYSTEM,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO					INTERMITTENT						No	OILS, LUBRICANT, COOLANT, GREASE,WATER (WASHDOWN)		2013				PM104		AG	Sent 2013
	0	4522	504-2200		4522-SQ-042	EVAC TANK,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO		L: 1118 W: 508 H: 1093	200		INTERMITTENT		60 GAL TANK				No	SAGE OIL VAC FLUID RECOVERY SYSTEM - 120 GALLONS - Waste oil Storage		2013				PM104	30070V	NORTHERN TOOL 30070V	Sent 2013
	0	4522	504-2200		4522-SQ-043	EVAC TANK,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO		L: 1118 W: 508 H: 1093	200		INTERMITTENT		60 GAL TANK				No	SAGE OIL VAC FLUID RECOVERY SYSTEM - 120 GALLONS - Waste oil Storage		2013				PM104	30070V	NORTHERN TOOL 30070V	Sent 2013
	0	4522	504-2200		4522-SQ-044	WELDING MACHINE,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO		L: 965 W: 584 H: 762	192		INTERMITTENT					54 hp	No	452 MIGRUNNER DIMENSION PACKAGE - 500 AMP		2013				PM104	MLW951-277	AG - MLW951-277	Sent 2013
	0	4522	504-2200		4522-SQ-046	METAL BREAK FLOOR,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO			580		INTERMITTENT						No			2013				PM104	GGS13W877	AG - GGS13W877	Sent 2013
	0	4522	504-2200		4522-SQ-047	PARTS WASHER,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO		L: 1070 W: 560 H: 406	84		INTERMITTENT		40 GAL TANK CAPACIT			2.03 hp	No	DIMENSIONS ARE FOR THE TANK ITSELF; SOLV DELUXE HANDIKLEEN		2013				PM104	GRYPL422A	AG - GRYPL422A	Sent 2013
	0	4522	504-2200		4522-SQ-048	PARTS WASHER,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO		L: 1070 W: 560 H: 406	84		INTERMITTENT		40 GAL TANK CAPACIT			2.03 hp	No	DIMENSIONS ARE FOR THE TANK ITSELF; SOLV DELUXE HANDIKLEEN		2013				PM104	GRYPL422A	AG - GRYPL422A	Sent 2013
	0	4522	504-2200		4522-SQ-049	PARTS WASHER,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO		L: 1070 W: 560 H: 406	84		INTERMITTENT		40 GAL TANK CAPACIT			2.03 hp	No	DIMENSIONS ARE FOR THE TANK ITSELF; SOLV DELUXE HANDIKLEEN		2013				PM104	GRYPL422A	AG - GRYPL422A	Sent 2013
	0	4522	504-2200		4522-SQ-050	PARTS WASHER,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO		L: 1070 W: 560 H: 406	84		INTERMITTENT		40 GAL TANK CAPACIT			2.03 hp	No	DIMENSIONS ARE FOR THE TANK ITSELF; SOLV DELUXE HANDIKLEEN		2013				PM104	GRYPL422A	AG - GRYPL422A	Sent 2013
	0	4522	504-2200		4522-SQ-051	TIRE SPREADER,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO					INTERMITTENT		MAX TIRE: 18R-22.5"			2.7 hp	No	AIR POWERED WITH LYING BASE. 220V MAX. 18R/22.5 INCH		2013				PM104	TR-S825	ZHUHAI TEAMROC TR-S825	Sent 2013
	0	4523	504-2200		4523-VP-001	TRUCK WASH FACILITY, VENDOR PACKAGE	VP	VENDOR PACKAGE		CERTIFIED FINAL	NEW	SANJAY DAHIYA					INTERMITTENT					7 hp	No			2013	H349000-4720-05-030-0004			PM114			Sent 2013
	1	4530	504-2200		4530-GE-001	GENERATOR,	GE	GENERATOR		CERTIFIED FINAL	NEW	BRIAN PERKINS					CONTINUOUS			DIESEL POW		1840 hp	No			2013				PE001			Sent 2013
	1	4530	504-2200		4530-GE-002	GENERATOR,	GE	GENERATOR		CERTIFIED FINAL	NEW	BRIAN PERKINS					CONTINUOUS			DIESEL POW		1840 hp	No			2013				PE001			Sent 2013
	1	4530	504-2200		4530-GE-003	GENERATOR,	GE	GENERATOR		CERTIFIED FINAL	NEW	BRIAN PERKINS					CONTINUOUS			DIESEL POW		1840 hp	No			2013				PE001			Sent 2013
	1	4530	504-2200		4530-GE-004	GENERATOR,	GE	GENERATOR		CERTIFIED FINAL	NEW	BRIAN PERKINS					CONTINUOUS			DIESEL POW		1840 hp	No			2013				PE001			Sent 2013
	0	4540	504-2200		4540-PP-005	MINE WASTE MANAGEMENT BUILDING, FUEL OIL PUMP (DUTY)	PP	PUMP		PRELIMINARY	NEW	KENTARO IMAI					INTERMITTENT		25 PSI	NOT DEFINED		0.5 hp	No	DUPLEX FUEL OIL PUMPS, POSITIVE DISPLACEMENT ROTARY		2013				PX002		VIKING DUPLEX OIL SYSTEMS	Sent 2013
	0	4540	504-2200		4540-PP-006	MINE WASTE MANAGEMENT BUILDING, FUEL OIL PUMP (STANDBY)	PP	PUMP		PRELIMINARY	NEW	KENTARO IMAI					INTERMITTENT		25 PSI	NOT DEFINED		0.5 hp	No	DUPLEX FUEL OIL PUMPS, POSITIVE DISPLACEMENT ROTARY		2013				PX002		VIKING DUPLEX OIL SYSTEMS	Sent 2013
	0	4540	504-2200		4540-SQ-002	AEROSOL CAN, RECYCLING SYSTEM	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO			5		INTERMITTENT		CAPABLE OF 76, 114, AND				No			2013				PM104	SAYCPU03	AG - SAYCPU03	Sent 2013
	0	4540	504-2200		4540-SQ-003	DRUM CRUSHER,	SQ	SHOP / MAINTENANCE EQUIPMENT		PRELIMINARY	NEW	BRADEN LOMANTO			650		INTERMITTENT		38000 LBS OF CRUSHIN			6.8 hp	No	CRUSHES 55 GAL DRUMS TO 6" HIGH; RESETS IN 25 SECONDS		2013				PM104	VESHDC900IDC	AG - VESHDC900IDC	Sent 2013
	0	4540	504-2200		4540-TK-007	MILNE WASTE MANAGEMENT BUILDING, DIESEL FUEL TANK	TK	TANK		PRELIMINARY	NEW	KENTARO IMAI					CONTINUOUS		20000 L					DOUBLE WALLED HORIZONTAL ABOVE GRADE TANK		2013				PX002		DTE ULC601-07	Sent 2013
	0	4540	504-2200		4540-VP-001	WASTE INCINERATOR, VENDOR PACKAGE	VP	VENDOR PACKAGE		PRELIMINARY	NEW	MATTHEW BUYKX					-									2013	H349000-4540-05-030-0001			TX001			Sent 2013
	0	4613	504-2200		4613-FD-013	DIESEL FUEL, DISPENSING MODULE	FD	FUEL DISPENSER		PRELIMINARY	NEW	FLOYD BUTTS					INTERMITTENT						No			2013				PM004			Sent 2013

		Identification											Technical																		Procurement			
													Design Data								Power			Supp. Information			Diagrams							
X	Equip Rev	Area	EWP	CWP	Tag No	Description	Equip Code	Equipment Type	Part Of	EngStatus	Const. Type	Package Engineer	Design Code	Dimension (mm) l x w x h	Dry Weight (Kg)	Material	Operating Mode	Equipment Size	Design Capacity	Drive Type	Design Load (kW)	Name Plate	Emerg Req	Remarks	Assembly on Delivery	Sealift	PFD No	PID No	Datasheet No	Enquiry No	Model Number	Manufacturer	Notes
	0	4613	504-2200		4613-TK-009	ARCTIC DIESEL, TANK	TK	TANK		PRELIMINARY	NEW	FLOYD BUTTS		W: 8350 DIA H: 9140			CONTINUOUS		500 kL							2013				PM004			Sent 2013
	0	4613	504-2200		4613-TK-010	ARCTIC DIESEL, TANK	TK	TANK		PRELIMINARY	NEW	FLOYD BUTTS		W: 8350 DIA H: 9140			CONTINUOUS		500 kL							2013				PM004			Sent 2013
	0	4613	504-2200		4613-TK-011	ARCTIC DIESEL, TANK	TK	TANK		PRELIMINARY	NEW	FLOYD BUTTS		W: 8350 DIA H: 9140			CONTINUOUS		500 kL							2013				PM004			Sent 2013
	0	4613	504-2200		4613-TK-012	ARCTIC DIESEL, TANK	TK	TANK		PRELIMINARY	NEW	FLOYD BUTTS		W: 8350 DIA H: 9140			CONTINUOUS		500 kL							2013				PM004			Sent 2013
	0	4720	504-2200		4720-PP-002	RAW WATER, DISTRIBUTION PUMP	PP	PUMP		PRELIMINARY	NEW	KENTARO IMAI					INTERMITTENT			NOT DEFINED		35 hp	No			2013	H349000-4720-05-030-0001			TX001			Sent 2013
	0	4720	504-2200		4720-PP-003	RAW WATER, DISTRIBUTION PUMP	PP	PUMP		PRELIMINARY	NEW	KENTARO IMAI					INTERMITTENT			NOT DEFINED		35 hp	No			2013	H349000-4720-05-030-0001			TX001			Sent 2013
	0	4720	504-2200		4720-PP-004	DIESEL FIRE, WATER PUMP	PP	PUMP		PRELIMINARY	NEW	MATTHEW BUYKX					INTERMITTENT						No			2013	H349000-4720-05-030-0001			TX001			Sent 2013
	0	4720	504-2200		4720-PP-005	ELECTRIC FIRE, WATER PUMP	PP	PUMP		PRELIMINARY	NEW	MATTHEW BUYKX					STANDBY						No			2013	H349000-4720-05-030-0001			TX001			Sent 2013
	0	4720	504-2200		4720-PP-006	JOCKEY, PUMP	PP	PUMP		PRELIMINARY	NEW	MATTHEW BUYKX					STANDBY						No			2013	H349000-4720-05-030-0001			TX001			Sent 2013
	0	4720	504-2200		4720-PP-008	RAW WATER, FEED PUMP	PP	PUMP		PRELIMINARY	NEW	KENTARO IMAI					INTERMITTENT		10 HP	NOT DEFINED		10 hp	No			2013	H349000-4720-05-030-0001			PM003			Sent 2013
	0	4720	504-2200		4720-PP-010	POTABLE WATER, DISCHARGE PUMP NO.1	PP	PUMP		PRELIMINARY	NEW	MATTHEW BUYKX					INTERMITTENT						No			2013	H349000-4720-05-030-0002			TX001			Sent 2013
	0	4720	504-2200		4720-PP-011	POTABLE WATER, DISCHARGE PUMP NO.2	PP	PUMP		PRELIMINARY	NEW	MATTHEW BUYKX					INTERMITTENT						No			2013	H349000-4720-05-030-0002			TX001			Sent 2013
	0	4720	504-2200		4720-PP-013	BACKWASH, SLURRY PUMP	PP	PUMP		PRELIMINARY	NEW	MATTHEW BUYKX					INTERMITTENT						No			2013	H349000-4720-05-030-0002			TX001			Sent 2013
	0	4720	504-2200		4720-PP-014	CLEAN BACKWASH, PUMP	PP	PUMP		PRELIMINARY	NEW	MATTHEW BUYKX					INTERMITTENT						No			2013	H349000-4720-05-030-0002			TX001			Sent 2013
	0	4720	504-2200		4720-PP-015	RAW WATER, FEED PUMP	PP	PUMP		PRELIMINARY	NEW	KENTARO IMAI					INTERMITTENT		10 HP	NOT DEFINED		10 hp	No	VERTICAL TURBINE PUMP		2013				PM003			Sent 2013
	0	4720	504-2200		4720-PP-031	MINE WATER BUILDING, FUEL OIL PUMP (DUTY)	PP	PUMP		PRELIMINARY	NEW	KENTARO IMAI					INTERMITTENT		25 PSI	NOT DEFINED		0.5 hp	No	DUPLEX FUEL OIL PUMPS, POSITIVE DISPLACEMENT ROTARY		2013				PX002		VIKING DUPLEX OIL SYSTEMS	Sent 2013
	0	4720	504-2200		4720-PP-032	MINE WATER BUILDING, FUEL OIL PUMP (STANDBY)	PP	PUMP		PRELIMINARY	NEW	KENTARO IMAI					INTERMITTENT		25 PSI	NOT DEFINED		0.5 hp	No	DUPLEX FUEL OIL PUMPS, POSITIVE DISPLACEMENT ROTARY		2013				PX002		VIKING DUPLEX OIL SYSTEMS	Sent 2013
	0	4720	504-2200		4720-TK-001	RAW, WATER TANK	TK	TANK		PRELIMINARY	NEW	MATTHEW BUYKX					CONTINUOUS									2013	H349000-4720-05-030-0001			TX001			Sent 2013
	0	4720	504-2200		4720-TK-007	FIRE, WATER TANK	TK	TANK		PRELIMINARY	NEW	MATTHEW BUYKX					CONTINUOUS									2013	H349000-4720-05-030-0001			TX001			Sent 2013
	0	4720	504-2200		4720-TK-009	POTABLE WATER, STORAGE TANK	TK	TANK		PRELIMINARY	NEW	MATTHEW BUYKX					INTERMITTENT									2013	H349000-4720-05-030-0002			TX001			Sent 2013
	0	4720	504-2200		4720-TK-012	BACKWASH , SETTLING TANK	TK	TANK		PRELIMINARY	NEW	MATTHEW BUYKX					INTERMITTENT									2013	H349000-4720-05-030-0002			TX001			Sent 2013
	0	4720	504-2200		4720-TK-033	MINE WATER BUILDING, DIESEL FUEL TANK	TK	TANK		PRELIMINARY	NEW	KENTARO IMAI					CONTINUOUS		10000 L					DOUBLE WALLED HORIZONTAL ABOVE GRADE TANK		2013				PX002		DTE ULC601-07	Sent 2013
	0	4720	504-2200		4720-VP-020	POTABLE WATER TREATMENT PLANT, VENDOR PACKAGE	VP	VENDOR PACKAGE		PRELIMINARY	NEW	RUSI KAPADIA					-									2013				TX001			Sent 2013
	0	4731	504-2200		4731-PP-003	TREATED EFFLUENT, DISCHARGE PUMP NO.1	PP	PUMP		PRELIMINARY	NEW	RUSI KAPADIA					INTERMITTENT						No			2013				PM009			Sent 2013
	0	4731	504-2200		4731-PP-004	TREATED EFFLUENT, DISCHARGE PUMP NO.2	PP	PUMP		PRELIMINARY	NEW	RUSI KAPADIA					INTERMITTENT						No			2013				PM009			Sent 2013
	0	4731	504-2200		4731-SC-001	SCREEN,	SC	SCREEN		PRELIMINARY	NEW	RUSI KAPADIA					INTERMITTENT									2013				PM009			Sent 2013
	0	4731	504-2200		4731-TK-002	TREATED, EFFLUENT TANK	TK	TANK		PRELIMINARY	NEW	RUSI KAPADIA					INTERMITTENT									2013				PM009			Sent 2013
	0	4731	504-2200		4731-VP-005	SEWAGE TREATMENT PLANT, VENDOR PACKAGE	VP	VENDOR PACKAGE		PRELIMINARY	NEW	RUSI KAPADIA					-									2013	H349000-4731-05-030-			PM009			Sent 2013
	0	4732	504-2200		4732-PP-001	MINE SEWAGE TRUCK BUILDING, FUEL OIL PUMP (DUTY)	PP	PUMP		PRELIMINARY	NEW	KENTARO IMAI					INTERMITTENT		25 PSI	NOT DEFINED		0.5 hp	No	DUPLEX FUEL OIL PUMPS, POSITIVE DISPLACEMENT ROTARY		2013				PX002		VIKING DUPLEX OIL SYSTEMS	Sent 2013
	0	4732	504-2200		4732-PP-002	MINE SEWAGE TRUCK BUILDING, FUEL OIL PUMP (STANDBY)	PP	PUMP		PRELIMINARY	NEW	KENTARO IMAI					INTERMITTENT		25 PSI	NOT DEFINED		0.5 hp	No	DUPLEX FUEL OIL PUMPS, POSITIVE DISPLACEMENT ROTARY		2013				PX002		VIKING DUPLEX OIL SYSTEMS	Sent 2013
	0	4732	504-2200		4732-TK-003	MINE SEWAGE TRUCK BUILDING, DIESEL FUEL TANK	TK	TANK		PRELIMINARY	NEW	KENTARO IMAI					CONTINUOUS		10000 L					DOUBLE WALLED HORIZONTAL ABOVE GRADE TANK		2013				PX002		DTE ULC601-07	Sent 2013
	0	4733	504-2200		4733-VM-001	TREATED EFFLUENT POND, SLUICE GATE	VM	BULK MATERIAL VALVES		PRELIMINARY	NEW	BRADEN LOMANTO					INTERMITTENT									2013				BP005	154 CW		Sent 2013
	0	4733	504-2200		4733-VM-002	TREATED EFFLUENT POND, SLUICE GATE SPARE	VM	BULK MATERIAL VALVES		PRELIMINARY	NEW	BRADEN LOMANTO					INTERMITTENT									2013				BP005			Sent 2013

		Identification											Technical																	Procurement			
													Design Data								Power			Supp. Information			Diagrams						
X	Equip Rev	Area	EWP	CWP	Tag No	Description	Equip Code	Equipment Type	Part Of	EngStatus	Const. Type	Package Engineer	Design Code	Dimension (mm) l x w x h	Dry Weight (Kg)	Material	Operating Mode	Equipment Size	Design Capacity	Drive Type	Design Load (kW)	Name Plate	Emerg Req	Remarks	Assembly on Delivery	Sealift	PFD No	PID No	Datasheet No	Enquiry No	Model Number	Manufacturer	Notes
	0	7231	507-3200		7231-PP-003	AERODROME OFFICE, RAW WATER PUMP	PP	PUMP		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 483 W: 275 H: 267			INTERMITTENT		65 PSI	NOT DEFINED		0.5 hp	No	1/2 HP ELECTRIC PUMP		2013				PX001		SIMER JET PUMPS 2205C	Sent 2013
	0	7231	507-3200		7231-TK-001	AERODROME OFFICE, SEWAGE COLLECTION TANK	TK	TANK		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 3791 W: 1829 H: 610			INTERMITTENT		1000 GAL					RECTANGULAR TANK		2013				PX001		LAGRANGE MECHANICAL SERVICES	Sent 2013
	0	7231	507-3200		7231-TK-002	AERODROME OFFICE, RAW WATER TANK	TK	TANK		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 1613 W: 737 H: 1676			CONTINUOUS		400 GAL TANK					FREESTANDING WATER TANK		2013				PX001		NORWESCO	Sent 2013
	0	7232	507-3200		7232-PP-003	BATCH PLANT OFFICE-LUNCHROOM-WC, RAW WATER PUMP	PP	PUMP		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 483 W: 275 H: 267			INTERMITTENT		65 PSI	NOT DEFINED		0.5 hp	No	1/2 HP ELECTRIC PUMP		2013				PX001		SIMER JET PUMPS 2205C	Sent 2013
	0	7232	507-3200		7232-PP-006	SITE SERVICES WASHCAR #1, RAW WATER PUMP	PP	PUMP		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 483 W: 275 H: 267			INTERMITTENT		65 PSI	NOT DEFINED		0.5 hp	No	1/2 HP ELECTRIC PUMP		2013				PX001		SIMER JET PUMPS 2205C	Sent 2013
	0	7232	507-3200		7232-PP-009	SITE SERVICES WASHCAR #2, RAW WATER PUMP	PP	PUMP		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 483 W: 275 H: 267			INTERMITTENT		65 PSI	NOT DEFINED		0.5 hp	No	1/2 HP ELECTRIC PUMP		2013				PX001		SIMER JET PUMPS 2205C	Sent 2013
	0	7232	507-3200		7232-TK-001	BATCH PLANT OFFICE-LUNCHROOM-WC, SEWAGE COLLECTION TANK	TK	TANK		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 3791 W: 1829 H: 610			INTERMITTENT		1000 GAL					RECTANGULAR TANK		2013				PX001		LAGRANGE MECHANICAL SERVICES	Sent 2013
	0	7232	507-3200		7232-TK-002	BATCH PLANT OFFICE-LUNCHROOM-WC, RAW WATER TANK	TK	TANK		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 1613 W: 737 H: 1676			CONTINUOUS		400 GAL TANK					HORIZONTAL TANK WITH >48 HOURS SUPPLY		2013				PX001		PLASTIC-MART 866-310-2556	Sent 2013
	0	7232	507-3200		7232-TK-004	SITE SERVICES WASHCAR #1, SEWAGE COLLECTION TANK	TK	TANK		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 3791 W: 1829 H: 610			INTERMITTENT		1000 GAL					RECTANGULAR TANK		2013				PX001		LAGRANGE MECHANICAL SERVICES	Sent 2013
	0	7232	507-3200		7232-TK-005	SITE SERVICES WASHCAR #1, RAW WATER TANK	TK	TANK		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 1803 W: 1245 H: 1346			CONTINUOUS		525 GAL TANK					HORIZONTAL TANK WITH >48 HOURS SUPPLY		2013				PX001		PLASTIC-MART 866-310-2556	Sent 2013
	0	7232	507-3200		7232-TK-007	SITE SERVICES WASHCAR #2, SEWAGE COLLECTION TANK	TK	TANK		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 3791 W: 1829 H: 610			INTERMITTENT		1000 GAL					RECTANGULAR TANK		2013				PX001		LAGRANGE MECHANICAL SERVICES	Sent 2013
	0	7232	507-3200		7232-TK-008	SITE SERVICES WASHCAR #2, RAW WATER TANK	TK	TANK		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 1803 W: 1245 H: 1346			CONTINUOUS		525 GAL TANK					HORIZONTAL TANK WITH >48 HOURS SUPPLY		2013				PX001		PLASTIC-MART 866-310-2556	Sent 2013
	0	7243	507-3200		7243-MO-001	ARTICULATED HAUL TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	TOROMONT		L: 10889 W: 3430 H: 3745	34000		INTERMITTENT		35 TON					MADE IN 2012; C/W LINERS - AVAILABLE TO SHIP - NEED FIRE SUPPRESSION - WILL TAKE SOME		2013				PM136	740B	CAT 740B	Sent 2013
	0	7243	507-3200		7243-MO-002	ARTICULATED HAUL TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	TOROMONT		L: 10889 W: 3430 H: 3745	34000		INTERMITTENT		35 TON					MADE IN 2012; C/W LINERS - AVAILABLE TO SHIP - NEED FIRE SUPPRESSION - WILL TAKE SOME		2013				PM136	740B	CAT 740B	Sent 2013
	0	7243	507-3200		7243-MO-003	ARTICULATED HAUL TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	TOROMONT		L: 10889 W: 3430 H: 3745	34000		INTERMITTENT		35 TON					MADE IN 2012; C/W LINERS - AVAILABLE TO SHIP - NEED FIRE SUPPRESSION - WILL TAKE SOME		2013				PM136	740B	CAT 740B	Sent 2013
	0	7243	507-3200		7243-MO-004	ARTICULATED HAUL TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	TOROMONT		L: 10889 W: 3430 H: 3745	34000		INTERMITTENT		35 TON					MADE IN 2012; C/W LINERS - AVAILABLE TO SHIP - NEED FIRE SUPPRESSION - WILL TAKE SOME		2013				PM136	740B	CAT 740B	Sent 2013
	0	7243	507-3200		7243-MO-005	ARTICULATED HAUL TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	TOROMONT		L: 10889 W: 3430 H: 3745	34000		INTERMITTENT		35 TON					MADE IN 2012; C/W LINERS - AVAILABLE TO SHIP - NEED FIRE SUPPRESSION - WILL TAKE SOME		2013				PM136	740B	CAT 740B	Sent 2013
	0	7243	507-3200		7243-MO-006	ARTICULATED HAUL TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	TOROMONT		L: 10889 W: 3430 H: 3745	34000		INTERMITTENT		35 TON					MADE IN 2012; C/W LINERS - AVAILABLE TO SHIP - NEED FIRE SUPPRESSION - WILL TAKE SOME		2013				PM136	740B	CAT 740B	Sent 2013
	0	7243	507-3200		7243-MO-007	ARTICULATED HAUL TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	TOROMONT		L: 10889 W: 3430 H: 3745	34000		INTERMITTENT		35 TON					MADE IN 2012; C/W LINERS - AVAILABLE TO SHIP - NEED FIRE SUPPRESSION - WILL TAKE SOME		2013				PM136	740B	CAT 740B	Sent 2013
	0	7243	507-3200		7243-MO-008	ARTICULATED HAUL TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	TOROMONT		L: 10889 W: 3430 H: 3745	34000		INTERMITTENT		35 TON					MADE IN 2012; C/W LINERS - AVAILABLE TO SHIP - NEED FIRE SUPPRESSION - WILL TAKE SOME		2013				PM136	740B	CAT 740B	Sent 2013
	0	7243	507-3200		7243-MO-009	ARTICULATED HAUL TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	TOROMONT		L: 10889 W: 3430 H: 3745	34000		INTERMITTENT		35 TON					MADE IN 2012; C/W LINERS - AVAILABLE TO SHIP - NEED FIRE SUPPRESSION - WILL TAKE SOME		2013				PM136	740B	CAT 740B	Sent 2013
	0	7243	507-3200		7243-MO-010	ARTICULATED HAUL TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	TOROMONT		L: 10889 W: 3430 H: 3745	34000		INTERMITTENT		35 TON					MADE IN 2012; C/W LINERS - AVAILABLE TO SHIP - NEED FIRE SUPPRESSION - WILL TAKE SOME		2013				PM136	740B	CAT 740B	Sent 2013
	0	7243	507-3200		7243-MO-011	FRONT END LOADER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 10390 W: 3600 H: 4115	43400		INTERMITTENT		4.5 - 5.4 M3 BUCKET					STANDARD LIFT		2013				PM102	988H	CAT 988H	Sent 2013
	0	7243	507-3200		7243-MO-012	FRONT END LOADER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 10390 W: 3600 H: 4115	43400		INTERMITTENT		4.5 - 5.4 M3 BUCKET					STANDARD LIFT		2013				PM102	988H	CAT 988H	Sent 2013
	0	7243	507-3200		7243-MO-014	MID SIZE AIR COMPRESSOR,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON				E:NUNA	INTERMITTENT		375 CFM							2013				PM104		ATLAS COPCO	Sent 2013
	0	7243	507-3200		7243-MO-015	TRASH PUMP,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 711.2 W: 533.4 H: 621.7	54		INTERMITTENT		3"					AVAILABLE READY TO SHIP		2013				PM106	13D-L70EE S/G	GORMAN-RUPP 13D-L700EE S/G	Sent 2013
	0	7243	507-3200		7243-MO-016	MOBILE LIGHT PLANT,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4623 W: 2007 H: 9000	925		INTERMITTENT		4000W					4 X 1000W LIGHTS		2013				PM106	AL4	TEREX AL4	Sent 2013
	0	7243	507-3200		7243-MO-017	MOBILE LIGHT PLANT,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4623 W: 2007 H: 9000	925		INTERMITTENT		4000W					4 X 1000W LIGHTS		2013				PM106	AL4	TEREX AL4	Sent 2013
	0	7243	507-3200		7243-MO-018	MOBILE LIGHT PLANT,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4623 W: 2007 H: 9000	925		INTERMITTENT		4000W					4 X 1000W LIGHTS		2013				PM106	AL4	TEREX AL4	Sent 2013
	0	7243	507-3200		7243-MO-019	MOBILE LIGHT PLANT,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4623 W: 2007 H: 9000	925		INTERMITTENT		4000W					4 X 1000W LIGHTS		2013				PM106	AL4	TEREX AL4	Sent 2013
	0	7243	507-3200		7243-MO-020	MOBILE LIGHT PLANT,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4623 W: 2007 H: 9000	925		INTERMITTENT		4000W					4 X 1000W LIGHTS		2013				PM106	AL4	TEREX AL4	Sent 2013
	0	7243	507-3200		7243-MO-021	FRONT END LOADER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 6050 W: 2390 H: 3150	9600		INTERMITTENT		1.3 M3 BUCKET					QUICK COUPLERS/BUCKETS/FORKS		2013				PM102	930K	CAT 930K	Sent 2013
	0	7243	507-3200		7243-MO-022	TELEHANDLER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 6100 W: 2570 H: 2570	15800	E:NUNA	INTERMITTENT		5000 KG							2013				PM106	TH514	CAT TH514	Sent 2013

		Identification											Technical																		Procurement			
													Design Data								Power			Supp. Information			Diagrams							
X	Equip Rev	Area	EWP	CWP	Tag No	Description	Equip Code	Equipment Type	Part Of	EngStatus	Const. Type	Package Engineer	Design Code	Dimension (mm) l x w x h	Dry Weight (Kg)	Material	Operating Mode	Equipment Size	Design Capacity	Drive Type	Design Load (kW)	Name Plate	Emerg Req	Remarks	Assembly on Delivery	Sealift	PFD No	PID No	Datasheet No	Enquiry No	Model Number	Manufacturer	Notes
	0	7243	507-3200		7243-MO-023	FROST FIGHTER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		350000 BTU					OIL FIRED; C/W HEAT RECOVERY SYSTEM		2013				BM104	IDF350-11	FROSTFIGHTER IDF350-11	Sent 2013
	0	7243	507-3200		7243-MO-024	FROST FIGHTER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		350000 BTU					OIL FIRED; C/W HEAT RECOVERY SYSTEM		2013				BM104	IDF350-11	FROSTFIGHTER IDF350-11	Sent 2013
	0	7243	507-3200		7243-MO-025	FROST FIGHTER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		350000 BTU					OIL FIRED; C/W HEAT RECOVERY SYSTEM		2013				BM104	IDF350-11	FROSTFIGHTER IDF350-11	Sent 2013
	0	7243	507-3200		7243-MO-026	FROST FIGHTER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		350000 BTU					OIL FIRED; C/W HEAT RECOVERY SYSTEM		2013				BM104	IDF350-11	FROSTFIGHTER IDF350-11	Sent 2013
	0	7243	507-3200		7243-MO-027	FROST FIGHTER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		350000 BTU					OIL FIRED; C/W HEAT RECOVERY SYSTEM		2013				BM104	IDF350-11	FROSTFIGHTER IDF350-11	Sent 2013
	0	7243	507-3200		7243-MO-028	FROST FIGHTER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		350000 BTU					OIL FIRED; C/W HEAT RECOVERY SYSTEM		2013				BM104	IDF350-11	FROSTFIGHTER IDF350-11	Sent 2013
	0	7243	507-3200		7243-MO-029	FROST FIGHTER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		350000 BTU					OIL FIRED; C/W HEAT RECOVERY SYSTEM		2013				BM104	IDF350-11	FROSTFIGHTER IDF350-11	Sent 2013
	0	7243	507-3200		7243-MO-030	FROST FIGHTER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		350000 BTU					OIL FIRED; C/W HEAT RECOVERY SYSTEM		2013				BM104	IDF350-11	FROSTFIGHTER IDF350-11	Sent 2013
	0	7243	507-3200		7243-MO-031	FROST FIGHTER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		350000 BTU					OIL FIRED; C/W HEAT RECOVERY SYSTEM		2013				BM104	IDF350-11	FROSTFIGHTER IDF350-11	Sent 2013
	0	7243	507-3200		7243-MO-032	FROST FIGHTER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		350000 BTU					OIL FIRED; C/W HEAT RECOVERY SYSTEM		2013				BM104	IDF350-11	FROSTFIGHTER IDF350-11	Sent 2013
	0	7243	507-3200		7243-MO-033	FROST FIGHTER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		350000 BTU					OIL FIRED; C/W HEAT RECOVERY SYSTEM		2013				BM104	IDF350-11	FROSTFIGHTER IDF350-11	Sent 2013
	0	7243	507-3200		7243-MO-034	FROST FIGHTER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		350000 BTU					OIL FIRED; C/W HEAT RECOVERY SYSTEM		2013				BM104	IDF350-11	FROSTFIGHTER IDF350-11	Sent 2013
	0	7243	507-3200		7243-MO-035	FROST FIGHTER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		350000 BTU					OIL FIRED; C/W HEAT RECOVERY SYSTEM		2013				BM104	IDF350-11	FROSTFIGHTER IDF350-11	Sent 2013
	0	7243	507-3200		7243-MO-036	FROST FIGHTER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		350000 BTU					OIL FIRED; C/W HEAT RECOVERY SYSTEM		2013				BM104	IDF350-11	FROSTFIGHTER IDF350-11	Sent 2013
	0	7243	507-3200		7243-MO-037	FROST FIGHTER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		350000 BTU					OIL FIRED; C/W HEAT RECOVERY SYSTEM		2013				BM104	IDF350-11	FROSTFIGHTER IDF350-11	Sent 2013
	0	7243	507-3200		7243-MO-046	LOWBOY TRAILER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 16050 W: 2438			INTERMITTENT		60 T					STANDARD WIDTH		2013				PM143			Sent 2013
	0	7244	507-3200		7244-GE-001	ACOMMODATIONS AREA, GENERATOR	GE	GENERATOR		PRELIMINARY	NEW	BRIAN PERKINS		L: 14630 W: 2440 H: 4062	68320		STANDBY		5106 L FUEL TANK			2145 hp	No	POWER SUPPLY CAN BE SPLIT INTO 2 X 1075 HP; DIMENSIONS INCLUDE TRAILER		2013				PE001	C1600D6R	CUMMINS C1600D6R	Sent 2013
	0	7244	507-3200		7244-GE-002	CONCRETE BATCH PLANT, GENERATOR	GE	GENERATOR		PRELIMINARY	NEW	BRIAN PERKINS		L: 4674 W: 1730 H: 2085	8800		STANDBY		901 L FUEL TANK			200 hp	No	DIMENSIONS INCLUDE TRAILER		2013				PE001	C150D6R	CUMMINS C150D6R	Sent 2013
	0	7244	507-3200		7244-GE-003	CONCRETE BATCH PLANT, GENERATOR	GE	GENERATOR		PRELIMINARY	NEW	BRIAN PERKINS		L: 4674 W: 1730 H: 2085	8800		STANDBY		901 L FUEL TANK			200 hp	No	DIMENSIONS INCLUDE TRAILER		2013				PE001	C150D6R	CUMMINS C150D6R	Sent 2013
	0	7244	507-3200		7244-GE-004	GENERAL, GENERATOR	GE	GENERATOR		PRELIMINARY	NEW	BRIAN PERKINS		L: 4500 W: 1905 H: 2085	5322		STANDBY		606 L FUEL TANK			107 hp	No	DIMENSIONS INCLUDE TRAILER		2013				PE001	C80D6R	CUMMINS C80D6R	Sent 2013
	0	7244	507-3200		7244-GE-006	SITE SERVICES LUNCHROOM/WASHCAR, GENERATOR	GE	GENERATOR		PRELIMINARY	NEW	BRIAN PERKINS		L: 2110 W: 1020 H: 2315	3776		STANDBY		532 L FUEL TANK			47 hp	No	NO TRAILER; DIMENSIONS ARE FOR GENERATOR ONLY		2013				PE001	DSFAA	CUMMINS DSFAA	Sent 2013
	0	7244	507-3200		7244-GE-007	LOGISTICS TRAILER, GENERATOR	GE	GENERATOR		PRELIMINARY	NEW	BRIAN PERKINS		L: 2110 W: 1020 H: 2315	3776		STANDBY		532 L FUEL TANK			47 hp	No	NO TRAILER; DIMENSIONS ARE FOR GENERATOR ONLY		2013				PE001	DSFAA	CUMMINS DSFAA	Sent 2013
	0	7244	507-3200		7244-GE-008	AERODROME LIGHTING, GENERATOR	GE	GENERATOR		PRELIMINARY	NEW	BRIAN PERKINS		L: 2160 W: 790 H: 1500	2442		STANDBY		380 L FUEL TANK			27 hp	No	NO TRAILER; DIMENSIONS ARE FOR GENERATOR ONLY		2013				PE001	DSKBA	CUMMINS DSKBA	Sent 2013
	0	7244	507-3200		7244-GE-009	WORKFACE TOOLS, GENERATOR	GE	GENERATOR		PRELIMINARY	NEW	BRIAN PERKINS		L: 2160 W: 790 H: 1500	2442		STANDBY		380 L FUEL TANK			27 hp	No	NO TRAILER; DIMENSIONS ARE FOR GENERATOR ONLY		2013				PE001	DSKBA	CUMMINS DSKBA	Sent 2013
	0	7244	507-3200		7244-GE-010	WORKFACE TOOLS, GENERATOR	GE	GENERATOR		PRELIMINARY	NEW	BRIAN PERKINS		L: 2160 W: 790 H: 1500	2442		STANDBY		380 L FUEL TANK			27 hp	No	NO TRAILER; DIMENSIONS ARE FOR GENERATOR ONLY		2013				PE001	DSKBA	CUMMINS DSKBA	Sent 2013
	0	7245	507-3200		7245-MO-002	MAN LIFT,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON					INTERMITTENT		51' WORKING					DIESEL		2013				PM140	450AJ	JLG 450AJ	Sent 2013
	0	7245	507-3200		7245-MO-003	MAN LIFT,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON					INTERMITTENT		51' WORKING					DIESEL		2013				PM140	450AJ	JLG 450AJ	Sent 2013
	0	7245	507-3200		7245-MO-004	MAN LIFT,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON					INTERMITTENT		51' WORKING					DIESEL		2013				PM140	Z45/25	GENIE Z45/25	Sent 2013
	0	7245	507-3200		7245-MO-005	SCISSOR LIFT,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON		L: 3500 W: 2200 H: 2900	4917		INTERMITTENT		47' WORKING					DIESEL		2013				PM140	SJ8841	SKYJACK 8841	Sent 2013
	0	7245	507-3200		7245-MO-006	SCISSOR LIFT,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON		L: 3500 W: 2200 H: 2900	4917		INTERMITTENT		47' WORKING					DIESEL		2013				PM140	SJ8841	SKYJACK 8841	Sent 2013
	0	7245	507-3200		7245-MO-007	BOOM TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON				E:	INTERMITTENT		26 T					MOUNTED ON A 2004 FORD STERLING 7501		2013				PM130	26101C	MAMTEX 26101C	Sent 2013
	0	7245	507-3200		7245-MO-008	MAINTENANCE CRANE,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON			41400		INTERMITTENT		80 T					ETA JULY 15, 2013		2013				PM116	RT890E	GROVE RT890E	Sent 2013
	0	7245	507-3200		7245-MO-010	WAREHOUSE FREIGHT DELIVERY, FLAT DECK TRUCKS	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 7264 W: 2418 H: 2022	3311		INTERMITTENT		12666 LBS MAXIMU					12' FLAT DECK BODY		2013				PM130	F550	FORD F550	Sent 2013

		Identification											Technical																	Procurement			
													Design Data								Power			Supp. Information			Diagrams						
X	Equip Rev	Area	EWP	CWP	Tag No	Description	Equip Code	Equipment Type	Part Of	EngStatus	Const. Type	Package Engineer	Design Code	Dimension (mm) l x w x h	Dry Weight (Kg)	Material	Operating Mode	Equipment Size	Design Capacity	Drive Type	Design Load (kW)	Name Plate	Emerg Req	Remarks	Assembly on Delivery	Sealift	PFD No	PID No	Datasheet No	Enquiry No	Model Number	Manufacturer	Notes
	0	7245	507-3200		7245-MO-011	WAREHOUSE FREIGHT DELIVERY, FLAT DECK TRUCKS	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 7264 W: 2418 H: 2022	3311		INTERMITTENT		12666 LBS MAXIMU					12' FLAT DECK BODY		2013				PM130	F550	FORD F550	Sent 2013
	0	7245	507-3200		7245-MO-012	WAREHOUSE FREIGHT DELIVERY, FLAT DECK TRUCKS	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 7264 W: 2418 H: 2022	3311		INTERMITTENT		12666 LBS MAXIMU					12' FLAT DECK BODY		2013				PM130	F550	FORD F550	Sent 2013
	0	7340	507-3200		7340-MO-001	TRACK DOZER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	TOROMONT		L: 4674 W: 2000 H: 2900	9250		INTERMITTENT		BLADE WIDTH: 3200 MM							2013				PM102	D6T XW	CAT D6T XW	Sent 2013
	0	7340	507-3200		7340-MO-002	TRACK DOZER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	TOROMONT		L: 4674 W: 2000 H: 2900	9250		INTERMITTENT		BLADE WIDTH: 3200 MM							2013				PM102	D6T XW	CAT D6T XW	Sent 2013
	0	7340	507-3200		7340-MO-003	TRACK DOZER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4674 W: 2000 H: 2900	9250		INTERMITTENT		BLADE WIDTH: 3200 MM					LGP - LOW GROUND PRESSURE		2013				PM102	D6-LGP	CAT D6-LGP	Sent 2013
	0	7340	507-3200		7340-MO-004	MID SIZE EXCAVATOR,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 11910 W: 3490 H: 3770	45000		INTERMITTENT		345 HP, 3.5 M3 BUCKET							2013				PM102	345DL HEX	CAT 345DL HEX	Sent 2013
	0	7340	507-3200		7340-MO-014	COMPACTOR,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	TOROMONT		L: 5970 W: 2300 H: 3070	15650		INTERMITTENT		DRUM WIDTH: 2140 MM;					MADE IN 2011		2013				PM102	CS74	CAT CS74	Sent 2013
	0	7340	507-3200		7340-MO-015	COMPACTOR,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	TOROMONT		L: 5970 W: 2300 H: 3070	15650		INTERMITTENT		DRUM WIDTH: 2140 MM;					MADE IN 2007; 84" PADFOOT VIBRATORY SOIL COMPACTOR		2013				PM102	CP563E	CAT CP563E	Sent 2013
	0	7340	507-3200		7340-MO-016	ROAD SNOW BLOWER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	TOROMONT		L: 6170 W: 2410 H: 3320	18338		INTERMITTENT		WITH SNOW BLOWER					C/W VOHL MODEL DV400 SNOW BLOWER		2013				PM102	950H	CAT 950H	Sent 2013
	0	7340	507-3200		7340-MO-017	ROAD SNOW BLOWER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	TOROMONT		L: 6170 W: 2410 H: 3320	18338		INTERMITTENT		WITH SNOW BLOWER					C/W VOHL MODEL DV400 SNOW BLOWER		2013				PM102	950H	CAT 950H	Sent 2013
	0	7432	507-3200		7432-PP-003	BATCH PLANT OFFICE-LUNCHROOM-WC, RAW WATER PUMP	PP	PUMP		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 483 W: 275 H: 267			INTERMITTENT		65 PSI	NOT DEFINED		0.5 hp	No	1/2 HP ELECTRIC PUMP		2013				PX001		SIMER JET PUMPS 2205C	Sent 2013
	0	7432	507-3200		7432-PP-006	FUEL SYSTEMS WASHCAR, RAW WATER PUMP	PP	PUMP		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 483 W: 275 H: 267			INTERMITTENT		65 PSI	NOT DEFINED		0.5 hp	No	1/2 HP ELECTRIC PUMP		2013				PX001		SIMER JET PUMPS 2205C	Sent 2013
	0	7432	507-3200		7432-PP-009	SITE SERVICES WASHCAR #1, RAW WATER PUMP	PP	PUMP		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 483 W: 275 H: 267			INTERMITTENT		65 PSI	NOT DEFINED		0.5 hp	No	1/2 HP ELECTRIC PUMP		2013				PX001		SIMER JET PUMPS 2205C	Sent 2013
	0	7432	507-3200		7432-PP-012	SITE SERVICES WASHCAR #2, RAW WATER PUMP	PP	PUMP		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 483 W: 275 H: 267			INTERMITTENT		65 PSI	NOT DEFINED		0.5 hp	No	1/2 HP ELECTRIC PUMP		2013				PX001		SIMER JET PUMPS 2205C	Sent 2013
	0	7432	507-3200		7432-TK-001	BATCH PLANT OFFICE-LUNCHROOM-WC, SEWAGE COLLECTION TANK	TK	TANK		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 3791 W: 1829 H: 610			INTERMITTENT		1000 GAL					RECTANGULAR TANK		2013				PX001		LAGRANGE MECHANICAL SERVICES	Sent 2013
	0	7432	507-3200		7432-TK-002	BATCH PLANT OFFICE-LUNCHROOM-WC, RAW WATER TANK	TK	TANK		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 1613 W: 737 H: 1676			CONTINUOUS		400 GAL TANK					HORIZONTAL TANK WITH >48 HOURS SUPPLY		2013				PX001		PLASTIC-MART 866-310-2556	Sent 2013
	0	7432	507-3200		7432-TK-004	FUEL SYSTEMS WASHCAR, SEWAGE COLLECTION TANK	TK	TANK		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 3791 W: 1829 H: 610			INTERMITTENT		1000 GAL					RECTANGULAR TANK		2013				PX001		LAGRANGE MECHANICAL SERVICES	Sent 2013
	0	7432	507-3200		7432-TK-005	FUEL SYSTEMS WASHCAR, RAW WATER TANK	TK	TANK		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 1803 W: 1245 H: 1346			CONTINUOUS		525 GAL TANK					HORIZONTAL TANK WITH >48 HOURS SUPPLY		2013				PX001		PLASTIC-MART 866-310-2556	Sent 2013
	0	7432	507-3200		7432-TK-007	SITE SERVICES WASHCAR #1, SEWAGE COLLECTION TANK	TK	TANK		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 3791 W: 1829 H: 610			INTERMITTENT		1000 GAL					RECTANGULAR TANK		2013				PX001		LAGRANGE MECHANICAL SERVICES	Sent 2013
	0	7432	507-3200		7432-TK-008	SITE SERVICES WASHCAR #1, RAW WATER TANK	TK	TANK		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 1803 W: 1245 H: 1346			CONTINUOUS		525 GAL TANK					HORIZONTAL TANK WITH >48 HOURS SUPPLY		2013				PX001		PLASTIC-MART 866-310-2556	Sent 2013
	0	7432	507-3200		7432-TK-010	SITE SERVICES WASHCAR #2, SEWAGE COLLECTION TANK	TK	TANK		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 3791 W: 1829 H: 610			INTERMITTENT		1000 GAL					RECTANGULAR TANK		2013				PX001		LAGRANGE MECHANICAL SERVICES	Sent 2013
	0	7432	507-3200		7432-TK-011	SITE SERVICES WASHCAR #2, RAW WATER TANK	TK	TANK		CERTIFIED FINAL	NEW	KENTARO IMAI		L: 1803 W: 1245 H: 1346			CONTINUOUS		525 GAL TANK					HORIZONTAL TANK WITH >48 HOURS SUPPLY		2013				PX001		PLASTIC-MART 866-310-2556	Sent 2013
	0	7441	507-3200		7441-MO-008	FUEL/LUBE TRUCK - ARTICULATED,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	TOROMONT					INTERMITTENT		4175 GAL					ENCLOSED FUEL LUBE TRUCK; 4175 GAL DIESEL TANK; 6 PRODUCT TANKS IN FABRICATION - ETA SEPT		2013				PM102	EFLT	CAT 740 EFLT	Sent 2013
	0	7441	507-3200		7441-MO-025	CUBE VAN,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON				E:	INTERMITTENT							12' HEATED ENCLOSED VAN BODY		2013				PM130	F550	FORD F550	Sent 2013
	0	7443	507-3200		7443-MO-001	ARTICULATED HAUL TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 10889 W: 3430 H: 3745	34000		INTERMITTENT		35 TON					ETA JULY 15, 2013		2013				PM136	740B	CAT 740B	Sent 2013
	0	7443	507-3200		7443-MO-002	ARTICULATED HAUL TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 10889 W: 3430 H: 3745	34000		INTERMITTENT		35 TON					ETA JULY 15, 2013		2013				PM136	740B	CAT 740B	Sent 2013
	0	7443	507-3200		7443-MO-003	ARTICULATED HAUL TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 10889 W: 3430 H: 3745	34000		INTERMITTENT		35 TON					ETA JULY 24, 2013		2013				PM136	740B	CAT 740B	Sent 2013
	0	7443	507-3200		7443-MO-004	ARTICULATED HAUL TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 10889 W: 3430 H: 3745	34000		INTERMITTENT		35 TON					ETA JULY 24, 2013		2013				PM136	740B	CAT 740B	Sent 2013
	0	7443	507-3200		7443-MO-005	ARTICULATED HAUL TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 10889 W: 3430 H: 3745	34000		INTERMITTENT		35 TON							2013				PM136	740B	CAT 740B	Sent 2013
	0	7443	507-3200		7443-MO-006	ARTICULATED HAUL TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 10889 W: 3430 H: 3745	34000		INTERMITTENT		35 TON							2013				PM136	740B	CAT 740B	Sent 2013
	0	7443	507-3200		7443-MO-011	FRONT END LOADER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 10390 W: 3600 H: 4115	43400		INTERMITTENT		4.5 - 5.4 M3 BUCKET					STANDARD LIFT		2013				PM102	988H	CAT 988H	Sent 2013
	0	7443	507-3200		7443-MO-014	MID SIZE AIR COMPRESSOR,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON				E:NUNA	INTERMITTENT		375 CFM							2013				PM104		ATLAS COPCO	Sent 2013
	0	7443	507-3200		7443-MO-016	TRASH PUMP,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 711.2 W: 533.4 H: 621.7	54		INTERMITTENT		3"							2013				PM106	13D-L70EE S/G	GORMAN-RUPP 13D-L700EE S/G	Sent 2013

		Identification											Technical																		Procurement			
													Design Data								Power			Supp. Information			Diagrams							
X	Equip Rev	Area	EWP	CWP	Tag No	Description	Equip Code	Equipment Type	Part Of	EngStatus	Const. Type	Package Engineer	Design Code	Dimension (mm) l x w x h	Dry Weight (Kg)	Material	Operating Mode	Equipment Size	Design Capacity	Drive Type	Design Load (kW)	Name Plate	Emerg Req	Remarks	Assembly on Delivery	Sealift	PFD No	PID No	Datasheet No	Enquiry No	Model Number	Manufacturer	Notes
	0	7443	507-3200		7443-MO-017	MOBILE LIGHT PLANT,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4623 W: 2007 H: 9000	925		INTERMITTENT		4000W					4 X 1000W LIGHTS		2013				PM106	AL4	TEREX AL4	Sent 2013
	0	7443	507-3200		7443-MO-018	MOBILE LIGHT PLANT,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4623 W: 2007 H: 9000	925		INTERMITTENT		4000W					4 X 1000W LIGHTS		2013				PM106	AL4	TEREX AL4	Sent 2013
	0	7443	507-3200		7443-MO-019	MOBILE LIGHT PLANT,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4623 W: 2007 H: 9000	925		INTERMITTENT		4000W					4 X 1000W LIGHTS		2013				PM106	AL4	TEREX AL4	Sent 2013
	0	7443	507-3200		7443-MO-020	MOBILE LIGHT PLANT,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4623 W: 2007 H: 9000	925		INTERMITTENT		4000W					4 X 1000W LIGHTS		2013				PM106	AL4	TEREX AL4	Sent 2013
	0	7443	507-3200		7443-MO-021	MOBILE LIGHT PLANT,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 4623 W: 2007 H: 9000	925		INTERMITTENT		4000W					4 X 1000W LIGHTS		2013				PM106	AL4	TEREX AL4	Sent 2013
	0	7443	507-3200		7443-MO-022	FRONT END LOADER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 6050 W: 2390 H: 3150	9600		INTERMITTENT		1.3 M3 BUCKET					QUICK COUPLERS/BUCKETS/FORKS		2013				PM102	930K	CAT 930K	Sent 2013
	0	7443	507-3200		7443-MO-023	TELEHANDLER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	TOROMONT		L: 6100 W: 2570 H: 2570	15800	E:NUNA	INTERMITTENT									2013				PM106	TH514	CAT TH514	Sent 2013
	0	7443	507-3200		7443-MO-024	FROST FIGHTER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		350000 BTU					OIL FIRED; C/W HEAT RECOVERY SYSTEM		2013				BM104	IDF350-11	FROSTFIGHTER IDF350-11	Sent 2013
	0	7443	507-3200		7443-MO-025	FROST FIGHTER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		350000 BTU					OIL FIRED; C/W HEAT RECOVERY SYSTEM		2013				BM104	IDF350-11	FROSTFIGHTER IDF350-11	Sent 2013
	0	7443	507-3200		7443-MO-026	FROST FIGHTER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		350000 BTU					OIL FIRED; C/W HEAT RECOVERY SYSTEM		2013				BM104	IDF350-11	FROSTFIGHTER IDF350-11	Sent 2013
	0	7443	507-3200		7443-MO-027	FROST FIGHTER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		350000 BTU					OIL FIRED; C/W HEAT RECOVERY SYSTEM		2013				BM104	IDF350-11	FROSTFIGHTER IDF350-11	Sent 2013
	0	7443	507-3200		7443-MO-028	FROST FIGHTER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		350000 BTU					OIL FIRED; C/W HEAT RECOVERY SYSTEM		2013				BM104	IDF350-11	FROSTFIGHTER IDF350-11	Sent 2013
	0	7443	507-3200		7443-MO-029	FROST FIGHTER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		350000 BTU					OIL FIRED; C/W HEAT RECOVERY SYSTEM		2013				BM104	IDF350-11	FROSTFIGHTER IDF350-11	Sent 2013
	0	7443	507-3200		7443-MO-030	FROST FIGHTER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		350000 BTU					OIL FIRED; C/W HEAT RECOVERY SYSTEM		2013				BM104	IDF350-11	FROSTFIGHTER IDF350-11	Sent 2013
	0	7443	507-3200		7443-MO-031	FROST FIGHTER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		350000 BTU					OIL FIRED; C/W HEAT RECOVERY SYSTEM		2013				BM104	IDF350-11	FROSTFIGHTER IDF350-11	Sent 2013
	0	7443	507-3200		7443-MO-032	FROST FIGHTER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		350000 BTU					OIL FIRED; C/W HEAT RECOVERY SYSTEM		2013				BM104	IDF350-11	FROSTFIGHTER IDF350-11	Sent 2013
	0	7443	507-3200		7443-MO-033	FROST FIGHTER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		350000 BTU					OIL FIRED; C/W HEAT RECOVERY SYSTEM		2013				BM104	IDF350-11	FROSTFIGHTER IDF350-11	Sent 2013
	0	7443	507-3200		7443-MO-034	FROST FIGHTER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		350000 BTU					OIL FIRED; C/W HEAT RECOVERY SYSTEM		2013				BM104	IDF350-11	FROSTFIGHTER IDF350-11	Sent 2013
	0	7443	507-3200		7443-MO-035	FROST FIGHTER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		350000 BTU					OIL FIRED; C/W HEAT RECOVERY SYSTEM		2013				BM104	IDF350-11	FROSTFIGHTER IDF350-11	Sent 2013
	0	7443	507-3200		7443-MO-036	FROST FIGHTER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		350000 BTU					OIL FIRED; C/W HEAT RECOVERY SYSTEM		2013				BM104	IDF350-11	FROSTFIGHTER IDF350-11	Sent 2013
	0	7443	507-3200		7443-MO-037	FROST FIGHTER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		350000 BTU					OIL FIRED; C/W HEAT RECOVERY SYSTEM		2013				BM104	IDF350-11	FROSTFIGHTER IDF350-11	Sent 2013
	0	7443	507-3200		7443-MO-038	FROST FIGHTER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON					INTERMITTENT		350000 BTU					OIL FIRED; C/W HEAT RECOVERY SYSTEM		2013				BM104	IDF350-11	FROSTFIGHTER IDF350-11	Sent 2013
	0	7443	507-3200		7443-MO-051	LOWBOY TRAILER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 16050 W: 3658			INTERMITTENT		60T						2013				PM143			Sent 2013
	0	7443	507-3200		7443-MO-052	HIBOY TRAILER,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 14630 W: 2438			INTERMITTENT		60T						2013				PM143			Sent 2013
	0	7443	507-3200		7443-MO-053	SECONDARY DRILL,	MO	MOBILE EQUIPMENT		PRELIMINARY	USED	GLACIER				E:	INTERMITTENT								2013				PM100		SANDVIK 800	Sent 2013
	0	7443	507-3200		7443-MO-054	SECONDARY DRILL,	MO	MOBILE EQUIPMENT		PRELIMINARY	USED	GLACIER				E:	INTERMITTENT								2013				PM100		SANDVIK 800	Sent 2013
	0	7444	507-3200		7444-GE-001	ACCOMMODATIONS AREA , GENERATOR	GE	GENERATOR		PRELIMINARY	NEW	BRIAN PERKINS		L: 14630 W: 2440 H: 4065	78220		STANDBY		5106 L FUEL TANK			2145 hp	No	POWER SUPPLY CAN BE SPLIT INTO 2 X 1075 HP; DIMENSIONS INCLUDE TRAILER		2013				PE001	C1600D6RG	CUMMINS C1600D6RG	Sent 2013
	0	7444	507-3200		7444-GE-002	CONCRETE BATCH PLANT, GENERATOR	GE	GENERATOR		PRELIMINARY	NEW	BRIAN PERKINS		L: 4675 W: 1730 H: 2085	10466		STANDBY		901 L FUEL TANK			200 hp	No	DIMENSIONS INCLUDE TRAILER		2013				PE001	C150D6R	CUMMINS C150D6R	Sent 2013
	0	7444	507-3200		7444-GE-003	CONCRETE BATCH PLANT, GENERATOR	GE	GENERATOR		PRELIMINARY	NEW	BRIAN PERKINS		L: 4675 W: 1730 H: 2085	10466		STANDBY		901 L FUEL TANK			200 hp	No	DIMENSIONS INCLUDE TRAILER		2013				PE001	C150D6R	CUMMINS C150D6R	Sent 2013
	0	7444	507-3200		7444-GE-004	GENERAL, GENERATOR	GE	GENERATOR		PRELIMINARY	NEW	BRIAN PERKINS		L: 4496 W: 1905 H: 2085	6458		STANDBY		606 L FUEL TANK			107 hp	No	DIMENSIONS INCLUDE TRAILER		2013				PE001	C80D6R	CUMMINS C80D6R	Sent 2013
	0	7444	507-3200		7444-GE-005	AERODROME LIGHTING, GENERATOR	GE	GENERATOR		PRELIMINARY	NEW	BRIAN PERKINS		L: 4496 W: 1905 H: 2085	6365		STANDBY		606 L FUEL TANK			80 hp	No	DIMENSIONS INCLUDE TRAILER		2013				PE001	C60D6R	CUMMINS C60D6R	Sent 2013
	0	7444	507-3200		7444-GE-006	RAW WATER PUMPHOUSE, GENERATOR	GE	GENERATOR		PRELIMINARY	NEW	BRIAN PERKINS		L: 4496 W: 1905 H: 2085	6365		STANDBY		606 L FUEL TANK			80 hp	No	DIMENSIONS INCLUDE TRAILER		2013				PE001	C60D6R	CUMMINS C60D6R	Sent 2013
	0	7444	507-3200		7444-GE-007	RAW WATER PUMPHOUSE, GENERATOR	GE	GENERATOR		PRELIMINARY	NEW	BRIAN PERKINS		L: 4496 W: 1905 H: 2085	6365		STANDBY		606 L FUEL TANK			80 hp	No	DIMENSIONS INCLUDE TRAILER		2013				PE001	C60D6R	CUMMINS C60D6R	Sent 2013

Mechanical Equipment List

H-349000 Baffinland Iron Mines Corporation

		Identification											Technical																		Procurement			
													Design Data								Power			Supp. Information			Diagrams								
X	Equip Rev	Area	EWP	CWP	Tag No	Description	Equip Code	Equipment Type	Part Of	EngStatus	Const. Type	Package Engineer	Design Code	Dimension (mm) l x w x h	Dry Weight (Kg)	Material	Operating Mode	Equipment Size	Design Capacity	Drive Type	Design Load (kW)	Name Plate	Emerg Req	Remarks	Assembly on Delivery	Sealift	PFD No	PID No	Datasheet No	Enquiry No	Model Number	Manufacturer	Notes
	0	7444	507-3200		7444-GE-008	CONSTRUCTION OFFICE/LUNCHROOM/WASHCAR, GENERATOR	GE	GENERATOR		PRELIMINARY	NEW	BRIAN PERKINS		L: 4496 W: 1905 H: 2085	6365		STANDBY		606 L FUEL TANK			80 hp	No	DIMENSIONS INCLUDE TRAILER		2013				PE001	C60D6R	CUMMINS C60D6R	Sent 2013
	0	7444	507-3200		7444-GE-009	SITE SERVICES LUNCHROOM/WASHCAR, GENERATOR	GE	GENERATOR		PRELIMINARY	NEW	BRIAN PERKINS		L: 2110 W: 1020 H: 2315	4760		STANDBY		532 L FUEL TANK			47 hp	No	NO TRAILER; DIMENSIONS ARE FOR GENERATOR ONLY		2013				PE001	DSFAA	CUMMINS DSFAA	Sent 2013
	0	7444	507-3200		7444-GE-010	SITE SERVICES LUNCHROOM/WASHCAR, GENERATOR	GE	GENERATOR		PRELIMINARY	NEW	BRIAN PERKINS		L: 2110 W: 1020 H: 2315	4760		STANDBY		532 L FUEL TANK			47 hp	No	NO TRAILER; DIMENSIONS ARE FOR GENERATOR ONLY		2013				PE001	DSFAA	CUMMINS DSFAA	Sent 2013
	0	7444	507-3200		7444-GE-011	SITE SERVICES LUNCHROOM/WASHCAR, GENERATOR	GE	GENERATOR		PRELIMINARY	NEW	BRIAN PERKINS		L: 2110 W: 1020 H: 2315	4760		STANDBY		532 L FUEL TANK			47 hp	No	NO TRAILER; DIMENSIONS ARE FOR GENERATOR ONLY		2013				PE001	DSFAA	CUMMINS DSFAA	Sent 2013
	0	7444	507-3200		7444-GE-012	WORKFACE TOOLS, GENERATOR	GE	GENERATOR		PRELIMINARY	NEW	BRIAN PERKINS		L: 2160 W: 790 H: 1500	3145		STANDBY		380 L FUEL TANK			27 hp	No	NO TRAILER; DIMENSIONS ARE FOR GENERATOR ONLY		2013				PE001	DSKBA	CUMMINS DSKBA	Sent 2013
	0	7444	507-3200		7444-GE-013	WORKFACE TOOLS, GENERATOR	GE	GENERATOR		PRELIMINARY	NEW	BRIAN PERKINS		L: 2160 W: 790 H: 1500	3145		STANDBY		380 L FUEL TANK			27 hp	No	NO TRAILER; DIMENSIONS ARE FOR GENERATOR ONLY		2013				PE001	DSKBA	CUMMINS DSKBA	Sent 2013
	0	7445	507-3200		7445-MO-002	MAN LIFT,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON					INTERMITTENT		51' WORKING					DIESEL		2013				PM140	Z45/25	GENIE Z45/25	Sent 2013
	0	7445	507-3200		7445-MO-003	MAN LIFT,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON					INTERMITTENT		51' WORKING					DIESEL		2013				PM140	Z45/25	GENIE Z45/25	Sent 2013
	0	7445	507-3200		7445-MO-006	SCISSOR LIFT,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON		L: 3500 W: 2200 H: 2900	4917		INTERMITTENT		47' WORKING					DIESEL		2013				PM140	SJ8841	SKYJACK 8841	Sent 2013
	0	7445	507-3200		7445-MO-007	SCISSOR LIFT,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON		L: 3500 W: 2200 H: 2900	4917		INTERMITTENT		47' WORKING					DIESEL		2013				PM140	SJ8841	SKYJACK 8841	Sent 2013
	0	7445	507-3200		7445-MO-008	SCISSOR LIFT,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON		L: 3500 W: 2200 H: 2900	4917		INTERMITTENT		47' WORKING					DIESEL		2013				PM140	SJ8841	SKYJACK 8841	Sent 2013
	0	7445	507-3200		7445-MO-009	MAINTENANCE CRANE,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON		L: 12900 W: 7910 H: 3640	113000		INTERMITTENT		300 T							2013				PM101	2250	MANITOWOC 2250	Sent 2013
	0	7445	507-3200		7445-MO-012	BOOM TRUCK,	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	USED	GRAHAM BURTON				E:	INTERMITTENT		26 T					MOUNTED ON A 2007 STERLING LT7501		2013				PM130	26101C	MANITEX 26101C	Sent 2013
	0	7445	507-3200		7445-MO-013	WAREHOUSE FREIGHT DELIVERY, FLAT DECK TRUCKS	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 7264 W: 2418 H: 2022	3311		INTERMITTENT		12666 LBS MAXIMU					12' FLAT DECK BODY		2013				PM130	F550	FORD F550	Sent 2013
	0	7445	507-3200		7445-MO-014	WAREHOUSE FREIGHT DELIVERY, FLAT DECK TRUCKS	MO	MOBILE EQUIPMENT		CERTIFIED FINAL	NEW	GRAHAM BURTON		L: 7264 W: 2418 H: 2022	3311		INTERMITTENT		12666 LBS MAXIMU					12' FLAT DECK BODY		2013				PM130	F550	FORD F550	Sent 2013

Filters	
Snapshot Revision	33-CURRENT DATA
Area	ALL
EWP	ALL
CWP	ALL
Const Type	ALL
PID No	ALL
Type	ALL
Enquiry No	ALL
Contract Package	ALL
Eng Status	ALL
Package Engineer	ALL
Show/Hide Tags	Hide Del Tags, (Note: Deleted rows are marked with a red X in the first column)
Last Updated	2013-10-15 10:49

Génica inc
Ingénieurs-Conseils

Visual and Magnetic Particle Test Report

File No: 221
Inspection date: June 14th, 2013
Report No: 13-221-58Ma

Customer reference : Kalmar
Customer name : Cropac Levage Inc.

1. Description of items

Inspection on a Kalmar lift, model DRF450-65S5, serial number T34113.1422

Weldings were inspected visually included:
- 2 boom section and spreader 20/40
- Deck and mast
- All attachments

Magnetic particle inspection was conducted for critical or questionable areas include.

2. Particle types use

☒ Dry ☐ Wet ☒ Nonfluorescent ☐ Fluorescent

2.1 Probe use

Machine :Parker modele : DA-400 Particules : Magnaflux #8A

3. Magnetization techniques

☒ Continuous ☐ Residual

3.2 Types of magnetizing currents

☒ Alternating ☐ Half-Wave rectified AC ☐ Full-Wave rectified AC ☐ Direct current

3.3 Magnetic field strength

☒ Yoke ☐ By cable ☐ Central conductor ☐ Residual

3.4 Direction of magnetic field

☐ Circular ☒ Longitudinal

3.6 Référence standard

☒ CSA W59-2003 ☐ AWS D1.1-2002

3.7 Conclusion :

All welds inspected are conforms to the code CSA W59-2003 art. 12

Inspector : O.N.G.C level II

Visual inspector : CSA W178.2 level 3

BUREAU CANADIEN DE SOUDAGE — 3575 — Alexandre Déry — NIVEAU 3 CSA W178.2 — INSPECTEUR FN SOUDAGE QUALIFIÉ

Date : 06/14/2013

66, boul. Sainte-Rose, | Laval, QC | H7L 3J8 | Téléphone : (450) 963-3008 | Télécopieur : (450) 963-8899

Génica inc
Ingénieurs-Conseils

Visual and Magnetic Particle Test Report

File No: 221
Inspection date: June 14th, 2013
Report No: 13-221-57Ma

Customer reference : Kalmar
Customer name : Cropac Levage Inc.

1. Description of items

Inspection on a Kalmar lift, model DRF450-65S5, serial number T34113.1423

Weldings were inspected visually included:
- 2 boom section and spreader 20/40
- Deck and mast
- All attachments

Magnetic particle inspection was conducted for critical or questionable areas include.

2. Particle types use

☒ Dry ☐ Wet ☒ Nonfluorescent ☐ Fluorescent

2.1 Probe use

Machine :Parker modele : DA-400 Particules : Magnaflux #8A

3. Magnetization techniques

☒ Continuous ☐ Residual

3.2 Types of magnetizing currents

☒ Alternating ☐ Half-Wave rectified AC ☐ Full-Wave rectified AC ☐ Direct current

3.3 Magnetic field strength

☒ Yoke ☐ By cable ☐ Central conductor ☐ Residual

3.4 Direction of magnetic field

☐ Circular ☒ Longitudinal

3.6 Référence standard

☒ CSA W59-2003 ☐ AWS D1.1-2002

3.7 Conclusion :

All welds inspected are conforms to the code CSA W59-2003 art. 12

Inspector : Alexandre Déry
O.N.G.C level II

Visual inspector:
CSA W178.2 level II

BUREAU CANADIEN DE SOUDAGE 3575 Alexandre Déry NIVEAU 3 CSA W178.2 INSPECTEUR QUALIFIÉ EN SOUDAGE

Date : 06/14/2013

66, boul. Sainte-Rose, | Laval, QC | H7L 3J8 | Téléphone : (450) 963-3008 | Télécopieur : (450) 963-8899

CERTIFICATE OF INSPECTION

All Canada Crane
7215 Torbram Road
Mississauga, Ontario, L4T 1G7

Equipment:	**Manitowoc Crawler Crane**	Model No.:	**M2250**
Serial No.:	**2251156**	Capacity:	**300 Ton**
Unit No.:	**8050**	Report No.:	**26850**
Date Inspected:	**July 8, 2013**	Page No.:	**1 of 2**

This unit has been inspected visually, by magnetic particle inspection (ASTM E709), and by ultrasonic inspection (ASTM E388) as appropriate. Our inspection included the critical, structural elements of the following load bearing components as accessible:

1. Track Frames
2. Carrier Frame
3. Rotary Gear
4. Machine Deck Framing
5. Gantry
6. Inner and Outer Bails
7. Boom Hoist Rope (Spooled)
8. Hook and Block
9. Hook and Ball
10. Pins and Bolts
11. Wedge and Sockets
12. Offset (22505, 4 Feet)
13. Offset (17179, 4 Feet)
14. Two Chains with Hooks (45 Feet)
15. Sheave Pack (3 Sheaves)
17. Boom Insert Section (179914-2, #44, TE-EA-RR, 40')
18. Boom Insert Section (179914-2, #44, 277958, 40')
19. Boom Insert Section (179914-2, #44, S-Y-NN, 40')
20. Boom Tip Section (179915-9, #44, 290597, 32')
21. Boom Insert Section (179912-9, #44, 292287, 10')
22. Jib With Mast Section (172680-7, #132, R-ER-RK, 40')
23. Boom Heel Section (171284-6, #44, K-EN-NN, 28')
24. Counterweight Attachment (1727439 - 30,130 Lbs)
25. Counterweight Attachment (1727439 - 30,120 Lbs)
26. Counterweight Attachment (1795702 - 15,060 Lbs)
27. Counterweight Attachment (1795702 - 15,060 Lbs)
28. Counterweight Attachment (1795702 - 15,060 Lbs)
29. Counterweight Attachment (1795702 - 15,060 Lbs)
30. Counterweight Attachment (179695 - 37,100 Lbs)
31. Counterweight Attachment (179455 - 39,200 Lbs)
32. Counterweight Attachment (1794572 - 15,660 Lbs)
33. Counterweight Attachment (1794592 - 20,070 Lbs)
34. Counterweight Attachment (1794572 - 15,520 Lbs)
35. Counterweight Attachment (1794582 - 15,610 Lbs)
36. Counterweight Attachment (N/A - 20,160 Lbs)
37. Counterweight Attachment (1794572 - 15,680 Lbs)
38. Counterweight Attachment (1794592 - 20,110 Lbs)
39. Counterweight Attachment (1794582 - 15,580 Lbs)
40. Counterweight Attachment (1794582 - 15,510 Lbs)
41. Counterweight Attachment (1794602 - 20,140 Lbs)
42. Four Counterweight Attachment (1795702 - 15,060 Lbs)

DOMSON ENGINEERING & INSPECTION LTD.
190 Wilkinson Road, Unit 2, Brampton, Ontario, L6T 4W3 Telephone: (905)789-1326 Facsimile: (905)789-1328
Website: www.domson.ca

CERTIFICATE OF INSPECTION

All Canada Crane
7215 Torbram Road
Mississauga, Ontario
L4T 1G7

Equipment:	**Manitowoc Crawler Crane**	Model No.:	**M2250**
Serial No.:	**2251156**	Capacity:	**300 Ton**
Unit No.:	**8050**	Report No.:	**26850**
Date Inspected:	**July 8, 2013**	Page No.:	**2 of 2**

Based on the described examination, before and after repairs, this unit is considered structurally fit for continued service for a period of one year from the date of inspection in accordance with the manufacturer's instruction.

Inspected By:
William Gallant
CGSB Level 2
Andrew Bloy
CGSB Level 2
Shaun Beaudin
CGSB Level 2
Brent Aubrey
CGSB Level 2
David Luey
CGSB Level 2

Reviewed By:

Dennis Domenichini, P. Eng.
CSA W178.2 Level 3
Project Engineer

This certificate represents the condition of the described equipment on the date of inspection; annual reinspection and certification is recommended. Damage to load bearing components, however caused, or operation outside the manufacturer's recommendations invalidates this certificate.

DOMSON ENGINEERING & INSPECTION LTD.
190 Wilkinson Road, Unit 2, Brampton, Ontario, L6T 4W3 Telephone: (905)789-1326 Facsimile: (905)789-1328
Website: www.domson.ca

Génica inc
Ingénieurs-Conseils

COMPLIANCE REPORT

Case file #: 221
Report #: 13-221-44a
Client Ref. #: Terex
Date of Inspection: May 16th, 2013

HATCH VENDOR DATA REVIEW

Doc Number	E349000-PM101-02-130-0001	Sub	01
Date Received	2013-06-11		

Review Grade	Next Submittal Status
☐ C1 – Proceed to next submission & status	☐ Internal Review ☐ Certified Final ☐ Final ☐ As-Built
☐ C2 – Proceed with exceptions as noted to next submission & status	Next Submittal Date:
☐ C3 – Do not proceed, revise as noted & resubmit	
No further submission required - Complete ☒	
☒ C4 - No further submission required - Cancelled ☐	
No further submission required - Superseded ☐	

Package Coordinator: Name, signature and Date:
GRAHAM BURTON / 2013-06-13

REVIEWED ONLY FOR GENERAL CONFORMITY WITH THE SPECIFICATIONS. ACCEPTANCE BY THE ENGINEER DOES NOT WARRANT OR REPRESENT THAT THE INFORMATION CONTAINED ON THIS DRAWING/DOCUMENT IS EITHER ACCURATE OR COMPLETE. THE SOLE RESPONSIBILTY FOR CORRECT DESIGN, DETAILS & DIMENSIONS SHALL REMAIN WITH THE PARTY SUBMITTING THE DRAWING/DOCUMENT.

SUBJECT: INSPECTION REPORT

We here by certify having inspected a **TEREX** mobile crane, model **RT 780** and serial number **1T9RT700CAW160105.**

The aforementioned mobile crane is a property of **RAFFINLAND IRON MINES CORPORATION.**

INSPECTION SUMMARY

- General condition of the structure.
- Range-limiting device operation.
- Safety systems operation.
- Welds were inspected visually. For critical or suspect areas, additional testing was conducted, either through magnetic-particle inspection. Observations of such are documented under Génica Inc.'s report **# 13-221-44Ma** , dated May 16th, 2013.

RESULTS

After consulting the available documents and conducting the tests, we are able to conclude that the unit contains no malfunction.

CONCLUSION

Considering these results, we are able to conclude that the inspection met the requirements of article 5.3.5.1 of CSA standard Z150-11 and that the above-mentioned mobile crane can be used safely when operated and maintained in accordance with the manufacturer's requirements.

Test conducted by: _____
Alexandre Déry, Tech.

Approved by: _____
Pascal Bouliane, P.Eng.

GÉNICA INC.
66, boul. Ste-Rose, Laval Qc, H7L 3J8 Téléphone : (450) 963-3008 Télécopieur : (450) 963-8899

Génica inc
Ingénieurs-Conseils

Visual and Magnetic Particle Test Report

File No : 221
Date : May 16th, 2013
Report No : 13-221-44Ma

Customer reference : Terex
Customer name : Cropac Equipment Inc

1. Description of items

Inspection on a Terex mobile crane, model RT 780, serial number 1T9RT700CAW160105

Weldings were inspected visually included:
- 4 sections of boom and jib
- 2 outriggers front and rear
- Turntable and frame
- All attachments

Magnetic particle inspection was conducted for critical or questionable areas include:
- 1 ball

2. Particle types use

☒ Dry ☐ Wet ☒ Nonfluorescent ☐ Fluorescent

2.1 Probe use

Machine :Parker modele : DA-400 Particules : Magnaflux #8A

3. Magnetization techniques

☒ Continuous ☐ Residual

3.2 Types of magnetizing currents

☒ Alternating ☐ Half-Wave rectified AC ☐ Full-Wave rectified AC ☐ Direct current

3.3 Magnetic field strength

☒ Yoke ☐ By cable ☐ Central conductor ☐ Residual

3.4 Direction of magnetic field

☐ Circular ☒ Longitudinal

3.6 Référence standard

☒ CSA W59-2003 ☐ AWS D1.1-2002

3.7 Conclusion :

After repair, all welds inspected are conform to the code CSA W59-2003 art. 12

Inspector : _____
O.N.G.C level II

Visual inspector : _____
CSA W178.2 level II

BUREAU CANADIEN DU SOUDAGE
3575
Alexandre Déry
NIVEAU 3
CSA W178.2
INSPECTEUR EN SOUDAGE QUALIFIÉ

Date : 05/16/2013

66, boul. Sainte-Rose, | Laval, QC | H7L 3J8 | Téléphone : (450) 963-3008 | Télécopieur : (450) 963-8899

Génica inc
Ingénieurs-Conseils

COMPLIANCE REPORT

Case file #: 221
Report #: 13-221-52a
Client Ref. #: Terex
Date of Inspection: May 30th, 2013

SUBJECT: INSPECTION REPORT

We here by certify having inspected a **TEREX** mobile crane, model **RT 130** and serial number **1T9RT130PW9160003.**

The aforementioned mobile crane is a property of **BAFFINLAND IRON MINES CORPORATION.**

INSPECTION SUMMARY

- General condition of the structure.
- Range-limiting device operation.
- Safety systems operation.
- Welds were inspected visually. For critical or suspect areas, additional testing was conducted, either through magnetic-particle inspection. Observations of such are documented under Génica Inc.'s report # **13-221-52Ma** , dated May 30th, 2013.

RESULTS

After consulting the available documents and conducting the tests, we are able to conclude that the unit contains no malfunction.

CONCLUSION

Considering these results, we are able to conclude that the inspection met the requirements of article 5.3.5.1 of CSA standard Z150-11 and that the above-mentioned mobile crane can be used safely when operated and maintained in accordance with the manufacturer's requirements.

INGÉNIEURE
Marie-Michelle Tremblay
121818
QUÉBEC
05 30

Test conducted by: _____
Alexandre Déry, Tech.

Approved by: _____
Marie-Michelle Tremblay, Eng.

66, boul. Sainte-Rose, | Laval, QC | H7L 3J8 | Téléphone : (450) 963-3008 | Télécopieur : (450) 963-8899

Génica inc
Ingénieurs-Conseils

Visual and Magnetic Particle Test Report

File No : 221
Date : May 30th, 2013
Report No : 13-221-52Ma

Customer reference : Terex
Customer name : Cropac Equipment Inc.

1. Description of items

Inspection on a Terex mobile crane, model RT 130, serial number 1T9RT130PW9160003

Weldings were inspected visually included:
- 5 sections of boom
- 2 outriggers front and rear
- Turntable and frame
- All attachments

Magnetic particle inspection was conducted for critical or questionable areas include:
- 1 block sheaves

2. Particle types use

☒ Dry ☐ Wet ☒ Nonfluorescent ☐ Fluorescent

2.1 Probe use

Machine :Parker modele : DA-400 Particules : Magnaflux #8A

3. Magnetization techniques

☒ Continuous ☐ Residual

3.2 Types of magnetizing currents

☒ Alternating ☐ Half-Wave rectified AC ☐ Full-Wave rectified AC ☐ Direct current

3.3 Magnetic field strength

☒ Yoke ☐ By cable ☐ Central conductor ☐ Residual

3.4 Direction of magnetic field

☐ Circular ☒ Longitudinal

3.6 Référence standard

☒ CSA W59-2003 ☐ AWS D1.1-2002

3.7 Conclusion :

After repair, all welds inspected are conform to the code CSA W59-2003 art. 12

Inspector : Alexandre Déry
O.N.G.C level II

Visual inspector : Alexandre Déry
CSA W178.2 level 3

BUREAU CANADIEN DE SOUDAGE 3575 Alexandre Déry NIVEAU 3 CSA W178.2 INSPECTEUR EN SOUDAGE QUALIFIÉ

Date : 30/05/2013

Génica inc
Ingénieurs-Conseils

COMPLIANCE REPORT

Case file #: 192
Report #: 13-192-19a
Customer reference #: Unit 41003623
Date of Inspection: August 5th, 2013

SUBJECT: INSPECTION REPORT

We here by certify having inspected a **SKYJACK** elevating work platform, model **SJ8841**, serial number **43676** and maximum capacity **1500** lbs.

The aforementioned portable elevating work platform is a property of **BAFFINLAND IRON MINES CORPORATION.**

INSPECTION SUMMARY

- General condition of the structure.
- Range-limiting device operation.
- Safety systems operation.
- Welds were inspected visually. For critical or suspect areas, additional testing was conducted, either through magnetic-particle inspection. Observations of such are documented under Génica Inc.'s report # **13-192-19Ma** , dated August 5th, 2013.

RESULTS

After consulting the available documents and conducting the tests, we are able to conclude that the unit contains no malfunction.

CONCLUSION

Considering these results, we are able to conclude that the lifting test met the requirements of CSA standard B354.2-01 and that the above-mentioned portable elevating work platform can be used safely when operated and maintained in accordance with the manufacturer's requirements.

3/08/05

Test conducted by: _____
Alexandre Déry, Tech.

Approved by: _____
Marie-Michelle Tremblay, Eng.

66, boul. Sainte-Rose, | Laval, QC | H7L 3J8 | Téléphone : (450) 963-3008 | Télécopieur : (450) 963-8899

Génica inc
Ingénieurs-Conseils

Visual and Magnetic Particle Test Report

File No : 192
Date : August 5th, 2013
Report No : 13-192-19Ma

Customer reference : Unit 41003623
Customer name : Hertz Location d'Équipement.

1. Description of items

Inspection on a Skyjack elevating work platform, model SJ8841, serial number 43676.

Weldings were inspected visually included:
- Platform
- Scissors
- All attachements

Magnetic particle inspection was conducted for critical or questionable areas.

2. Particle types use

☒ Dry ☐ Wet ☒ Nonfluorescent ☐ Fluorescent

2.1 Probe use

Machine :Parker modele : DA-400 Particules : Magnaflux #8A

3. Magnetization techniques

☒ Continuous ☐ Residual

3.2 Types of magnetizing currents

☒ Alternating ☐ Half-Wave rectified AC ☐ Full-Wave rectified AC ☐ Direct current

3.3 Magnetic field strength

☒ Yoke ☐ By cable ☐ Central conductor ☐ Residual

3.4 Direction of magnetic field

☐ Circular ☒ Longitudinal

3.6 Référence standard

☐ CSA W59-2003 ☒ AWS D1.1-2002

3.7 Conclusion :

After repair, all welds inspected are conform to the code CSA W59-2003 art. 12

Inspector : _____
O.N.G.C level II

Visual inspector : _____
CSA W178.2 level 3

BUREAU CANADIEN DE SOUDAGE — 3575 Alexandre Déry — NIVEAU 3 — CSA W178.2 — INSPECTEUR EN SOUDAGE QUALIFIÉ

Date : 08/05/2013

66, boul. Sainte-Rose, | Laval, QC | H7L 3J8 | Téléphone : (450) 963-3008 | Télécopieur : (450) 963-8899

Génica inc
Ingénieurs-Conseils

COMPLIANCE REPORT

Case file #: 192
Report #: 13-192-20a
Customer reference #: Unit 41003618
Date of Inspection: August 5th, 2013

SUBJECT: INSPECTION REPORT

We here by certify having inspected a **SKYJACK** elevating work platform, model **SJ8841**, serial number **43677** and maximum capacity **1500** lbs.

The aforementioned portable elevating work platform is a property of **BAFFINLAND IRON MINES CORPORATION.**

INSPECTION SUMMARY

- General condition of the structure.
- Range-limiting device operation.
- Safety systems operation.
- Welds were inspected visually. For critical or suspect areas, additional testing was conducted, either through magnetic-particle inspection. Observations of such are documented under Génica Inc.'s report # **13-192-20Ma** , dated August 5th, 2013.

RESULTS

After consulting the available documents and conducting the tests, we are able to conclude that the unit contains no malfunction.

CONCLUSION

Considering these results, we are able to conclude that the lifting test met the requirements of CSA standard B354.2-01 and that the above-mentioned portable elevating work platform can be used safely when operated and maintained in accordance with the manufacturer's requirements.

3/08/05

Test conducted by: _____
Alexandre Déry, Tech.

Approved by: _____
Marie-Michelle Tremblay, Eng.

66, boul. Sainte-Rose, | Laval, QC | H7L 3J8 | Téléphone : (450) 963-3008 | Télécopieur : (450) 963-8899

Génica inc
Ingénieurs-Conseils

Visual and Magnetic Particle Test Report

File No : 192
Date : August 5th, 2013
Report No : 13-192-20Ma

Customer reference : Unit 41003618
Customer name : Hertz Location d'Équipement.

1. Description of items

Inspection on a Skyjack elevating work platform, model SJ8841, serial number 43677.

Weldings were inspected visually included:
- Platform
- Scissors
- All attachements

Magnetic particle inspection was conducted for critical or questionable areas.

2. Particle types use

☒ Dry ☐ Wet ☒ Nonfluorescent ☐ Fluorescent

2.1 Probe use

Machine :Parker modele : DA-400 Particules : Magnaflux #8A

3. Magnetization techniques

☒ Continuous ☐ Residual

3.2 Types of magnetizing currents

☒ Alternating ☐ Half-Wave rectified AC ☐ Full-Wave rectified AC ☐ Direct current

3.3 Magnetic field strength

☒ Yoke ☐ By cable ☐ Central conductor ☐ Residual

3.4 Direction of magnetic field

☐ Circular ☒ Longitudinal

3.6 Référence standard

☐ CSA W59-2003 ☒ AWS D1.1-2002

3.7 Conclusion :

All welds inspected are conform to the code CSA W59-2003

Inspector : _____
O.N.G.C level II

Visual inspector : _____
CSA W178.2 level 3

BUREAU CANADIEN DE SOUDAGE
3575
Alexandre Déry
NIVEAU 3
CSA W178.2
INSPECTEUR EN SOUDAGE QUALIFIÉ

Date : 08/05/2013

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Génica inc
Ingénieurs-Conseils

COMPLIANCE REPORT

Case file #: 192
Report #: 13-192-21a
Customer reference #: Unit 30161124
Date of Inspection: August 5th, 2013

SUBJECT: LIFTING TEST

We hereby certify that we attended the lifting test conducted by **HERTZ LOCATION D'ÉQUIPEMENT** on a **GENIE INDUSTRIES** elevating work platform, model **Z45/25**, serial number **Z452506-30183** and maximum capacity **500** lbs.

The aforementioned portable elevating work platform is a property of **BAFFINLAND IRON MINES CORPORATION.**

SUMMARY OF THE TEST

Boom length :	maximum
Radius :	maximum
Load capacity :	550 lb
Applied load :	550 lb
Translation :	back and front
Rotation :	360°

The weldings were inspected visually. Magnetic particle inspection was conducted for critical or questionable areas. Observations of such are documented under Génica Inc.'s report **#13-192-21Ma**, dated August 5th, 2013.

RESULTS

After consulting the available documents and conducting the tests, we are able to conclude that the unit contains no malfunction.

CONCLUSION

Considering these results, we are able to conclude that the lifting test met the requirements of CSA standard B354.4-02 and that the above-mentioned portable elevating work platform can be used safely when operated and maintained in accordance with the manufacturer's requirements.

INGÉNIEUR Marie-Michelle Tremblay 121818 QUÉBEC

3/08/05

Test conducted by: _____
Alexandre Déry, Tech.

Approved by: _____
Marie-Michelle Tremblay, Eng.

66, boul. Sainte-Rose, | Laval, QC | H7L 3J8 | Téléphone : (450) 963-3008 | Télécopieur : (450) 963-8899

Génica inc
Ingénieurs-Conseils

Visual and Magnetic Particle Test Report

File No : 192
Date : August 5th, 2013
Report No : 13-192-21Ma

Customer reference : Unit 30161124
Customer name : Hertz Location d'Équipement.

1. Description of items

Inspection on a Genie Industries elevating work platform, model Z45/25, serial number Z452506-30183

Weldings were inspected visually included:
- Articulating boom, telescopic section and jib
- Frame and turn table
- Basket
- All attachements

Magnetic particle inspection was conducted for critical or questionable areas.

2. Particle types use

☒ Dry ☐ Wet ☒ Nonfluorescent ☐ Fluorescent

2.1 Probe use

Machine :Parker modele : DA-400 Particules : Magnaflux #8A

3. Magnetization techniques

☒ Continuous ☐ Residual

3.2 Types of magnetizing currents

☒ Alternating ☐ Half-Wave rectified AC ☐ Full-Wave rectified AC ☐ Direct current

3.3 Magnetic field strength

☒ Yoke ☐ By cable ☐ Central conductor ☐ Residual

3.4 Direction of magnetic field

☐ Circular ☒ Longitudinal

3.6 Référence standard

☐ CSA W59-2003 ☒ AWS D1.1-2002

3.7 Conclusion :

All welds inspected are conforms to the code CSA W59-2003 and D1.1

Inspector : O.N.G.C level II

Visual inspector : CSA W178.2 level 3

BUREAU CANADIEN DE SOUDAGE 3575 Alexandre Déry NIVEAU 3 CSA W178.2 INSPECTEUR EN SOUDAGE QUALIFIÉ

Date : 08/05/2013

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Génica inc
Ingénieurs-Conseils

COMPLIANCE REPORT

Case file #: 192
Report #: 13-192-23a
Customer reference #: Unit 43002534
Date of Inspection: August 5th, 2013

SUBJECT: LIFTING TEST

We hereby certify that we attended the lifting test conducted by **HERTZ LOCATION D'ÉQUIPEMENT** on a **JLG INDUSTRIES INC** elevating work platform, model **450AJ**, serial number **0300117568** and maximum capacity **500** lbs.

The aforementioned portable elevating work platform is a property of **BAFFINLAND IRON MINES CORPORATION.**

SUMMARY OF THE TEST

Boom length :	maximum
Radius :	maximum
Load capacity :	550 lb
Applied load :	550 lb
Translation :	back and front
Rotation :	360°

The weldings were inspected visually. Magnetic particle inspection was conducted for critical or questionable areas. Observations of such are documented under Génica Inc.'s report **#13-192-23Ma**, dated August 5th, 2013.

RESULTS

After consulting the available documents and conducting the tests, we are able to conclude that the unit contains no malfunction.

CONCLUSION

Considering these results, we are able to conclude that the lifting test met the requirements of CSA standard B354.4-02 and that the above-mentioned portable elevating work platform can be used safely when operated and maintained in accordance with the manufacturer's requirements.

INGÉNIEURE Marie-Michelle Tremblay 121818 QUÉBEC 3/08/05

Test conducted by: _____
Alexandre Déry, Tech.

Approved by: _____
Marie-Michelle Tremblay, Eng.

66, boul. Sainte-Rose, | Laval, QC | H7L 3J8 | Téléphone : (450) 963-3008 | Télécopieur : (450) 963-8899

Génica inc
Ingénieurs-Conseils

Visual and Magnetic Particle Test Report

File No : 192
Date : August 5th, 2013
Report No : 13-192-23Ma

Customer reference : Unit 43002534
Customer name : Hertz Location d'Équipement.

1. Description of items

Inspection on a JLG Industries Inc elevating work platform, model 450AJ, serial number 0300117568.

Weldings were inspected visually included:
- Articulating boom, telescopic section and jib
- Frame and turn table
- Basket
- All attachements

Magnetic particle inspection was conducted for critical or questionable areas.

2. Particle types use

☒ Dry ☐ Wet ☒ Nonfluorescent ☐ Fluorescent

2.1 Probe use

Machine :Parker modele : DA-400 Particules : Magnaflux #8A

3. Magnetization techniques

☒ Continuous ☐ Residual

3.2 Types of magnetizing currents

☒ Alternating ☐ Half-Wave rectified AC ☐ Full-Wave rectified AC ☐ Direct current

3.3 Magnetic field strength

☒ Yoke ☐ By cable ☐ Central conductor ☐ Residual

3.4 Direction of magnetic field

☐ Circular ☒ Longitudinal

3.6 Référence standard

☐ CSA W59-2003 ☒ AWS D1.1-2002

3.7 Conclusion :

All welds inspected are conforms to the code CSA W59-2003

BUREAU DE SOUDAGE INSPECTION QUALIFIÉ 3575 Alexandre Déry CSA W178.2 EN SOUDAGE

Inspector : O.N.G.C level II

Visual inspector : CSA W178.2 level 3

Date : 08/05/2013

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Génica inc
Ingénieurs-Conseils

COMPLIANCE REPORT

Case file #: 192
Report #: 13-192-14a
Customer reference #: Unit 43002533
Date of Inspection: July 26th, 2013

SUBJECT: LIFTING TEST

We hereby certify that we attended the lifting test conducted by **HERTZ LOCATION D'ÉQUIPEMENT** on a **JLG INDUSTRIES INC** elevating work platform, model **450AJ**, serial number **0300117564** and maximum capacity **500** lbs.

The aforementioned portable elevating work platform is a property of **BAFFINLAND IRON MINES CORPORATION.**

SUMMARY OF THE TEST

Boom length :	maximum
Radius :	maximum
Load capacity :	550 lb
Applied load :	550 lb
Translation :	back and front
Rotation :	360°

The weldings were inspected visually. Magnetic particle inspection was conducted for critical or questionable areas. Observations of such are documented under Génica Inc.'s report **#13-192-14Ma**, dated July 26th, 2013.

RESULTS

After consulting the available documents and conducting the tests, we are able to conclude that the unit contains no malfunction.

CONCLUSION

Considering these results, we are able to conclude that the lifting test met the requirements of CSA standard B354.4-02 and that the above-mentioned portable elevating work platform can be used safely when operated and maintained in accordance with the manufacturer's requirements.

Marie-Michelle Tremblay 21818 QUÉBEC 13/07/26

Test conducted by: _____
Alexandre Déry, Tech.

Approved by: _____
Marie-Michelle Tremblay, Eng.

66, boul. Sainte-Rose, | Laval, QC | H7L 3J8 | Téléphone : (450) 963-3008 | Télécopieur : (450) 963-8899

Génica inc
Ingénieurs-Conseils

Visual and Magnetic Particle Test Report

File No : 192
Date : July 26th, 2013
Report No : 13-192-14Ma

Customer reference : Unit 43002533
Customer name : Hertz Location d'Équipement.

1. Description of items

Inspection on a JLG Industries Inc elevating work platform, model 450AJ, serial number 0300117564.

Weldings were inspected visually included:
- Articulating boom, telescopic section and jib
- Frame and turn table
- Basket
- All attachements

Magnetic particle inspection was conducted for critical or questionable areas.

2. Particle types use

☒ Dry ☐ Wet ☒ Nonfluorescent ☐ Fluorescent

2.1 Probe use

Machine :Parker modele : DA-400 Particules : Magnaflux #8A

3. Magnetization techniques

☒ Continuous ☐ Residual

3.2 Types of magnetizing currents

☒ Alternating ☐ Half-Wave rectified AC ☐ Full-Wave rectified AC ☐ Direct current

3.3 Magnetic field strength

☒ Yoke ☐ By cable ☐ Central conductor ☐ Residual

3.4 Direction of magnetic field

☐ Circular ☒ Longitudinal

3.6 Référence standard

☐ CSA W59-2003 ☒ AWS D1.1-2002

3.7 Conclusion :

After repair, all welds inspected are conforms to the code CSA W59-2003 art. 12

Inspector : _____
O.N.G.C level II

Visual inspector :
CSA W178.2 level 3

BUREAU CANADIEN DE SOUDAGE — 3575 — Alexandre Déry — NIVEAU 3 — CSA W178.2 — INSPECTEUR EN SOUDAGE QUALIFIÉ

Date : 07/26/13

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Génica inc
Ingénieurs-Conseils

COMPLIANCE REPORT

Case file #: 192
Report #: 13-192-15a
Customer reference #: Unit 41003619
Date of Inspection: July 26th, 2013

SUBJECT: INSPECTION REPORT

We here by certify having inspected a **SKYJACK** elevating work platform, model **SJ8841**, serial number **43680** and maximum capacity **1500** lbs.

The aforementioned portable elevating work platform is a property of **BAFFINLAND IRON MINES CORPORATION.**

INSPECTION SUMMARY

- General condition of the structure.
- Range-limiting device operation.
- Safety systems operation.
- Welds were inspected visually. For critical or suspect areas, additional testing was conducted, either through magnetic-particle inspection. Observations of such are documented under Génica Inc.'s report # **13-192-15Ma** , dated July 26th, 2013.

RESULTS

After consulting the available documents and conducting the tests, we are able to conclude that the unit contains no malfunction.

CONCLUSION

Considering these results, we are able to conclude that the lifting test met the requirements of CSA standard B354.2-01 and that the above-mentioned portable elevating work platform can be used safely when operated and maintained in accordance with the manufacturer's requirements.

Test conducted by: _____
Alexandre Déry, Tech.

Approved by: _____ 13/07/26
Marie-Michelle Tremblay, Eng.

66, boul. Sainte-Rose, | Laval, QC | H7L 3J8 | Téléphone : (450) 963-3008 | Télécopieur : (450) 963-8899

Génica inc
Ingénieurs-Conseils

Visual and Magnetic Particle Test Report

File No : 192
Date : July 26th, 2013
Report No : 13-192-15Ma

Customer reference : Unit 41003619
Customer name : Hertz Location d'Équipement.

1. Description of items

Inspection on a Skyjack elevating work platform, model SJ8841, serial number 43680.

Weldings were inspected visually included:
- Platform
- Scissors
- Outriggers
- All attachements

Magnetic particle inspection was conducted for critical or questionable areas.

2. Particle types use

☒ Dry ☐ Wet ☒ Nonfluorescent ☐ Fluorescent

2.1 Probe use

Machine :Parker modele : DA-400 Particules : Magnaflux #8A

3. Magnetization techniques

☒ Continuous ☐ Residual

3.2 Types of magnetizing currents

☒ Alternating ☐ Half-Wave rectified AC ☐ Full-Wave rectified AC ☐ Direct current

3.3 Magnetic field strength

☒ Yoke ☐ By cable ☐ Central conductor ☐ Residual

3.4 Direction of magnetic field

☐ Circular ☒ Longitudinal

3.6 Référence standard

☐ CSA W59-2003 ☒ AWS D1.1-2002

3.7 Conclusion :

After repair, all welds inspected are conforms to the code CSA W59-2003 art. 12

Inspector : _____
O.N.G.C level II

Visual inspector :
CSA W178.2 level 3

BUREAU CANADIEN DE SOUDAGE INSPECTEUR QUALIFIÉ EN SOUDAGE 3575 Alexandre Déry NIVEAU 3 CSA W178.2

Date : 07/26/13

66, boul. Sainte-Rose, | Laval, QC | H7L 3J8 | Téléphone : (450) 963-3008 | Télécopieur : (450) 963-8899

Génica inc
Ingénieurs-Conseils

COMPLIANCE REPORT

Case file #: 192
Report #: 13-192-16a
Customer reference #: Unit 41003620
Date of Inspection: July 26th, 2013

SUBJECT: INSPECTION REPORT

We here by certify having inspected a **SKYJACK** elevating work platform, model **SJ8841**, serial number **43684** and maximum capacity **1500** lbs.

The aforementioned portable elevating work platform is a property of **BAFFINLAND IRON MINES CORPORATION.**

INSPECTION SUMMARY

- General condition of the structure.
- Range-limiting device operation.
- Safety systems operation.
- Welds were inspected visually. For critical or suspect areas, additional testing was conducted, either through magnetic-particle inspection. Observations of such are documented under Génica Inc.'s report # **13-192-16Ma** , dated July 26th, 2013.

RESULTS

After consulting the available documents and conducting the tests, we are able to conclude that the unit contains no malfunction.

CONCLUSION

Considering these results, we are able to conclude that the lifting test met the requirements of CSA standard B354.2-01 and that the above-mentioned portable elevating work platform can be used safely when operated and maintained in accordance with the manufacturer's requirements.

Test conducted by: _____
Alexandre Déry, Tech.

Approved by: _____ 13/07/26
Marie-Michelle Tremblay, Eng.

66, boul. Sainte-Rose, | Laval, QC | H7L 3J8 | Téléphone : (450) 963-3008 | Télécopieur : (450) 963-8899

Génica inc
Ingénieurs-Conseils

Visual and Magnetic Particle Test Report

File No : 192
Date : July 26th, 2013
Report No : 13-192-16Ma

Customer reference : Unit 41003620
Customer name : Hertz Location d'Équipement.

1. Description of items

Inspection on a Skyjack elevating work platform, model SJ8841, serial number 43684.

Weldings were inspected visually included:
- Platform
- Scissors
- Outriggers
- All attachements

Magnetic particle inspection was conducted for critical or questionable areas.

2. Particle types use

☒ Dry ☐ Wet ☒ Nonfluorescent ☐ Fluorescent

2.1 Probe use

Machine :Parker modele : DA-400 Particules : Magnaflux #8A

3. Magnetization techniques

☒ Continuous ☐ Residual

3.2 Types of magnetizing currents

☒ Alternating ☐ Half-Wave rectified AC ☐ Full-Wave rectified AC ☐ Direct current

3.3 Magnetic field strength

☒ Yoke ☐ By cable ☐ Central conductor ☐ Residual

3.4 Direction of magnetic field

☐ Circular ☒ Longitudinal

3.6 Référence standard

☐ CSA W59-2003 ☒ AWS D1.1-2002

3.7 Conclusion :

After repair, all welds inspected are conforms to the code CSA W59-2003 art. 12

Inspector : O.N.G.C level II

Visual inspector : CSA W178.2 level 3

BUREAU CANADIEN DE SOUDAGE 3575 Alexandre Déry NIVEAU 3 CSA W178.2 INSPECTEUR EN SOUDAGE QUALIFIÉ

Date : 07/26/13

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Génica inc
Ingénieurs-Conseils

COMPLIANCE REPORT

Case file #: 192
Report #: 13-192-17a
Customer reference #: Unit 41003625
Date of Inspection: July 26th, 2013

SUBJECT: INSPECTION REPORT

We here by certify having inspected a **SKYJACK** elevating work platform, model **SJ8841**, serial number **43681** and maximum capacity **1500** lbs.

The aforementioned portable elevating work platform is a property of **BAFFINLAND IRON MINES CORPORATION.**

INSPECTION SUMMARY

- General condition of the structure.
- Range-limiting device operation.
- Safety systems operation.
- Welds were inspected visually. For critical or suspect areas, additional testing was conducted, either through magnetic-particle inspection. Observations of such are documented under Génica Inc.'s report # **13-192-17Ma** , dated July 26th, 2013.

RESULTS

After consulting the available documents and conducting the tests, we are able to conclude that the unit contains no malfunction.

CONCLUSION

Considering these results, we are able to conclude that the lifting test met the requirements of CSA standard B354.2-01 and that the above-mentioned portable elevating work platform can be used safely when operated and maintained in accordance with the manufacturer's requirements.

Test conducted by: _____
Alexandre Déry, Tech.

Approved by: _____ 13/07/26
Marie-Michelle Tremblay, Eng.

66, boul. Sainte-Rose, | Laval, QC | H7L 3J8 | Téléphone : (450) 963-3008 | Télécopieur : (450) 963-8899

Génica inc
Ingénieurs-Conseils

Visual and Magnetic Particle Test Report

File No : 192
Date : July 26th, 2013
Report No : 13-192-17Ma

Customer reference : Unit 41003625
Customer name : Hertz Location d'Équipement.

1. Description of items

Inspection on a Skyjack elevating work platform, model SJ8841, serial number 43681.

Weldings were inspected visually included:
- Platform
- Scissors
- Outriggers
- All attachements

Magnetic particle inspection was conducted for critical or questionable areas.

2. Particle types use

☒ Dry ☐ Wet ☒ Nonfluorescent ☐ Fluorescent

2.1 Probe use

Machine :Parker modele : DA-400 Particules : Magnaflux #8A

3. Magnetization techniques

☒ Continuous ☐ Residual

3.2 Types of magnetizing currents

☒ Alternating ☐ Half-Wave rectified AC ☐ Full-Wave rectified AC ☐ Direct current

3.3 Magnetic field strength

☒ Yoke ☐ By cable ☐ Central conductor ☐ Residual

3.4 Direction of magnetic field

☐ Circular ☒ Longitudinal

3.6 Référence standard

☐ CSA W59-2003 ☒ AWS D1.1-2002

3.7 Conclusion :

After repair, all welds inspected are conforms to the code CSA W59-2003 art. 12

BUREAU CANADIEN DE SOUDAGE 3575 Alexandre Déry NIVEAU 3 INSPECTEUR EN SOUDAGE QUALIFIÉ

Inspector : _____
O.N.G.C level II

Visual inspector :
CSA W178.2 level 3

Date : 07/26/13

66, boul. Sainte-Rose, | Laval, QC | H7L 3J8 | Téléphone : (450) 963-3008 | Télécopieur : (450) 963-8899

Génica inc
Ingénieurs-Conseils

COMPLIANCE REPORT

Case file #: 192
Report #: 13-192-18a
Customer reference #: Unit 41003612
Date of Inspection: July 26th, 2013

SUBJECT: INSPECTION REPORT

We here by certify having inspected a **SKYJACK** elevating work platform, model **SJ8841**, serial number **43675** and maximum capacity **1500** lbs.

The aforementioned portable elevating work platform is a property of **BAFFINLAND IRON MINES CORPORATION.**

INSPECTION SUMMARY

- General condition of the structure.
- Range-limiting device operation.
- Safety systems operation.
- Welds were inspected visually. For critical or suspect areas, additional testing was conducted, either through magnetic-particle inspection. Observations of such are documented under Génica Inc.'s report # **13-192-18Ma** , dated July 26th, 2013.

RESULTS

After consulting the available documents and conducting the tests, we are able to conclude that the unit contains no malfunction.

CONCLUSION

Considering these results, we are able to conclude that the lifting test met the requirements of CSA standard B354.2-01 and that the above-mentioned portable elevating work platform can be used safely when operated and maintained in accordance with the manufacturer's requirements.

13/07/26

Test conducted by: _____
Alexandre Déry, Tech.

Approved by: _____
Marie-Michelle Tremblay, Eng.

66, boul. Sainte-Rose, | Laval, QC | H7L 3J8 | Téléphone : (450) 963-3008 | Télécopieur : (450) 963-8899

Génica inc
Ingénieurs-Conseils

Visual and Magnetic Particle Test Report

File No : 192
Date : July 26th, 2013
Report No : 13-192-18Ma

Customer reference : Unit 41003612
Customer name : Hertz Location d'Équipement.

1. Description of items

Inspection on a Skyjack elevating work platform, model SJ8841, serial number 43675.

Weldings were inspected visually included:
- Platform
- Scissors
- Outriggers
- All attachements

Magnetic particle inspection was conducted for critical or questionable areas.

2. Particle types use

☒ Dry ☐ Wet ☒ Nonfluorescent ☐ Fluorescent

2.1 Probe use

Machine :Parker modele : DA-400 Particules : Magnaflux #8A

3. Magnetization techniques

☒ Continuous ☐ Residual

3.2 Types of magnetizing currents

☒ Alternating ☐ Half-Wave rectified AC ☐ Full-Wave rectified AC ☐ Direct current

3.3 Magnetic field strength

☒ Yoke ☐ By cable ☐ Central conductor ☐ Residual

3.4 Direction of magnetic field

☐ Circular ☒ Longitudinal

3.6 Référence standard

☐ CSA W59-2003 ☒ AWS D1.1-2002

3.7 Conclusion :

All welds inspected are conform to the code CSA W59-2003 and AWS D1.1-2002

BUREAU CANADIEN DE SOUDAGE
INSPECTEUR QUALIFIÉ EN SOUDAGE
3575
Alexandre Déry
NIVEAU 3
CSA W178.2

Inspector : _____
O.N.G.C level II

Visual inspector :
CSA W178.2 level 3

Date : 07/26/13

66, boul. Sainte-Rose, | Laval, QC | H7L 3J8 | Téléphone : (450) 963-3008 | Télécopieur : (450) 963-8899

Génica inc
Ingénieurs-Conseils

COMPLIANCE REPORT

Case file #: 192
Report #: 13-192-24a
Customer reference #: Unit 44000112
Date of Inspection: August 6th, 2013

SUBJECT: LIFTING TEST

We hereby certify that we attended the lifting test conducted by **HERTZ LOCATION D'ÉQUIPEMENT** on a **JLG INDUSTRIES INC** elevating work platform, model **450AJ**, serial number **0300111342** and maximum capacity **500** lbs.

The aforementioned portable elevating work platform is a property of **BAFFINLAND IRON MINES CORPORATION.**

SUMMARY OF THE TEST

Boom length :	maximum
Radius :	maximum
Load capacity :	550 lb
Applied load :	550 lb
Translation :	back and front
Rotation :	360°

The welding were inspected visually. Magnetic particle inspection was conducted for critical or questionable areas. Observations of such are documented under Génica Inc.'s report **#13-192-24Ma**, dated August 6th, 2013.

RESULTS

After consulting the available documents and conducting the tests, we are able to conclude that the unit contains no malfunction.

CONCLUSION

Considering these results, we are able to conclude that the lifting test met the requirements of CSA standard B354.4-02 and that the above-mentioned portable elevating work platform can be used safely when operated and maintained in accordance with the manufacturer's requirements.

INGÉNIEURE Marie-Michelle Tremblay 21818 QUÉBEC 31/08/06

Test conducted by: _____
Alexandre Déry, Tech.

Approved by: _____
Marie-Michelle Tremblay, Eng.

66, boul. Sainte-Rose, | Laval, QC | H7L 3J8 | Téléphone : (450) 963-3008 | Télécopieur : (450) 963-8899

Génica inc
Ingénieurs-Conseils

Visual and Magnetic Particle Test Report

File No : 192
Date : August 6th, 2013
Report No : 13-192-24Ma

Customer reference : Unit 44000112
Customer name : Hertz Location d'Équipement.

1. Description of items

Inspection on a JLG Industries Inc elevating work platform, model 450AJ, serial number 0300111342.

Weldings were inspected visually included:
- Articulating boom, telescopic section and jib
- Frame and turn table
- Basket
- All attachements

Magnetic particle inspection was conducted for critical or questionable areas.

2. Particle types use

☒ Dry ☐ Wet ☒ Nonfluorescent ☐ Fluorescent

2.1 Probe use

Machine :Parker modele : DA-400 Particules : Magnaflux #8A

3. Magnetization techniques

☒ Continuous ☐ Residual

3.2 Types of magnetizing currents

☒ Alternating ☐ Half-Wave rectified AC ☐ Full-Wave rectified AC ☐ Direct current

3.3 Magnetic field strength

☒ Yoke ☐ By cable ☐ Central conductor ☐ Residual

3.4 Direction of magnetic field

☐ Circular ☒ Longitudinal

3.6 Référence standard

☐ CSA W59-2003 ☒ AWS D1.1-2002

3.7 Conclusion :

All welds inspected are conform to the code CSA W59-2003 art. 12

Inspector : _____
O.N.G.C level II

Visual inspector :
CSA W178.2 level 3

BUREAU CANADIEN DE SOUDAGE
3375
Alexandre Déry
NIVEAU 3
CSA W178.2
INSPECTEUR QUALIFIÉ EN SOUDAGE

Date : 08/06/13

66, boul. Sainte-Rose, | Laval, QC | H7L 3J8 | Téléphone : (450) 963-3008 | Télécopieur : (450) 963-8899

Génica inc
Ingénieurs-Conseils

COMPLIANCE REPORT

Case file #: 192
Report #: 13-192-25a
Customer reference #: Unit 30161125
Date of Inspection: August 6th, 2013

SUBJECT: LIFTING TEST

We hereby certify that we attended the lifting test conducted by **HERTZ LOCATION D'ÉQUIPEMENT** on a **GENIE INDUSTRIES** elevating work platform, model **Z45/25**, serial number **Z452506-30186** and maximum capacity **500** lbs.

The aforementioned portable elevating work platform is a property of **BAFFINLAND IRON MINES CORPORATION.**

SUMMARY OF THE TEST

Boom length :	maximum
Radius :	maximum
Load capacity :	550 lb
Applied load :	550 lb
Translation :	back and front
Rotation :	360°

The weldings were inspected visually. Magnetic particle inspection was conducted for critical or questionable areas. Observations of such are documented under Génica Inc.'s report **#13-192-25Ma**, dated August 6th, 2013.

RESULTS

After consulting the available documents and conducting the tests, we are able to conclude that the unit contains no malfunction.

CONCLUSION

Considering these results, we are able to conclude that the lifting test met the requirements of CSA standard B354.4-02 and that the above-mentioned portable elevating work platform can be used safely when operated and maintained in accordance with the manufacturer's requirements.

INGÉNIEURE Marie-Michelle Tremblay 121818 QUÉBEC

3/08/06

Test conducted by: _____
Alexandre Déry, Tech.

Approved by: _____
Marie-Michelle Tremblay, Eng.

66, boul. Sainte-Rose, | Laval, QC | H7L 3J8 | Téléphone : (450) 963-3008 | Télécopieur : (450) 963-8899

Génica inc
Ingénieurs-Conseils

Visual and Magnetic Particle Test Report

File No : 192
Date : August 6th, 2013
Report No : 13-192-25Ma

Customer reference : Unit 30161125
Customer name : Hertz Location d'Équipement.

1. Description of items

Inspection on a Genie Industries elevating work platform, model Z45/25, serial number Z452506-30186

Weldings were inspected visually included:
- Articulating boom, telescopic section and jib
- Frame and turn table
- Basket
- All attachements

Magnetic particle inspection was conducted for critical or questionable areas.

2. Particle types use

☒ Dry ☐ Wet ☒ Nonfluorescent ☐ Fluorescent

2.1 Probe use

Machine :Parker modele : DA-400 Particules : Magnaflux #8A

3. Magnetization techniques

☒ Continuous ☐ Residual

3.2 Types of magnetizing currents

☒ Alternating ☐ Half-Wave rectified AC ☐ Full-Wave rectified AC ☐ Direct current

3.3 Magnetic field strength

☒ Yoke ☐ By cable ☐ Central conductor ☐ Residual

3.4 Direction of magnetic field

☐ Circular ☒ Longitudinal

3.6 Référence standard

☐ CSA W59-2003 ☒ AWS D1.1-2002

3.7 Conclusion :

All welds inspected are conform to the code CSA W59-2003 and D1.1

BUREAU CANADIEN DE SOUDAGE
3575
Alexandre Déry
NIVEAU 3
CSA W178.2
INSPECTEUR EN SOUDAGE QUALIFIÉ

Inspector : _____
O.N.G.C level II

Visual inspector :
CSA W178.2 level 3

Date : 08/06/13

APPENDIX E.7.4
FOLLOW-UP SPILL REPORTS

TABLE 6.1

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

2013 QIA AND NWB ANNUAL REPORT

SUMMARY OF UNAUTHORIZED DISCHARGES

Date of Occurrence	Quantity	Product Spilled	Immediate Cause and Follow-up Actions	Approximate Location	Proximity to Water body?	Basic Cause, Corrective Actions Taken, and Follow-up	Spill Line ID No.
MILNE PORT							
22-May-13	<500 L	Treated Sewage Effluent	A malfunctioning float caused the Milne Inlet RBC unit to pump an excessive volume through the process, which fouled the filtering system, and overflowed out an access port onto the ground adjacent to the RBC. Due to the impermeability of the frozen ground, nearly all the spilled effluent was collected using a vacuum truck and transported to the PWSP facility.	17W 503472 7974837	>100 m	**Equipment failure issue, Preventive Maintanence Issue. Weather Conditions and Temperature Extremes.** - Soon after the spill, the floats in the unit were tested and any malfunctioning floats replaced. In addition, a work practice was put in place that requires the filtering system to be monitored daily for fouling and restricted flow. The RBC is no longer in operation and has been replaced by a new MBR unit in October 2013. - Although the spilled effluent did not meet the Water License discharge criteria (marginally), the cleanup was successful in collecting most of the spilled effluent making unlikely that residual effluent will pose a risk to the receiving environment during the spring melt.	13-166
22-May-13	approx 1000L	Untreated Sewage	While cleaning up the previous Milne Inlet RBC spill (above), untreated sewage influent was detected migrating under the snow. The main discharge line from the Shanco Camp was cleared of snow and the pipe was observed to be split and leaking. During the clean-up around 10 m^3 of contaminated snow was removed from the area and transported to the PWSP facility.	17W 503472 7974837	>100 m	**Equipment failure issue, Preventive Maintanence Issue. Weather Conditions and Temperature Extremes.** - The spill had resulted from historical wear and tear of the plumbing at the Shanco complex and the inability to inspect the piping due to the deep snow drifts and the potential damage that can result from snow removal at difficult locations. However, since that time, all visible piping and fittings have been inspected. The RBC and Shanco complex are no longer in service and will be demobilzed in 2014. - Although the spilled effluent most likely did not meet the Water License discharge criteria for Milne Inlet, the cleanup was successful in removing most of the contaminated snow caused by the spill. The small volume of residual contaminated snow remaining poses negligible risk to the receiving environment during the spring melt.	13-165
21-Sep-13	205 L	Gasoline	A fork lift operator inadvertently punctured a gasoline drum at its base which resulted in the release of the contents of the drum, i.e. 205 L. An area of approximately 4 m^2 was contaminated within less than a minute. Approximately 7 m^3 of contaminated soil was excavated from the site stored in lined and secure areas. The soil will be deposited in the planned landfarm for treatment. The limits of the excavation were based on the extent of the contamination subject to visual and olfactory observations.	17 W 503315 7976386	50 m to Milne Inlet (high water mark)	**Equipment failure issue, Design Issue, Procedure not Adequate.** - During the investigation the supervisor and operator were interviewed. The basic finding was that the gasoline drums pallet failed to support the load. The middle portion of the pallet collapsed, and it was difficult to observe the forks in relation to drum clearance. As the forks were passing through the pallet, the bottom of one of the drums was pierced. In future, Project Buyers will reiterate the need for pallets that are sturdy enough to support loads. In addition, the equipment operators will be reminded that they need to be vigilant in their identification of potentially suspect pallets. - On September 27, ten samples were taken to assess potential soil contamination. Samples were collected from the walls and floor of the excavation. Results show that the results of soil samples collected were below applicable guideline criteria and that the area was successfully remediated.	13-321
29-Oct-13	500 L	Untreated Sewage	A leak of untreated sewage effluent was detected at the main lift station of the newly constructed accommodations facility at the Milne Port location. The breech was located about 12" from the top of the enclosed tank and was approximately four inches in diameter. Personnel immediately acquired vacuum truck services to empty the tank. The primary lift station and the dorm lift stations were also cleaned out to ensure no further issues occurred throughout the night. Approximately 500 L was discharged to the adjacent land surface, with an approximate impacted area of 10 m^2. Frozen ground conditions limited the depth of soil contamination. The contaminated snow and untreated sewage effluent were transferred to the PWSP facility.	17 W 503933 7975985	>100 m	**Equipment Failure Issue, Defective Equipment.** - The tank was monitored regularly until thoroughly inspected and repaired to ensure no further leakage. - The area is within the camp pad area and well away from any water body. The small volume of residual contaminated material poses negligible risk to the receiving environment during the spring melt.	13-367
30-Oct-13	1000 L	Untreated Sewage	A spill occurred at the Milne Port Sewage Treatment Facility during offloading of a truck transferring waste sewage effluent. During off-loading into the camp's main lift station, the lift station's pump engaged and pumped the contents of the tank over to the Sewage Treatment Plant. The influent screening equipment at the STP overflowed as a result of hydraulic overloading. The line from the lift station to the STP was immediately closed and resources were deployed to clean up the spill. A conservative estimate of 1000 L was discharged to the adjacent ground surface. Due to snow cover conditions, much of the effluent was absorbed by the snow which limited the impact area to 15 m^2 and allowed for easy clean up. The contaminated snow and effluent was transferred to the PWSP facility.	17 W 503798 7975986	>100 m	**Equipment Failure Issue, Design Failure.** - It was determined that the lift station pump moves higher volumes than the respective pumps in the sewage treatment facility. With this in mind, the floats in the lift station have been moved closer together to pump less volume, although on a more frequent cycle. - The area is within the camp pad area and well away from any water body. The small volume of residual contaminated material poses negligible risk to the receiving environment during the spring melt.	13-371

Baffinland

TABLE 6.1

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

2013 QIA AND NWB ANNUAL REPORT

SUMMARY OF UNAUTHORIZED DISCHARGES

8-Nov-13	700 L	Untreated Sewage	A leak of untreated sewage effluent was detected at the SE lift station of the Shanco Camp at the Milne Port Location. The discharge sewage line had frozen causing the lift station to overflow and spill approx 700 L. All facilities in the Shanco Camp were locked out immediately and the system was depressurized. Sewage in and around the lift station was removed using the vacuum truck onsite. The contaminated snow, ice and remaining untreated sewage effluent were transferred to the PWSP facility.	17 W 503420 7975788	>100 m	**Procedural Issue, No Procedure** - The cause of the frozen sewage line appears to have been caused by the heat trace being inadvertently powered off during a fire alarm in the camp the previous night. Personnel with responsibility for the site electrical system have been advised of the incident and, in future, there will be a procedure or checklist in place to prevent this situation from occurring again.	13-377
MARY RIVER MINE SITE							
6-Mar-13	2000 L	Treated Sewage Effluent	Failed pressure fit coupling. Thermal contraction causing the RBC discharge pipe to pull out of the coupling. The impacted ice and snow was scraped up wherever possible and placed into the PWSP facility.	17W 558248 7914367	>100 m	**Equipment Failure Issue, Design Issue, Temperature Extremes.** - The discharge line repaired. In the interim, the treated effluent was transported from the WWTP to the PWSP via Vacuum Truck. - The small quantity of frozen sewage effluent does not pose an environmental or health and safety risk, as it meets Water Licence effluent criteria and there are no detectable faecal coliforms.	13-080
14-Jul-13	50-75 L	Oily Stormwater	During the routine treatment and discharge of oily storm water in the Mary River Bulk Fuel Storage Facility (MRY-6), contaminated water was pumped down below the level that allowed for efficient treatment. Free phase residual product (fuel), was inadvertently pumped through the treatment system, which overwhelmed the system's capacity to fully treat the water. Initial estimates of free phase oily product released to the environment ranges between 50 and 75 litres. Upon noticing the problem the operator shut the system down and stopped the treatment and discharge system process. Absorbent materials were used to contain the free phase product. A vacuum truck was used to remove the free phase product / contaminated water from the area.	17 W 559341 7914513	>100 m	**Procedural Issue, Error in Procedure** - An effective work practice was developed and implemented that included collecting and removing free product from the secondary containment prior to treatment plant operation. A longer term recommendation is to design a physical oil water separator at the front end of the existing treatment system to minimize the opportunity for free product to foul the treatment system. - The discharge from the treatment system was to a small isolated pool of standing water located immediately adjacent to the fuel farm berm. This area is normally dry, however due to the recent pumping activities and rainfall events; standing water has accumulated in this area. Based on field reconnaissance, and sampling there is no flow or impact from this pool to downstream water bodies.	13-253
6-Aug-13	125 L	Jet A Diesel	A worker had completed loading a tanker truck with Jet A fuel. A secondary valve on the truck was not fully closed and while disconnecting the hose, the fuel splashed and spilled into the lined berm area of the refueling station. The release lasted for several seconds until the operator closed the valve. The hard packed, sand surface allowed the spill of approximately 125L to spread rapidly. Valve was closed and spill pads were used to mop up the product, but there was some saturation into the hard packed sand. The stained soil was left to aerate for several days and cleaned material has been applied to the area. There was no release to the surrounding land or water. The spill pads were disposed in a lined quatrex bag.	17 W 558274 7914421	>100 m	**Procedural Issue, Error in Procedure** **Training Issue, Insufficient Training.** - The worker had been trained verbally on site with regard to the procedure, however, the specific procedure was not current for the particular tanker truck in question. The contractor developed a procedure for all employees/contractors involved in offloading with this type of tanker truck. Training is now better formalized and recorded . - The spill was completely within engineered containment and there was no release ot the receiving environment.	13-276
MILNE INLET TOTE ROAD							
9-Nov-13	1 m^3	Ammonium Nitrate	A tractor trailer unit loaded with two sea-cans of ammonium nitrate (AN) lost traction climbing the hill at Km 10 on the Milne Inlet Tote Road. The operator backed the unit down the hill approximately 100 m and in doing so caused the trailer to slip over the embankment on the right hand side of the road. Both sea-cans of AN broke loose from the trailer. The trailer became disengaged from the tractor and turned over. One of the sea-cans ruptured and spilled approximately 1 m^3 of AN onto the ground. The tractor remained upright on the shoulder of the road and did not have any damage other than damage to the fifth wheel. There were no fluids leaks from the tractor. The Tote road was closed to all traffic and the incident scene was secured. During the day following the incident, the tractor and trailer were recovered, the spilt AN was transferred into a Quatrex bag in secondary containment and the sea-cans were relocated to the side of the road. Subsequently the seacans were transported back to camp and AN transfered to secure storage for future use.	17 W 508149 7969711	>30 m	**Procedural Issue, Insufficent Procedure.** **Training Issue, Insufficient Training.** - The incident was caused by transporting a load too heavy for the road conditions. To prevent similar incidents from occurring, tractor trailers should be loaded with the appropriate weight for the current road conditions at the time of transport. Tote Road procedures were subsequently enhanced to address this issue. - During the spring when the ice and snow are melted, the area will be reexamined for residual AN materials.	13-378

April 4, 2013

Resource Management Officer
Nunavut Field Operations
Aboriginal Affairs and Northern Development Canada
Box 100
Iqaluit, NU X0A 0H0
keima@aandc.gc.ca

Manager, Major Projects
Qikiqtani Inuit Assocation
P.O. Box 219
Iqaluit, NU X0A 0H0
swbathory@qia.ca.

Re: Follow-up to Spill Reported on March 6th, 2013
Mary River Project - Water Licence No. 2BB-MRY1114

Summary:

On March 6th, 2013, at approximately 1230h, while conducting the routine pumping of treated effluent from the Mary River Waste Water Treatment Plant (WWTP) to Polishing Waste Stabilization Pond (PWSP) #2, a leak was detected in the plastic insulated and heat traced pipeline. The leak, which originated from a pressure fit coupling was located midway along the pipeline (see Photos 1, 2 & 3). Thermal contracting of the pipeline caused the pipe to pull out of the coupling, which in turn caused treated effluent to spill out onto the ground surface in the vicinity of the coupling. Approximately 2000 liters of treated sewage effluent was released to the ground adjacent to the coupling and pipeline. The MRY-4 lab results prior to and immediately after the spill met Baffinland's Water License criteria for sewage effluent. (see attached lab results).

Immediate and Follow-Up Action:

Impacted ice and snow was scraped up wherever possible and placed in PWSP#2 (a lined and engineered containment pond), where it will melt out in the spring (see Photo 4).

Recommendations:

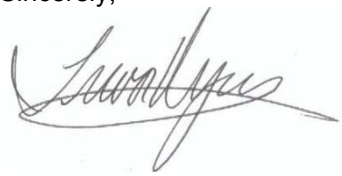
The discharge line will not be operated utilized again until it has been repaired. In the interim, the treated effluent will be transported from the WWTP to the PWSP via Vacuum Truck. The small quantity of frozen sewage effluent does not pose an environmental or health and safety risk, as it meets Water Licence effluent criteria (see attached analyses) and there are no detectable faecal coliforms. Please refer to the results for sample MRY-4 in the attached analytical laboratory results. In consideration of the above, the ice will be allowed to passively melt during freshet.

Current Status:

The above recommendation was immediately implemented.

Should you require further information or clarification on the above noted spill, please feel free to contact the undersigned at (647) 693-9447 or Jim Millard, Environmental Manager, at (902) 403-1337.

Sincerely,



Trevor Myers, BA, M.Sc.
Environmental Coordinator

Attach: Photos
Lab Results

cc. Jim Millard, Dave McCann, Allan Knight and Erik Madsen, Baffinland.

Photo 1 Photo of spill location (Looking North).

Photo 2 Photo of spill location.

Photo 3 Failed Pressure Fit Coupler

Photo 4 Spill Clean up

EXOVA OTTAWA

Certificate of Analysis

Exova

Client: Baffinland Iron Mines Corporation
120 Adelaide Street West, Suite 1016
Toronto, ON
M5H 1T1
Attention: Mr. Jim Millard
PO#:
Invoice to: Baffinland Iron Mines Corporation

Report Number: 1302742
Date Submitted: 2013-02-15
Date Reported: 2013-02-17
Project:
COC #: 760385

Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.
					1011999 / Wastewater / / 2013-02-14 / MRY-4
Microbiology	Faecal Coliforms	0	ct/100mL		0

Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.	
					1012000 / Wastewater / / 2013-02-14 / MRY-4-FST	1012001 / Wastewater / / 2013-02-14 / MRY-4-INF
Microbiology	Faecal Coliforms	0	ct/100mL		2320	2600000

Guideline = *** = Guideline Exceedence**
** = Analysis completed at Mississauga, Ontario.
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective.

Certificate of Analysis

Client: Baffinland Iron Mines Corporation
120 Adelaide Street West, Suite 1016
Toronto, ON
M5H 1T1
Attention: Mr. Jim Millard
PO#:
Invoice to: Baffinland Iron Mines Corporation

Report Number: 1302741
Date Submitted: 2013-02-15
Date Reported: 2013-02-22
Project:
COC #: 760385

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1011996 Wastewater 2013-02-14 MRY-4	1011997 Wastewater 2013-02-14 MRY-4-FST	1011998 Wastewater 2013-02-14 MRY-4-INF
General Chemistry	pH	1.00				7.86	7.90	7.28
	Total Suspended Solids	2	mg/L			<2	4	640
Nutrients	BOD5	1	mg/L			<1	1	656
	COD	5	mg/L			6	<5	2420
	N-NH3	0.02	mg/L			0.04	0.03	
		2.0	mg/L					106
	Total Kjeldahl Nitrogen	1.0	mg/L			1.1	<1.0	
		5.0	mg/L					137
	Total P	0.003	mg/L			0.044	0.090	
		0.1	mg/L					16.1
Oil & Grease	Oil & Grease - Total	1	mg/L			<1	<1	46

Guideline = *** = Guideline Exceedence**
** = Analysis completed at Mississauga, Ontario.
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective.

Client: Baffinland Iron Mines Corporation
120 Adelaide Street West, Suite 1016
Toronto, ON
M5H 1T1
Attention: Mr. Jim Millard
PO#:
Invoice to: Baffinland Iron Mines Corporation

Report Number: 1303973
Date Submitted: 2013-03-08
Date Reported: 2013-03-10
Project:
COC #: 760820

Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.		
					1014864 Wastewater 2013-03-07 MRY - 4	1014865 Wastewater 2013-03-07 MRY - 4 - FST	1014866 Wastewater 2013-03-07 MRY - 4 - INF
Microbiology	Faecal Coliforms	0	ct/100mL		0	23000	5900000

Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.
					1014867 Wastewater 2013-03-07 MRY - 401
Microbiology	Faecal Coliforms	0	ct/100mL		0

Guideline = *** = Guideline Exceedence**
** = Analysis completed at Mississauga, Ontario.
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective.

Certificate of Analysis

Client: Baffinland Iron Mines Corporation
120 Adelaide Street West, Suite 1016
Toronto, ON
M5H 1T1
Attention: Mr. Jim Millard
PO#:
Invoice to: Baffinland Iron Mines Corporation

Report Number: 1303985
Date Submitted: 2013-03-08
Date Reported: 2013-03-25
Project:
COC #: 760820

Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.			
					1014884 Wastewater 2013-03-07 MRY - 4	1014885 Wastewater 2013-03-07 MRY - 4 - FST	1014886 Wastewater 2013-03-07 MRY - 4 - INF	1014887 Wastewater 2013-03-07 MRY - 401
General Chemistry	pH	1.00			7.62	7.74	7.02	7.72
	Total Suspended Solids	2	mg/L		4	5	126	4
Nutrients	BOD5	1	mg/L		1	4	378	2
	COD	5	mg/L		12	11	812	10
	N-NH3	0.02	mg/L		0.10	0.10		0.10
		2.0	mg/L				75.9	
	Total Kjeldahl Nitrogen	1.0	mg/L		<1.0	<1.0		<1.0
		5.0	mg/L				86.0	
	Total P	0.003	mg/L		0.144	0.131		0.119
		0.01	mg/L				9.94	
Oil & Grease	Oil & Grease - Total	1	mg/L		<1	<1	44	<1

Guideline = *** = Guideline Exceedence**
** = Analysis completed at Mississauga, Ontario.
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective.

June 20, 2013

Resource Management Officer
Nunavut Field Operations
Aboriginal Affairs and Northern Development Canada
Box 100
Iqaluit, NU X0A 0H0
keima@aandc.gc.ca

Manager, Major Projects
Qikiqtani Inuit Association
P.O. Box 219
Iqaluit, NU X0A 0H0
swbathory@qia.ca

Re: Follow-up to RBC Spill Reported on May 22, 2013
Mary River Project – Water License No. 2BB-MRY1114

Summary:

At 13:30 on May 22nd, 2013, effluent began to leak out of an access port on the side of the Milne Inlet RBC unit. Workers on the scene noticed the leak immediately and proceeded to shut off all RBC pumps and cap the access port. During the time it took to shut down the RBC pumps and cap the access port, a conservative estimate of 500 L of effluent spilled onto the ground adjacent to the RBC. Upon investigating the cause of the spill, it was determined that a malfunctioning float had caused the RBC unit to pump an excessive volume through the RBC unit during the night of May 21st, 2013. This in turn caused the filtering system to become fouled and constrict flow to the effluent tank. As volume continued to be pumped through the RBC during the morning of May 22nd, the RBC became backlogged due to the fouled filtering system and overflowed out of the access port. There was no discharge of effluent to nearby water bodies from this spill.

In reviewing the Milne RBC effluent analysis that was performed on May 19th and May 26th, it is likely that the spilled effluent had a pH between 7.31 and 7.55, a total phosphorus concentration between 14 and 14.3 mg/L, an ammonia concentration between 9 and 48 mg/L, a turbidity between 196 and 294 NTU and a COD between 110 and 600 mg/L. Therefore, it is likely that the spilled effluent did not meet the Water License discharge criteria for Milne Inlet.

The original Spill Report submitted on May 22 is attached. A map showing the spill location is also attached.

Immediate and Follow Action:

As mentioned above, the spill was noticed and all RBC pumps were promptly turned off and the leaking access port was capped (see Photo 1). Due to the impermeability of the frozen ground around the RBC, nearly all of the spilled effluent was collected using a vacuum truck and transported to PWSP #1 at the Mary River Site (see Photos 2 & 3) for secure disposal.

Recommendations:

Since the time of spill, all floats in the Milne RBC unit have been tested and any malfunctioning floats have been replaced. In addition, a procedure has been put in place that requires the filtering system to be monitored daily for fouling and restricted flow. Although the spilled effluent did not meet the Water License discharge criteria for Milne Inlet, the cleanup was successful in collecting most of the spilled effluent making it unlikely that any remaining effluent will pose a risk to the receiving environment during the spring melt.

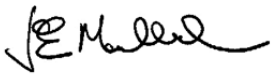
Current Status:

The above recommendation was immediately implemented.

Should you require further information or clarification on the above noted spill, please feel free to contact the undersigned at (647) 693-9447 or (902) 403-1337.

Sincerely,

BAFFINLAND IRON MINES CORPORATION



Jim Millard, M.Sc., P.Geo.
Environmental Manager

cc: Erik Alain (AANDC)
Erik Madsen, Oliver Curran, Trevor Myers, Allan Knight (Baffinland)
Shawn Tucker, Marlon Coakley, Tyler Bruce (Hatch)

Attach:

Original Spill Report submitted to Spill Line on May 22, 2013
Location map showing spill location.

Photo 1 – Milne RBC after Access Port was Capped

Photo 2 – Collecting Spilled Effluent with Vacuum Truck

Photo 3 – Milne RBC after Cleanup

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
TEL: (867) 920-8130
FAX: (867) 873-6924
EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH – DAY – YEAR **05/22/2013**	REPORT TIME **22:30**	☒ ORIGINAL SPILL REPORT, OR	REPORT NUMBER -
B	OCCURRENCE DATE: MONTH – DAY – YEAR **05/22/2013**	OCCURRENCE TIME **13:30**	☐ UPDATE # TO THE ORIGINAL SPILL REPORT	

C	LAND USE PERMIT NUMBER (IF APPLICABLE)	WATER LICENCE NUMBER (IF APPLICABLE) **2BB-MRY1114**
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM THE NAMED LOCATION **Baffinland Iron Mines - Milne Inlet Camp**	REGION ☐ NWT ☒ NUNAVUT ☐ ADJACENT JURISDICTION OR
E	LATITUDE DEGREES **71** MINUTES **19** SECONDS **32**	LONGITUDE DEGREES **79** MINUTES **22** SECONDS **24**
F	RESPONSIBLE PARTY OR VESSEL NAME **Baffinland Iron Mines Corp.**	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION **Suite 1016, 120 Adelaide St. W., Toronto, ON**
G	ANY CONTRACTOR INVOLVED **Hatch/Nuna Logistics**	CONTRACTOR ADDRESS OR OFFICE LOCATION

H	PRODUCT SPILLED **Waste Water Effluent**	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES **Approx. 500 litres**	U.N. NUMBER
	SECOND PRODUCT SPILLED (IF APPLICABLE)	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER

I	SPILL SOURCE **RBC Water Treatment Plant**	SPILL CAUSE **System Malfunction**	AREA OF CONTAMINATION IN SQUARE METRES **Approx. 10 M sq.**
J	FACTORS AFFECTING SPILL OR RECOVERY	DESCRIBE ANY ASSISTANCE REQUIRED	HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT

K — ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS

At approximatly 13:30 on May 22/13, effluent began to leak from an access port on the waste water treatment facility the Milne Inlet Camp. The leak was quickly noticed by a worker in the area and the system was shut down immidiately. During the time in which it took to shut the system down, a conservative estimate of approximatly 500 liters of effluent spilled onto the ground adjacent to the facility and pooled in the low laying areas. A vac truck was immidiately used to collect the spilled effluent and as a result of the frozen ground conditions as well as the limited lateral migration of the effluent, no soil absorbtion is believed to have occurred. The collected effluent was then transported to the Mary River camp and deposited into PWSP#1 for future treatment and processsing. The exact cause of the malfunction is currently under investigation and details of the malfunction will be provided in a follow-up report.

L	REPORTED TO SPILL LINE BY **Trevor Myers**	POSITION **Enviro Coordinator**	EMPLOYER **Baffinland Iron Mine**	LOCATION CALLING FROM **Mary River, Baffin Island**	TELEPHONE **(647) 693-9447**
M	ANY ALTERNATE CONTACT **Jim Millard**	POSITION **Enviro Superintendent**	EMPLOYER **Baffinland Iron Mine**	ALTERNATE CONTACT LOCATION **Mary River, Baffin Island**	ALTERNATE TELEPHONE **(902) 403-1337**

REPORT LINE USE ONLY

N	RECEIVED AT SPILL LINE BY	POSITION **Station operator**	EMPLOYER	LOCATION CALLED **Yellowknife, NT**	REPORT LINE NUMBER **(867) 920-8130**

LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC | SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN | FILE STATUS ☐ OPEN ☐ CLOSED

AGENCY	CONTACT NAME	CONTACT TIME	REMARKS
LEAD AGENCY			
FIRST SUPPORT AGENCY			
SECOND SUPPORT AGENCY			
THIRD SUPPORT AGENCY			

501500 E
502000 E
502500 E
503000 E
503500 E
504000 E
504500 E
505000 E
7977000 N
7976500 N
7976000 N
7975500 N
7975000 N

ᑭᖅᔪᐊ
MILNE INLET

ΔL⁾Γ· ᓯᑦᓭᒪᓂᖅ ᐃᑎᑕᐃᑦ
EFFLUENT DISCHARGE LOCATION TO RECEIVING ENVIRONMENT

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LAYDOWN AREA

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ORE PAD AND RESIDUAL ORE

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POLISHING/WASTE STABILIZATION POND

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BULK FUEL STORAGE TANK

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INCINERATOR

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FUEL STORAGE

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FUEL FARM

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OWS AREA

HAZARDOUS WASTE BERM

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TENT CAMP

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LINED STORAGE AREA

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TRAILER CAMP

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LINED STORAGE

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GARAGE

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WASTE WATER TREATMENT FACILITY

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AIRSTRIP

Δσᒋᑦᖏᖅ
LAYDOWN AREA

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MILNE INLET TOTE ROAD

Spill Location

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PROPOSED LANDFARM LOCATION

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PERMITTED OPEN BURN PIT AREA

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BORROW PITS

ᐃᓂᔨᑦᑕᐅᓂᒃ ᐃᓂᔨᑦᑕᐃᓂᒃ 1
BORROW SOURCE NO. 1

ᐃᓂᔨᑦᑕᐅᓂᒃ 1
ROCK QUARRY NO. 1

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MILNE INLET METEOROLOGY STATION 400 m (7975275 m N, 505832 m E)

Δᑲᓕᖅᓴᓐ
EXISTING HTO CABIN

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75
100

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LEGEND:

- ΔΓᓐ WATER
- ᓴᖅᑭᑐᓂᖅ ᓂᓀ WETLAND
- Δσᒋᑦᖏᖅ LAYDOWN AREA
- ᓂᓀᓕᑦ ᐱᓕᕆᔨᒃᑐᑦᓴᑦ (Δᓂᐃᑦ ᓂᓀᐊᑎᓚᓂ ᑭᓇᐅᔭᖏᑦᑐᒍᓐᓇᖅ) BAFFINLAND'S COMMERCIAL LEASE ON INUIT OWNED LAND
- ᐃᒻᒪᓂ/ᑯᒪᓕᕐᓂᒃ/ᑯᐊᐃᐅᓐᓇᖅ RIVER/STREAM/DRAINAGE
- ᓇᒧ ᑯᓴᓕᕆᔨᒃᓴᑦ ᐃᒪᐅᓂᒪᓂᕐᓂᒃ DIRECTION OF SURFACE WATER RUNOFF
- ᑭᓴᔪᓂ ᐊᖏᔪᑎ MILNE INLET TOTE ROAD
- ᐊᖏᔪᑎ ROAD
- ᐃᓂᔨᑦᑕᐅᓂᒃᓴᖅ (Δᓂᐃᑦ ᓂᓀᐊᑎᓚᓂ ᑭᓇᐅᔭᖏᑦᑐᒍᓐᓇᖅ) EXISTING ROCK QUARRY (IOL COMMERCIAL LEASE)
- ᐃᓂᔨᑦᑕᐅᓂᒃ (Δᓂᐃᑦ ᓂᓀᐊᑎᓚᓂ ᑭᓇᐅᔭᖏᑦᑐᒍᓐᓇᖅ) EXISTING BORROW AREA (IOL COMMERCIAL LEASE)

ᖃᐅᔨᒪᔭᕐᓂᒃᓴᑦ

1. ᓂᓀᐊᑎᓚᓂ ᒪᑎᓕᕐᓂᒃ EAGLE MAPPING (2005)
2. ᓂᓀᐊᑎᓚᓂ ᑎᑎᖅᓯᒪᓂᖅ ᒪᓕᓕᐅᖅ UTM (NAD83) ZONE 17
3. ᑎᑎᖅᓯᒪᓕᑦ ᒥᑕ ᑲᓛᓂᓕᑦ ᐅᖃᓕᓴᑎᖅᓴᑦ 5 ᒥᑕ

NOTES:

1. TOPOGRAPHY PROVIDED BY EAGLE MAPPING (2005).
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METRES.
3. CONTOURS ARE IN METRES. CONTOUR INTERVAL IS 5 METRES.

ᐊᖏᓂᖅ SCALE 100 50 0 100 200 300 400 500 m ᒥᑕ

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
0	27MAR'13	ISSUED WITH NWB ANNUAL REPORT	JM	AS	TM	JM

Baffinland IRON MINES CORPORATION

ᓂᓪᔨᓂᓂ ᐅᕗᖅᓯᐅᓴᖅ MARY RIVER PROJECT

ᑭᖅᔪᐊᑦ ᐊᖏᔪᑎᓂᖅ
EXISTING SITE LAYOUT AT MILNE PORT

Knight Piésold CONSULTING

P/A NO.	REF NO.
NB102-181/33	NB13-00093

ᑎᑎᕐᓯᒪᔭᕐᓂᒃ FIGURE 1.3 REV 0

June 20, 2013

Resource Management Officer
Nunavut Field Operations
Aboriginal Affairs and Northern Development Canada
Box 100
Iqaluit, NU X0A 0H0
keima@aandc.gc.ca

Manager, Major Projects
Qikiqtani Inuit Association
P.O. Box 219
Iqaluit, NU X0A 0H0
swbathory@qia.ca

Re: Follow-up to the Shanco Spill Reported on May 22, 2013
Mary River Project – Water License No. 2BB-MRY1114

Summary:

On May 22nd, 2013, at approximately 1:00 PM, a sewage waste water leak was detected. It originated from a main pipe that runs along the south side of the Milne Inlet Shanco complex. The plumber was contacted immediately and upon inspection it was discovered that the pipe was broken in several locations between the camp and the lift station. Shortly after the plumber arrived the cracked pipe was repaired. Although it is unknown exactly how long the pipe had been leaking, it is likely that it had been leaking since May 12th, 2013 when the Shanco complex was opened and went undetected due to the heavy snow cover on the ground. During the spill cleanup around 10 m^3 of contaminated snow was removed. Assuming the snow water equivalent was 15% and that 66% of that water was wastewater (a conservative estimate based on observations), the spill volume was estimated at approximately 1 m^3. There was no discharge of effluent to nearby water bodies from this spill.

Based on the sampling from May 19th and May 26th of the Milne RBC influent, the spilled sewage most likely had a pH between 6.82 and 7.02, a total phosphorus concentration between 13.3 and 15.3 mg/L, an ammonia concentration between 8 and 48 mg/L and a turbidity between 196 and 294 NTU. Therefore, in assuming that the spilled sewage had characteristics within the range of the samples taken on May 19th and May 26th, it is unlikely that the spilled wastewater met the Water License discharge criteria for Milne Inlet.

The original Spill Report submitted on May 23 is attached. A map showing the spill location is also attached.

Immediate and Follow Action:

The migration route of the spill was identified using the known slope of the ground (see Photo 1). Impacted ice and snow were excavated where possible and trucked to the PWSP No. 1 at the Mary River Mine Site (a lined and engineered containment pond), where it will melt out in the spring. Refer to Photos 3 and 4 for a record of the clean-up activities. All piping has since been inspected and no further leaks detected.

Recommendations:

The spill had resulted from historical wear and tear of the plumbing at the Shanco complex and the inability to inspect the piping due to the deep snow drifts and the potential damage that can result from snow removal at difficult locations. However, since that time, all visible piping and fittings have been inspected. The Shanco complex will be demobilized in the near future; there is little risk of this event

repeating itself. Although the spilled effluent most likely did not meet the Water License discharge criteria for Milne Inlet, the cleanup was successful in removing most of the contaminated snow caused by the spill (see Photo 4). The small volume of residual contaminated snow remaining poses negligible risk to the receiving environment during the spring melt.

Current Status:

All cracked plumbing has been repaired. Impacted ice and snow has been removed and transported to PWSP No. 1 at the Mary River Mine Site.

Should you require further information or clarification on the above noted spill, please feel free to contact the undersigned at (647) 693-9447 or (902) 403-1337.

Sincerely,

BAFFINLAND IRON MINES CORPORATION

Jim Millard, M.Sc., P.Geo.
Environmental Manager

cc: Erik Alain (AANDC)
Erik Madsen, Oliver Curran, Trevor Myers, Allan Knight (Baffinland)
Shawn Tucker, Marlon Coakley, Tyler Bruce (Hatch)

Attach:

Original Spill Report submitted to Spill Line on May 23, 2013
Location map showing spill location.

Photo 1 –Spill Migration Route (looking North)

Photo 2 –Cracked Pipe

Photo 3 – Contaminated Snow Removal

Photo 4 – Spill Cleanup (Looking North)

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
TEL: (867) 920-8130
FAX: (867) 873-6924
EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH – DAY – YEAR **05/22/2013**	REPORT TIME **23:00**	☒ ORIGINAL SPILL REPORT, OR	REPORT NUMBER -
B	OCCURRENCE DATE: MONTH – DAY – YEAR **05/22/2013**	OCCURRENCE TIME **14:00**	☐ UPDATE # TO THE ORIGINAL SPILL REPORT	

C	LAND USE PERMIT NUMBER (IF APPLICABLE)	WATER LICENCE NUMBER (IF APPLICABLE) **2BB-MRY1114**
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM THE NAMED LOCATION **Baffinland Iron Mines - Milne Inlet Camp**	REGION ☐ NWT ☒ NUNAVUT ☐ ADJACENT JURISDICTION OR
E	LATITUDE DEGREES **71** MINUTES **19** SECONDS **32**	LONGITUDE DEGREES **79** MINUTES **22** SECONDS **24**
F	RESPONSIBLE PARTY OR VESSEL NAME **Baffinland Iron Mines Corp.**	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION **Suite 1016, 120 Adelaide St. W., Toronto, ON**
G	ANY CONTRACTOR INVOLVED **Hatch/Nuna Logistics**	CONTRACTOR ADDRESS OR OFFICE LOCATION

H	PRODUCT SPILLED **Waste Water**	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES **Presently Unknown**	U.N. NUMBER
	SECOND PRODUCT SPILLED (IF APPLICABLE)	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER

I	SPILL SOURCE **Milne Inlet Shanco Camp**	SPILL CAUSE **Broken Sewage Line**	AREA OF CONTAMINATION IN SQUARE METRES **Presently Unknown**
J	FACTORS AFFECTING SPILL OR RECOVERY **Heavy Snow Cover on the Ground**	DESCRIBE ANY ASSISTANCE REQUIRED	HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT

K — ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS

At approximatly 14:00 on May 22/13, while workers were cleaning up a spill at the Milne Inlet waste water treatment facility, what appeared to waste water was discovered migrating under the snow from the direction of the camp; which is located adjacent to the facility. Upon clearing the snow away from the camp's main discharge line, the pipe was found to be split and leaking. Due to deep snow conditions, the exact area of contamination is presently unknown, however frozen ground conditions are believed to have largely prevented soil absorption. Heavy equipment will be used to collect and remove the contaminated snow, which will then be trucked to Mary River Camp and placed in PWSP#1 for future treatment.The situation is currently under investigation and exact volume of waste water released, which is currently unknown, as well as the amount of contaminated snow will be presented in a follow-up letter.

L	REPORTED TO SPILL LINE BY **Trevor Myers**	POSITION **Enviro Coordinator**	EMPLOYER **Baffinland Iron Mine**	LOCATION CALLING FROM **Mary River, Baffin Island**	TELEPHONE **(647) 693-9447**
M	ANY ALTERNATE CONTACT **Jim Millard**	POSITION **Enviro Superintendent**	EMPLOYER **Baffinland Iron Mine**	ALTERNATE CONTACT LOCATION **Mary River, Baffin Island**	ALTERNATE TELEPHONE **(902) 403-1337**

REPORT LINE USE ONLY

N	RECEIVED AT SPILL LINE BY	POSITION **Station operator**	EMPLOYER	LOCATION CALLED **Yellowknife, NT**	REPORT LINE NUMBER **(867) 920-8130**

LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC

SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN

FILE STATUS ☐ OPEN ☐ CLOSED

AGENCY	CONTACT NAME	CONTACT TIME	REMARKS
LEAD AGENCY			
FIRST SUPPORT AGENCY			
SECOND SUPPORT AGENCY			
THIRD SUPPORT AGENCY			

501500 E
502000 E
502500 E
503000 E
503500 E
504000 E
504500 E
505000 E
7977000 N
7976500 N
7976000 N
7975500 N
7975000 N

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MILNE INLET

ΔL⁾Γ· ᓯᑦᓭᒪᓂᖅ ᐃᑎᑕᐃᑦ
EFFLUENT DISCHARGE LOCATION TO RECEIVING ENVIRONMENT

Δσᒋᑦᖏᖅ
LAYDOWN AREA

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ORE PAD AND RESIDUAL ORE

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POLISHING/WASTE STABILIZATION POND

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FUEL STORAGE

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FUEL FARM

ᐊᐃᓱᒪᓕᓂ ᑲᓇᑕᒫᑦ
OWS AREA

ᐃᓕᓴᕐᑎᑐᖅ ᐃᓕᓐᖠᐃᐃᑦ
LINED STORAGE AREA

ᓴᓇᔨᑎᖅ ᐃᑭᒋᑎᑐᖅ
LINED STORAGE

ᑎᑕᑦᑐᐃᑦ
AIRSTRIP

ᑲᓇᑕᒫᑦ ᐅᓂᒃᑳᖅ ᑲᑎᒪᔨᐃᑦ
TENT CAMP

ᓴᓐᑯ ᓂᓀᑦᑲᓐᖏᖅ
TRAILER CAMP

ᐊᐃᑲᓐᓂᕐᓂᐊᓕᒃ ᐃᒥᒻᒪᒃ ᓴᓇᔨᑎᖅ
WASTE WATER TREATMENT FACILITY

ᓇᓐᑯ
GARAGE

Δσᒋᑦᖏᖅ
LAYDOWN AREA

ᑭᓇᐅᔭᖅ ᐊᑭᓐᓇᖅ ᑲᑎᒪᔨᐃᑦ
MILNE INLET TOTE ROAD

Spill Location

ᐃᓕᓴᕐᑎᑐᖅ ᓂᓀ
ᖃᓄᐃᓂᒪᔪᓂᖅ ᓇᓂᓂᖅ
PROPOSED LANDFARM LOCATION

ᐊᐃᑦᑎᐊᑲᓐᓂᖅ 1
ROCK QUARRY NO. 1

ᐊᐃᑦᑎᐊᑲᓐᓂᖅ
BORROW PITS

ᐃᓚᔪᑎᑲᓐᓂᖅ ᐊᐃᑦᑎᐊᑲᓐᓂᖅ 1
BORROW SOURCE NO. 1

ᐃᓕᓴᕐᑎᑐᖅ ᐊᐃᑦᑎᐊᑲᓐᓂᖅ
EXISTING HTO CABIN

ᐅᓪᓗᒥᐅᑦ
MILNE INLET METEOROLOGY STATION 400 m (7975275 m N, 505832 m E)

ᐃᓐᓇᐃᑦᑐᖅ ᓂᓀ ᖃᓄᐃᓂᒪᔪᓂᖅ ᓇᓂᓂᖅ ᐃᒪᒃᑲᓂᕐᒧᑦ ᐃᒥᒻᒧᑦ
PERMITTED OPEN BURN PIT AREA

ᐃᓐᓇᐃᑦᑐᖅ ᐃᓕᓴᕐᑎᑐᖅ ᐃᒪᒃᑲᓂᕐᒧᑦ ᐃᒥᒻᒧᑦ
HAZARDOUS WASTE BERM

ᐃᓐᓇᐃᑦᑐᖅ ᐃᒪᒃᑲᓂᕐᒧᑦ ᐃᒥᒻᒧᑦ
BULK FUEL STORAGE TANK

ᐃᒥᒻᒧᑦ
INCINERATOR

25
50
75
100

LEGEND:

- Δᒥᖅ WATER
- ᓴᕐᑐᓂᖅ ᓂᓀ WETLAND
- Δσᒋᑦᖏᖅ LAYDOWN AREA
- ᓂᓀᓕᑦ ᖃᖅᓴᓂ ᐱᓕᕆᑐᐃᓐᓇᖅᑐᑦ (Δᓂᐃᑦ ᓂᓀᓕᑦᓴᓂ ᑭᓇᐅᔭᖅᑐᑦ) BAFFINLAND'S COMMERCIAL LEASE ON INUIT OWNED LAND
- ᐃᖅᑲᓇᑦ/ᑯᒪᓕᑐᖅ/ᑯᐊᐃᑦᓂᖅ RIVER/STREAM/DRAINAGE
- ᓇᒧ ᑯᐊᑦᓂᓕᖓᓐᓂᑦ ᐃᒪᑎᓂᖅᓴᓐᓇᖅ DIRECTION OF SURFACE WATER RUNOFF
- ᑭᖅᔪᐊᓂ ᐊᑭᓐᓇᖅ MILNE INLET TOTE ROAD
- ᐊᑭᓐᓇᖅ ROAD
- ᐃᓕᓴᕐᑎᑐᖅ ᐊᐃᑦᑎᐊᑲᓐᓂᖅ (Δᓂᐃᑦ ᓂᓀᓕᑦᓴᓂ ᑭᓇᐅᔭᖅᑐᑦ) EXISTING ROCK QUARRY (IOL COMMERCIAL LEASE)
- ᐃᓕᓴᕐᑎᑐᖅ (Δᓂᐃᑦ ᓂᓀᓕᑦᓴᓂ ᑭᓇᐅᔭᖅᑐᑦ) EXISTING BORROW AREA (IOL COMMERCIAL LEASE)

ᖃᐅᔨᒪᔨᖏᓪᓗᑦ

1. ᓂᓀᓕᑦᓴᓂ ᓄᑖᒪᓂᖅ EAGLE MAPPING (2005)
2. ᓂᓀᓕᑦ ᑎᑎᕐᒪᓂᖅ ᒪᓕᓗᒋᖅ UTM (NAD83) ZONE 17
3. ᑎᑎᕐᒪᓕᐊᑦ ᒥᑕ ᑲᓛᓂᓕᑦ ᐅᖃᓕᓗᑎᒍᓐᓇᑦ 5 ᒥᑕ

NOTES:

1. TOPOGRAPHY PROVIDED BY EAGLE MAPPING (2005).
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METRES.
3. CONTOURS ARE IN METRES. CONTOUR INTERVAL IS 5 METRES.

ᐊᖏᓂᖅ SCALE 100 50 0 100 200 300 400 500 m ᒥᑕ

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
0	27MAR'13	ISSUED WITH NWB ANNUAL REPORT	JM	AS	TM	JM

Baffinland IRON MINES CORPORATION

ᓄᓇᕗᑦ ᐅᕙᖓᓄᐃᓐᓇᑦ MARY RIVER PROJECT

ᑭᖅᔪᐊᑦ ᐊᖏᓕᒪᓂᖅ
EXISTING SITE LAYOUT AT MILNE PORT

Knight Piésold CONSULTING

P/A NO.	REF NO.
NB102-181/33	NB13-00093

ᑎᑎᕐᒪᓕᐊᑦ FIGURE 1.3 REV 0

SAVED: I:\1\VZ\00\181\33\AA\acad\FIGS\B12_r0_3/26/2013 9:05:12 AM, ASIMPSON PRINTED: 3/26/2013 9:09:54 AM, Layout1, ASIMPSON
XREF FILE(S): IMAGE FILE(S): \\vpchq\cmgr\dwl_2013\vpc_2013\vpc_2013.dwg

July 18, 2013

Resource Management Officer
Nunavut Field Operations
Aboriginal Affairs and Northern Development Canada
Box 100
Iqaluit, NU X0A 0H0
keima@aandc.gc.ca

Director, Major Projects
Qikiqtani Inuit Assocation
P.O. Box 219
Iqaluit, NU X0A 0H0
swbathory@qia.ca

Re: Follow-up to Spill Reported on July 15th, 2013
Mary River Project - Water Licence 2BB-MRY1114 and QIA Commercial Lease No. Q10C3001

Summary:

On July 14, 2013, at approximately 1730h, during the routine treatment and discharge of oily storm water in the Mary River Bulk Fuel Storage Facility (MRY-6), contaminated water was pumped down below the level that allowed for efficient treatment. Free phase residual product (fuel), was inadvertently pumped through the Oily Water Treatment System (OWS), which overwhelmed the system's capacity to fully treat the water. Based on the periodic monitoring conducted for the area throughout the day, it is estimated that the upset treatment and discharge condition lasted for approximately 30 minutes. During this period approximately 1000 litres of contaminated water may have been inadequately processed through the treatment system and was discharged to an adjacent tundra pool. The discharge area is normally dry, however due to the recent pumping activities and rainfall events; standing water has accumulated in this area. Initial estimates of free phase product released to the environment range between 50 and 75 litres.

An attached oblique aerial photo of the Mary River Bulk Fuel Storage Facility (with view to the south) is provided that shows the following features:

- Oily Water Treatment System (OWS) to the east (left) and adjacent to the fuel storage facility.
- The location of the discharge end of the treatment system when the incident occurred (MRY-6-Discharge).
- The location where free phase product was sequestered (outlined in yellow), vacuumed, and stored for future treatment.
- Location of water samples that were collected for in-house Total Oil and Grease (TOG) analysis[1] and analyses by an external independent laboratory for the standard list of hydrocarbon parameters.
- Results for in-house TOG analyses. (Note that in-house results for TOG <3 generally correlate with external TOG results that are at or near detection limits).

The original spill report submitted on July 15 to the Nunavut Spill Line and Agencies is attached. (Nunavut Spill File no. 13-253).

Immediate and Follow-Up Action:

Upon noticing the problem the operator shut the system down and stopped the treatment and discharge system process. The prevailing winds helped to blow the free phase product to an area immediately adjacent and to the northeast of the fuel storage facility (denoted by yellow oval in attached aerial photo and photo). A boom was used to sequester and contain the free phase product and a vacuum truck was used to subsequently remove the product / contaminated water from the area. Based on subsequent field

[1] In-house TOG analysis by the InfraCal TOG/TPH Analyzer, Model CVH, which is designed to measure solvent extractable material (hydrocarbons or oil and grease) by infrared determination in water or wastewater. The InfraCal Model CVH InfraCal TOG/TPH Analyzer is designed for use with EPA Methods 413.2 and 418.1.

reconnaissance, there is little to no flow from this pool to downstream water bodies. In-House testing was done at various locations following cleanup. This testing indicated accumulated water was free of TOG (refer to attached aerial photo). External TOG analytical results for samples sent to an independent laboratory were consistent with the internal TOG results obtained from the field analytical unit. The laboratory analytical certificates are attached.

Immediate and Basic Cause:

The immediate cause of the spill incident was the inflow of small quantities of free phase fuel into the treatment system. The current design of the oily water treatment system is adequate for treating dissolved phase hydrocarbons, but not free-phase product. This upset condition is normally controlled by the use of absorbent booms that surround and protect the intake pump and by periodic visual monitoring. However, when the water level in the containment area gets too low, the boom becomes ineffective and free product can enter the system via the pump intake. The level of oily water in the fuel containment can be deceptive towards the treatment cycle endpoint, rapidly declining towards the end of the treatment cycle. The basic cause of the incident is the absence of a specific procedure or engineered control that would prevent free product from entering the system towards the end of the treatment cycle, especially when water levels are lowering quickly.

Recommendations:

1. The short term recommendation is to develop and implement an effective procedure that includes collecting and removing free product from the secondary containment prior to OWS treatment.
2. The longer term recommendation is to design a physical oil water separator at the front end of the existing OWS to minimize the opportunity for free product to foul the treatment system.

Current Status:

The OWS is currently not in operation pending the implementation of recommendation No. 1 and the change out and replacement of all treatment media. Recommendation No. 2 will be implemented prior to the start of the next OWS treatment season. The water samples that were collected and sent to the external laboratory are pending and will be provided when available. .

Should you require further information or clarification on the above noted spill, please feel free to contact me or Allan Knight/Trevor Myers at (647) 693-9447.

Sincerely,
Baffinland Iron Mines Corporation

James Millard, M.Sc, P. Geo.
Environmental Manager

Attach: Nunavut Spill Report File no. 13-253
Aerial Photo (view to the south),
Exova Laboratory analytical certificates.

cc. Trevor Myers, Allan Knight, Dave McCann, Erik Madsen, Baffinland.
Erik Allain, AANDC.

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
TEL: (867) 920-8130
FAX: (867) 873-6924
EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH – DAY – YEAR **July 14, 2013**	REPORT TIME **18:30**	☐ ORIGINAL SPILL REPORT, OR ☐ UPDATE # _____ TO THE ORIGINAL SPILL REPORT	REPORT NUMBER **13 - 253**
B	OCCURRENCE DATE: MONTH – DAY – YEAR **July 14, 2013**	OCCURRENCE TIME **17:30**		

C	LAND USE PERMIT NUMBER (IF APPLICABLE) **QIA Commercial Lease Q10C3001**	WATER LICENCE NUMBER (IF APPLICABLE) **2BB-MRY1114**
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION **Mary River Project Site, Baffin Island, NU**	REGION ☐ NWT ☒ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN
E	LATITUDE DEGREES **71** MINUTES **19** SECONDS **32**	LONGITUDE DEGREES **79** MINUTES **22** SECONDS **24**
F	RESPONSIBLE PARTY OR VESSEL NAME **Baffinland Iron Mines Corp.**	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION **Suite 1016, 120 Adelaide St. W., Toronto, ON**
G	ANY CONTRACTOR INVOLVED	CONTRACTOR ADDRESS OR OFFICE LOCATION

H	PRODUCT SPILLED **P-50 / Jet A Diesel Mixture**	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES **50-75 Litres**	U.N. NUMBER
	SECOND PRODUCT SPILLED (IF APPLICABLE)	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER
I	SPILL SOURCE **Oily Water Separator**	SPILL CAUSE **Pumping down Fuel Berm**	AREA OF CONTAMINATION IN SQUARE METRES **10 sq. m.**
J	FACTORS AFFECTING SPILL OR RECOVERY **Oily water/sand**	DESCRIBE ANY ASSISTANCE REQUIRED	HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT

K — ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS

During the routine treatment and discharge of oily storm water in the Mary River Bulk Fuel Storage Facility (MRY-6), contaminated water was pumped down below the level that allowed for efficient treatment. Free phase residual product (fuel), was inadvertently pumped through the treatment system, which overwhelmed the systems' capacity to fully treat the water. Upon noticing the problem the operator shut the system down and stopped the treatment and discharge system process. Absorbent materials were used to contain the free phase product. A vacuum truck was used to remove the free phase product / contaminated water from the area. The discharge from the treatment system was to a small isolated pool of standing water located immediately adjacent to the fuel farm berm. This area is normally dry, however due to the recent pumping activities and rainfall events; standing water has accumulated in this area. (Continued...)

L	REPORTED TO SPILL LINE BY **Jim Millard**	POSITION **Enviro Supervisor**	EMPLOYER **Baffinland Iron Mine**	LOCATION CALLING FROM	TELEPHONE **902-403-1337**
M	ANY ALTERNATE CONTACT **Allan Knight**	POSITION **Enviro Coordinator**	EMPLOYER **Baffinland Iron Mine**	ALTERNATE CONTACT LOCATION	ALTERNATE TELEPHONE **647-693-9447**

REPORT LINE USE ONLY

N	RECEIVED AT SPILL LINE BY	POSITION STATION OPERATOR	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8130

LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC | SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN | FILE STATUS ☐ OPEN ☐ CLOSED

AGENCY	CONTACT NAME	CONTACT TIME	REMARKS
LEAD AGENCY			
FIRST SUPPORT AGENCY			
SECOND SUPPORT AGENCY			
THIRD SUPPORT AGENCY			

	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER, OR DISPOSED OF SPILLED PRODUCT AND CONTAMINATED MATERIALS
K	Continued: Based on field reconnaissance, there is no flow from this pool to downstream water bodies. Based on the periodic monitoring conducted for the area throughout the day, it is estimated that the upset treatment and discharge condition lasted for less than 30 minutes. During this period approximately 1000 litres of contaminated water was inadequately processed through the treatment system and was discharged to the adjacent tundra pool. Initial estimates of free phase product released to the environment ranges between 50 and 75 litres. The results of the investigation and details of corrective actions will be provided in a follow-up report.


MRY-6-DS2
In-House taken July 15 - 2 ppm TOG
MRY-6-DS4
In-House taken July 16 - 1 ppm TOG
MRY-6-DS1
In-House taken July 15 - 2 ppm TOG
MRY-6-DS3
In-House taken July 16 - 1 ppm TOG
MRY-6-DS5
In-House taken July 16 - 1 ppm TOG
MRY-6-DISCHARGE
In-House taken July 15 - 3 ppm TOG
Free phase product sequestered and vacuumed

EXOVA OTTAWA

Certificate of Analysis

Client: Baffinland Iron Mines Corporation
#300 - 2275 Upper Middle Road East
Oakville, ON
L6H 0C3
Attention: Mr. Jim Millard
PO#:
Invoice to: Baffinland Iron Mines Corporation

Report Number: 1315060
Date Submitted: 2013-07-17
Date Reported: 2013-07-18
Project:
COC #: 773924

Dear Jim Millard:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

APPROVAL: _____

Diana Cameron
Team Leader, Inorganics

APPROVAL: _____

Charlie (Long) Qu
Laboratory Supervisor, Organics

Certificate of Analysis

Client: Baffinland Iron Mines Corporation
#300 - 2275 Upper Middle Road East
Oakville, ON
L6H 0C3
Attention: Mr. Jim Millard
PO#:
Invoice to: Baffinland Iron Mines Corporation

Report Number: 1315060
Date Submitted: 2013-07-17
Date Reported: 2013-07-18
Project:
COC #: 773924

Group	Analyte	MRL	Units	Guideline	1042943 Water 2013-07-15 MRY-6-Discharge	1042944 Water 2013-07-15 MRY-6-DS1	1042945 Water 2013-07-15 MRY-6-DS2
				Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.			
Metals	Pb	0.001	mg/L		<0.001	<0.001	<0.001
Oil & Grease	Oil & Grease - Total	1	mg/L		9	<1	2
VOCs	Benzene	0.5	ug/L		<0.5	<0.5	<0.5
	Ethylbenzene	0.5	ug/L		<0.5	<0.5	<0.5
	Toluene	0.5	ug/L		<0.5	<0.5	<0.5
	Toluene-d8	1	%		94	96	94

Guideline = *** = Guideline Exceedence**
** = Analysis completed at Mississauga, Ontario.
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Baffinland Iron Mines Corporation
#300 - 2275 Upper Middle Road East
Oakville, ON
L6H 0C3
Attention: Mr. Jim Millard
PO#:
Invoice to: Baffinland Iron Mines Corporation

Report Number: 1315060
Date Submitted: 2013-07-17
Date Reported: 2013-07-18
Project:
COC #: 773924

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 254553 **Analysis Date** 2013-07-18 **Method** C SM5520B			
Oil & Grease - Total	<1 mg/L	99	60-120
Run No 254559 **Analysis Date** 2013-07-18 **Method** V 8260B			
Benzene	<0.5 ug/L	108	80-120
Ethylbenzene	<0.5 ug/L	104	80-120
Toluene	<0.5 ug/L	104	80-120
Toluene-d8	98 %	93	80-120
Run No 254563 **Analysis Date** 2013-07-18 **Method** EPA 200.8			
Pb	0.001 mg/L	95	89-111

Guideline = *** = Guideline Exceedence**
** = Analysis completed at Mississauga, Ontario.
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Baffinland

September 8, 2013

Resource Management Officer
Nunavut Field Operations
Aboriginal Affairs and Northern Development Canada
Box 100
Iqaluit, NU X0A 0H0
keima@aandc.gc.ca

Manager, Major Projects
Qikiqtani Inuit Assocation
P.O. Box 219
Iqaluit, NU X0A 0H0
swbathory@qia.ca

Re: Follow-up to Spill Reported on August 7th, 2013
Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On August 6th, 2013, at approximately 2115h, a worker had completed loading a tanker truck with Jet A fuel. A secondary valve on the truck was not fully closed and while disconnecting the hose, the fuel splashed and spilled into the lined berm area of the refueling station. The release lasted for several seconds until the operator closed the valve. The hard packed, sand surface allowed the spill of approximately 125 litres to spread rapidly. Spill pads were used to mop up the product, but there was some saturation into the hard packed sand. The stained soil was left to aerate for several days and cleaned material has been applied to the area. There was no release to the surrounding land or water. The spill pads were disposed in a lined quatrex bag.

Immediate and Follow-Up Action:

Valve was closed and spill pads were used to mop up the product, but there was some saturation into the hard packed sand. The stained soil was left to aerate for several days and cleaned material has been applied to the area. There was no release to the surrounding land or water. The spill pads were disposed in a lined quatrex bag.

Basic Cause: The basic cause for this incident was a gap in formal training and procedure. The worker had been trained verbally on site with regard to the procedure, however, the specific procedure was not current for the particular tanker truck in question. A specific job hazard analysis had not been reviewed and signed off by the employee.

Recommendations:

The contractor is to develop a Safe Work Procedure for all employees/contractors involved in offloading with this type of tanker truck. Ensure that the training group will train all workers performing this task.

Current Status:

The above recommendations have been implemented.

Should you require further information or clarification on the above noted spill, please feel free to contact the undersigned at (647) 693-9447 or Jim Millard, Environmental Manager, at (902) 403-1337.

Sincerely,

James Millard, P.Geo., M.Sc.
Environmental Manager

Attach: Original NT-NU SPILL REPORT

Northwest Territories | Nunavut | Canada

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
TEL: (867) 920-8130
FAX: (867) 873-6924
EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH – DAY – YEAR Aug-07-13	REPORT TIME 22:15 hrs	☐ ORIGINAL SPILL REPORT, OR ☒ UPDATE # 13-276 TO THE ORIGINAL SPILL REPORT	REPORT NUMBER ____-_____
B	OCCURRENCE DATE: MONTH – DAY – YEAR Aug-06-13	OCCURRENCE TIME 21:15 hrs		
C	LAND USE PERMIT NUMBER (IF APPLICABLE) IOL Commercial Lease Q10C3001	WATER LICENCE NUMBER (IF APPLICABLE) 2BB-MRY1114		
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION Mary River Project - Mary River Mine Site	REGION ☐ NWT ☒ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN		
E	LATITUDE DEGREES 71 MINUTES 19 SECONDS 29	LONGITUDE DEGREES 79 MINUTES 22 SECONDS 9		
F	RESPONSIBLE PARTY OR VESSEL NAME Baffinland Iron Mines Corp.	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION 2275 Middle Road East, Suite 300, Oakville, ON L6H 0C3		
G	ANY CONTRACTOR INVOLVED Nuna Logistics Limited	CONTRACTOR ADDRESS OR OFFICE LOCATION		
H	PRODUCT SPILLED Jet A Fuel	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES 125 Litres	U.N. NUMBER N/A	
	SECOND PRODUCT SPILLED (IF APPLICABLE) N/A	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES N/A	U.N. NUMBER N/A	
I	SPILL SOURCE Jet A fuel truck in load out area	SPILL CAUSE Improper disconnection of hose	AREA OF CONTAMINATION IN SQUARE METRES 10 m2	
J	FACTORS AFFECTING SPILL OR RECOVERY Lined engineered containment	DESCRIBE ANY ASSISTANCE REQUIRED None	HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT None	

K — ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS

The spill occurred at the Bulk Fuel Bladder Facility Jet A load out area at the Mary River Mine Site which is a lined and engineered containment area. At 21:15 hrs, the worker had completed loading his tanker truck with Jet A fuel and forgot to turn off the valve from the truck and while disconnecting the hose, the fuel spilled out into the bermed area. The release lasted for several seconds before the operator closed the valve. The sand surface was very hard packed and the spill spread out rapidly. Spill pads were used to mop up the product but there was some saturation into the hard packed sand. The stained soil will be left to aerate for several days and then clean material will be applied to the area. There was no release to the surrounding land or water. The spill pads were disposed of in a Quatrex bag. An investigation is underway and a follow-up spill report will be provided within 30 days that outlines the basic cause and corrective actions taken.

L	REPORTED TO SPILL LINE BY Jim Millard	POSITION Environ. Manager	EMPLOYER Baffinland	LOCATION CALLING FROM Mary River	TELEPHONE (647)693-9447
M	ANY ALTERNATE CONTACT Trevor Myers	POSITION Environ. Coordinator	EMPLOYER Baffinland	ALTERNATE CONTACT LOCATION Mary River	ALTERNATE TELEPHONE (647)693-9458

REPORT LINE USE ONLY

N	RECEIVED AT SPILL LINE BY	POSITION STATION OPERATOR	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8130

LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC | SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN | FILE STATUS ☐ OPEN ☐ CLOSED

AGENCY	CONTACT NAME	CONTACT TIME	REMARKS
LEAD AGENCY			
FIRST SUPPORT AGENCY			
SECOND SUPPORT AGENCY			
THIRD SUPPORT AGENCY			

Baffinland

October 19, 2013

Resource Management Officer
Nunavut Field Operations
Aboriginal Affairs and Northern Development Canada
Box 100
Iqaluit, NU X0A 0H0
andrew.keim@aandc-aadnc.gc.ca

Director Major Projects
Qikiqtani Inuit Association
P.O. Box 219
Iqaluit, NU X0A 0H0
swbathory@qia.ca

Re: Follow-up to Spill Reported on September 21th, 2013
Mary River Project - Water Licence 2AM-MRY1325 Type "A"

Summary:

On September 21, 2013, at approximately 1200h, in a laydown area at Milne Port, more than 50 m away from Milne Inlet (ocean), a fork lift operator inadvertently punctured a gasoline drum at its base which resulted in the release of the contents of the drum, i.e. 205 liters. An area of approximately 4 square meters was contaminated within less than a minute. Approximately 7 m^3 of contaminated soil was excavated from the site and placed in Quatrex bags (which were subsequently placed in lined hazardous waste area) as well as in a temporary lined and covered berm beside the location of the incident. The limits of the excavation were based on the extent of the contamination subject to visual and olfactory observations. The contaminated material will continue to be stockpiled and will be deposited in the future land farm which is scheduled to be constructed in 2014. The original spill report submitted on September 21 for the above referenced spill, as well as photographs of the spill occurrence, and clean-up, are attached.

Immediate and Follow-Up Action:

Upon noticing the problem, the operator stopped work and notified environment and site services. Environment arrived at the scene soon after to assess conditions and to work with site services to implement a cleanup. The spill was cleaned up as described in the summary above. The excavated area was left open and secured. On September 27, ten samples were taken to assess potential soil contamination. Samples were collected from the walls and floor of the excavation. Results show that the results of soil samples collected were below applicable guideline criteria and that the remediation of the impacted area was completed successfully (refer to attached Table 1).

Basic cause

During the investigation the supervisor and operator were interviewed. The basic finding was that the gasoline drums pallet failed to support the load. The middle portion of the pallet collapsed, and it was difficult to observe the forks in relation to drum clearance. As the forks were passing through the pallet, the bottom of one of the drums was pierced.

Recommendations:

In future, Project Buyers will reiterate the need for pallets that are sturdy enough to support loads. In addition, the equipment operators will be reminded that they need to be vigilant in their identification of potentially suspect pallets.

Current Status:

The above recommendations will be implemented.

Should you require further information or clarification on the above noted spill, please feel free to contact the undersigned at 902-403-133 or Trevor Myers / Allan Knight at 647-693-9447.

Sincerely,

James Millard, M.Sc., P.Geo.
Environmental Manager

Attach: Original Nunavut Spill Report, Table - Follow-up soil sampling results

cc. Erik Allain, AANDC
Erik Madsen, Michael Anderson, Oliver Curran, Baffinland
Phyllis Beulieau, NWB

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
TEL: (867) 920-8130
FAX: (867) 873-6924
EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH – DAY – YEAR **July 14, 2013**	REPORT TIME **18:30**	☐ ORIGINAL SPILL REPORT, OR ☐ UPDATE # _____ TO THE ORIGINAL SPILL REPORT	REPORT NUMBER **13 - 253**
B	OCCURRENCE DATE: MONTH – DAY – YEAR **July 14, 2013**	OCCURRENCE TIME **17:30**		

C	LAND USE PERMIT NUMBER (IF APPLICABLE) **QIA Commercial Lease Q10C3001**	WATER LICENCE NUMBER (IF APPLICABLE) **2BB-MRY1114**
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION **Mary River Project Site, Baffin Island, NU**	REGION ☐ NWT ☒ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN
E	LATITUDE DEGREES **71** MINUTES **19** SECONDS **32**	LONGITUDE DEGREES **79** MINUTES **22** SECONDS **24**
F	RESPONSIBLE PARTY OR VESSEL NAME **Baffinland Iron Mines Corp.**	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION **Suite 1016, 120 Adelaide St. W., Toronto, ON**
G	ANY CONTRACTOR INVOLVED	CONTRACTOR ADDRESS OR OFFICE LOCATION

H	PRODUCT SPILLED **P-50 / Jet A Diesel Mixture**	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES **50-75 Litres**	U.N. NUMBER
	SECOND PRODUCT SPILLED (IF APPLICABLE)	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER
I	SPILL SOURCE **Oily Water Separator**	SPILL CAUSE **Pumping down Fuel Berm**	AREA OF CONTAMINATION IN SQUARE METRES **10 sq. m.**
J	FACTORS AFFECTING SPILL OR RECOVERY **Oily water/sand**	DESCRIBE ANY ASSISTANCE REQUIRED	HAZARDS TO PERSONS, PROPERTY OR ENVIRONMENT

K — ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS

During the routine treatment and discharge of oily storm water in the Mary River Bulk Fuel Storage Facility (MRY-6), contaminated water was pumped down below the level that allowed for efficient treatment. Free phase residual product (fuel), was inadvertently pumped through the treatment system, which overwhelmed the systems' capacity to fully treat the water. Upon noticing the problem the operator shut the system down and stopped the treatment and discharge system process. Absorbent materials were used to contain the free phase product. A vacuum truck was used to remove the free phase product / contaminated water from the area. The discharge from the treatment system was to a small isolated pool of standing water located immediately adjacent to the fuel farm berm. This area is normally dry, however due to the recent pumping activities and rainfall events; standing water has accumulated in this area. (Continued...)

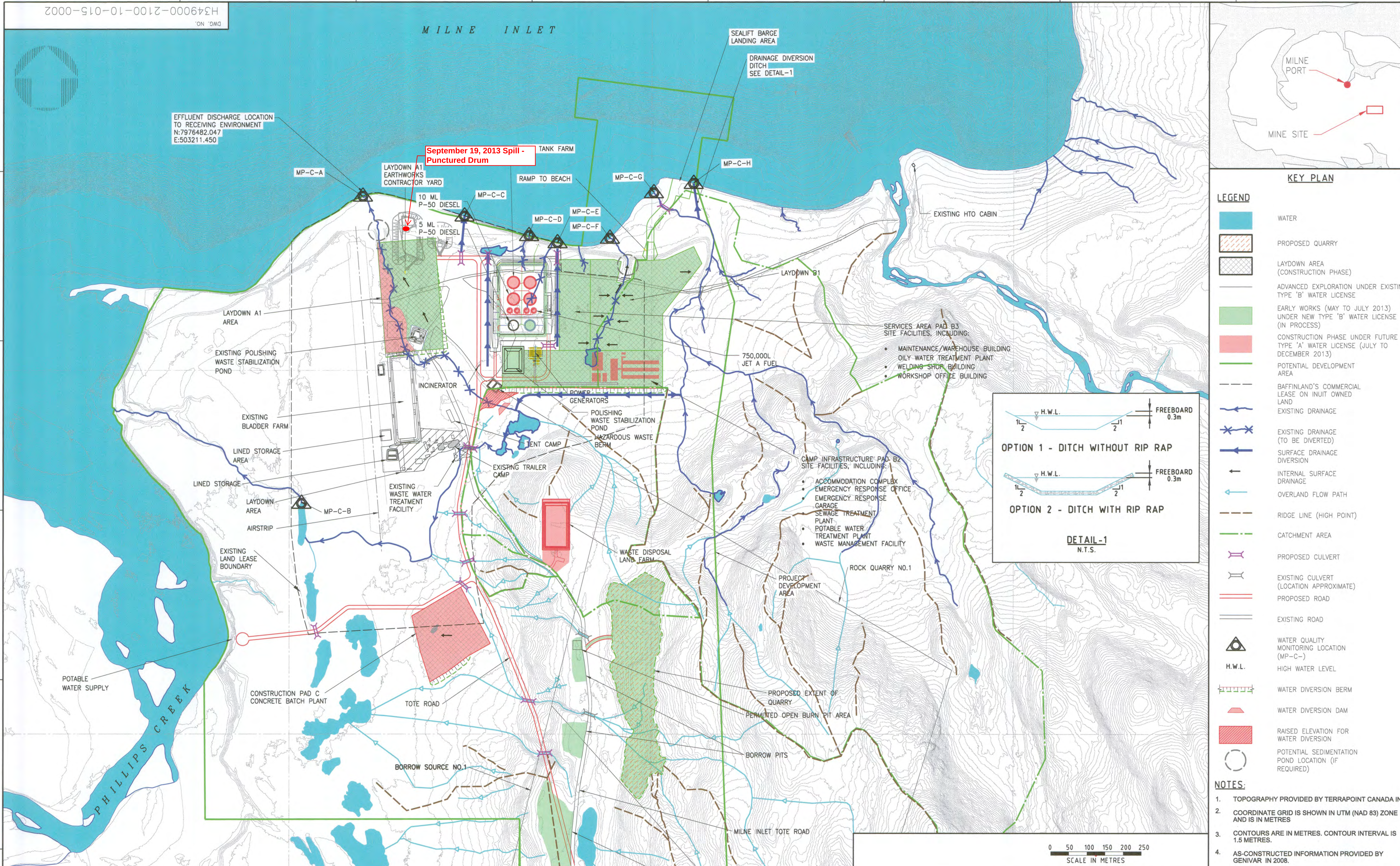
L	REPORTED TO SPILL LINE BY **Jim Millard**	POSITION **Enviro Supervisor**	EMPLOYER **Baffinland Iron Mine**	LOCATION CALLING FROM	TELEPHONE **902-403-1337**
M	ANY ALTERNATE CONTACT **Allan Knight**	POSITION **Enviro Coordinator**	EMPLOYER **Baffinland Iron Mine**	ALTERNATE CONTACT LOCATION	ALTERNATE TELEPHONE **647-693-9447**

REPORT LINE USE ONLY

N	RECEIVED AT SPILL LINE BY	POSITION STATION OPERATOR	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8130

LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC | SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN | FILE STATUS ☐ OPEN ☐ CLOSED

AGENCY	CONTACT NAME	CONTACT TIME	REMARKS
LEAD AGENCY			
FIRST SUPPORT AGENCY			
SECOND SUPPORT AGENCY			
THIRD SUPPORT AGENCY			



H349000-2100-10-015-0002
DWG. NO.
MILNE INLET
SEALIFT BARGE LANDING AREA
DRAINAGE DIVERSION DITCH SEE DETAIL-1
EFFLUENT DISCHARGE LOCATION TO RECEIVING ENVIRONMENT N:7976482.047 E:503211.450
September 19, 2013 Spill - Punctured Drum
TANK FARM
LAYDOWN A1 EARTHWORKS CONTRACTOR YARD
RAMP TO BEACH
MP-C-A
MP-C-B
MP-C-C
MP-C-D
MP-C-E
MP-C-F
MP-C-G
MP-C-H
10 ML P-50 DIESEL
5 ML P-50 DIESEL
EXISTING HTO CABIN
LAYDOWN B1
LAYDOWN A1 AREA
EXISTING POLISHING WASTE STABILIZATION POND
SERVICES AREA PAD B3 SITE FACILITIES, INCLUDING:
MAINTENANCE/WAREHOUSE BUILDING
OILY WATER TREATMENT PLANT
WELDING SHOP BUILDING
WORKSHOP OFFICE BUILDING
750,000L JET A FUEL
INCINERATOR
POWER GENERATORS
EXISTING BLADDER FARM
POLISHING WASTE STABILIZATION POND
HAZARDOUS WASTE BERM
TENT CAMP
LINED STORAGE AREA
EXISTING TRAILER CAMP
LINED STORAGE
LAYDOWN AREA
EXISTING WASTE WATER TREATMENT FACILITY
CAMP INFRASTRUCTURE PAD B2 SITE FACILITIES, INCLUDING:
ACCOMMODATION COMPLEX
EMERGENCY RESPONSE OFFICE
EMERGENCY RESPONSE GARAGE
SEWAGE TREATMENT PLANT
POTABLE WATER TREATMENT PLANT
WASTE MANAGEMENT FACILITY
AIRSTRIP
EXISTING LAND LEASE BOUNDARY
WASTE DISPOSAL LAND FARM
ROCK QUARRY NO.1
PROJECT DEVELOPMENT AREA
POTABLE WATER SUPPLY
CONSTRUCTION PAD C CONCRETE BATCH PLANT
TOTE ROAD
PROPOSED EXTENT OF QUARRY
PERMITTED OPEN BURN PIT AREA
BORROW PITS
BORROW SOURCE NO.1
PHILLIPS CREEK
MILNE INLET TOTE ROAD
H.W.L.
FREEBOARD 0.3m
OPTION 1 - DITCH WITHOUT RIP RAP
OPTION 2 - DITCH WITH RIP RAP
DETAIL-1
N.T.S.
0 50 100 150 200 250
SCALE IN METRES
MILNE PORT
MINE SITE
KEY PLAN
LEGEND
WATER
PROPOSED QUARRY
LAYDOWN AREA (CONSTRUCTION PHASE)
ADVANCED EXPLORATION ACTIVITIES UNDER EXISTING TYPE 'B' WATER LICENSE
EARLY WORKS (MAY TO JULY 2013) UNDER NEW TYPE 'B' WATER LICENSE (IN PROCESS)
CONSTRUCTION PHASE UNDER FUTURE TYPE 'A' WATER LICENSE (JULY TO DECEMBER 2013)
POTENTIAL DEVELOPMENT AREA
BAFFINLAND'S COMMERCIAL LEASE ON INUIT OWNED LAND
EXISTING DRAINAGE
EXISTING DRAINAGE (TO BE DIVERTED)
SURFACE DRAINAGE DIVERSION
INTERNAL SURFACE DRAINAGE
OVERLAND FLOW PATH
RIDGE LINE (HIGH POINT)
CATCHMENT AREA
PROPOSED CULVERT
EXISTING CULVERT (LOCATION APPROXIMATE)
PROPOSED ROAD
EXISTING ROAD
WATER QUALITY MONITORING LOCATION (MP-C-)
HIGH WATER LEVEL
WATER DIVERSION BERM
WATER DIVERSION DAM
RAISED ELEVATION FOR WATER DIVERSION
POTENTIAL SEDIMENTATION POND LOCATION (IF REQUIRED)
NOTES:
1. TOPOGRAPHY PROVIDED BY TERRAPOINT CANADA INC.
2. COORDINATE GRID IS SHOWN IN UTM (NAD 83) ZONE 17 AND IS IN METRES
3. CONTOURS ARE IN METRES. CONTOUR INTERVAL IS 1.5 METRES.
4. AS-CONSTRUCTED INFORMATION PROVIDED BY GENIVAR IN 2008.

DRAWING NO.	DRAWING TITLE

REFERENCE DRAWINGS

NO.	DESCRIPTION	BY	CHK'D	APP'D	DATE

REVISIONS

REGISTERED PROFESSIONAL ENGINEER M. M. S. HASSAN LICENSEE NT/NU

REV.	ISSUE FOR	AUTH.	BY	DATE
A	FOR PERMITTING	SH	MM	2013-03-28

ISSUE AUTHORIZATION

HATCH

DESIGNED BY K. FALLAHI DATE 2013-03-28	DRAWN BY M. MCDOUGALD DATE 2013-03-28
CHECKED BY A. MOHEBKHANI DATE 2013-03-28	DISCIP. ENGR. S. HASSAN DATE 2013-03-28
PROJ. DES. COORD. T. THERTELL DATE 2013-03-28	PROJ. ENGR. J. CLELAND DATE 2013-03-28
PROJ. MGR. S. PERRY DATE 2013-03-28	

Baffinland Iron Mines Corporation

MARY RIVER PROJECT

MILNE PORT SITE LAYOUT DRAINAGE PLAN

SCALE 1:5000 OR AS NOTED

DWG. NO. H349000-2100-10-015-0002

REV. A

c:\pw\projectwise\mcdo64322\dms74794\H349000-2100-10-015-0002.dgn 28/03/2013 11:46:21 AM mcdo64322

Figure 1. Punctured Drum


Figure 2. Spill Before Clean-Up


Figure 3. Excavated Area

Sample ID	F1 (C6-C10)	F2 (C10-C16)	F3 (C16-C34)	F4 (C35+)	Benzene	Ethylbenzene	Toluene	Xylenes	Date	Location	Sample Type	Lab Report	Lab COC	Lab ID
CCME Tier 1 Industrial coarse-grain	***320***	***260***	***1700***	***3300***	***0.03***	***0.082***	***0.37***	***11***	-	-	-	-	-	-
13-321-N-1	<10	<10	90	40	<0.02	<0.05	<0.2	0.21	27/09/2013	Spill 13 321 area	upper wall composite	1321718	777541	1062464
13-321-N-2	<10	<10	30	30	<0.02	<0.05	<0.2	<0.05	27/09/2013	Spill 13 321 area	lower wall composite	1321718	777541	1062465
13-321-E-1	<10	20	<20	<20	<0.02	<0.05	<0.2	<0.05	27/09/2013	Spill 13 321 area	upper wall composite	1321718	777541	1062466
13-321-E-2	<10	30	<20	<20	<0.02	<0.05	<0.2	<0.05	27/09/2013	Spill 13 321 area	lower wall composite	1321718	777541	1062467
13-321-S-1	<10	20	<20	<20	<0.02	<0.05	<0.2	<0.05	27/09/2013	Spill 13 321 area	upper wall composite	1321718	777541	1062468
13-321-S-2	<10	40	<20	<20	<0.02	<0.05	<0.2	<0.05	27/09/2013	Spill 13 321 area	lower wall composite	1321718	777541	1062469
13-321-W-1	<10	30	<20	<20	<0.02	<0.05	<0.2	<0.05	27/09/2013	Spill 13 321 area	upper wall composite	1321718	777541	1062470
13-321-W-2	<10	50	<20	<20	<0.02	<0.05	<0.2	<0.05	27/09/2013	Spill 13 321 area	lower wall composite	1321718	777541	1062471
13-321-F-1	<10	50	<20	<20	<0.02	<0.05	<0.2	<0.05	27/09/2013	Spill 13 321 area	North floor composite	1321718	777541	1062472
13-321-F-2	<10	40	<20	<20	<0.02	<0.05	<0.2	<0.05	27/09/2013	Spill 13 321 area	South floor composite	1321718	777541	1062473

* All results in ug/g.

Submission Date: Nov 11, 2013

Resource Management Officer
Nunavut Field Operations
Aboriginal Affairs and Northern Development Canada
Box 100
Iqaluit, NU X0A 0H0
Justin.Hack@aandc-aadnc.gc.ca

Manager, Major Projects
Qikiqtani Inuit Assocation
P.O. Box 219
Iqaluit, NU X0A 0H0
swbathory@qia.ca

Re: Follow-up to Spill Reported on Oct 30th, 2013
Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On October 29th, 2013, at approximately 0005h, a leak of untreated sewage effluent was detected at the main lift station of the newly constructed accommodations facility at the Milne Port location. The breech was located about 12" from the top of the enclosed tank and was approximately four inches in diameter.

Immediate and Follow-Up Action:

Personnel immediately acquired vacuum truck services to empty the tank. The primary lift station and the dorm lift stations were also cleaned out to ensure no further issues occurred throughout the night. The tank is being monitored regularly until it can be thoroughly inspected and repaired to ensure no further leakage. Approximately 500 litres was discharged to the adjacent land surface, with an approximate impacted area of 10 square meters. Frozen ground conditions limited the depth of soil contamination. The contaminated snow and untreated sewage effluent were transferred to the Milne Exploration Phase Sewage PWSP (MP-MRY-04a).

Recommendations:

The cause of the breech is unknown, however, when the level of the tank reached the area of the hole, part of the tank "popped" out. The hole was securely, although temporarily, covered and will be repaired properly when fibreglass materials are delivered to site.

Current Status:

Currently, we are awaiting hardener for the fiberglass repair.

Should you require further information or clarification on the above noted spill, please feel free to contact on Allan Knight or Trevor Myers at (647) 693-9447 or the undersigned at (902) 403-1337.

Sincerely,

James Millard, M.Sc., P.Geo.
Environmental Manager

Attach: NT-NU SPILL REPORT
Photos

cc. Michael Anderson, Allan Knight, Trevor Myers, Nicolas Kuzyk, Erik Madsen, Baffinland.
Erik Allain, AANDC
Manager of Licencing, NWB

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
TEL: (867) 920-8130
FAX: (867) 873-6924
EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH – DAY – YEAR **July 14, 2013**	REPORT TIME **18:30**	☐ ORIGINAL SPILL REPORT, OR ☐ UPDATE # _____ TO THE ORIGINAL SPILL REPORT	REPORT NUMBER **13 - 253**
B	OCCURRENCE DATE: MONTH – DAY – YEAR **July 14, 2013**	OCCURRENCE TIME **17:30**		

C	LAND USE PERMIT NUMBER (IF APPLICABLE) **QIA Commercial Lease Q10C3001**	WATER LICENCE NUMBER (IF APPLICABLE) **2BB-MRY1114**
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION **Mary River Project Site, Baffin Island, NU**	REGION ☐ NWT ☒ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN
E	LATITUDE DEGREES **71** MINUTES **19** SECONDS **32**	LONGITUDE DEGREES **79** MINUTES **22** SECONDS **24**
F	RESPONSIBLE PARTY OR VESSEL NAME **Baffinland Iron Mines Corp.**	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION **Suite 1016, 120 Adelaide St. W., Toronto, ON**
G	ANY CONTRACTOR INVOLVED	CONTRACTOR ADDRESS OR OFFICE LOCATION

H	PRODUCT SPILLED **P-50 / Jet A Diesel Mixture**	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES **50-75 Litres**	U.N. NUMBER
	SECOND PRODUCT SPILLED (IF APPLICABLE)	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER
I	SPILL SOURCE **Oily Water Separator**	SPILL CAUSE **Pumping down Fuel Berm**	AREA OF CONTAMINATION IN SQUARE METRES **10 sq. m.**
J	FACTORS AFFECTING SPILL OR RECOVERY **Oily water/sand**	DESCRIBE ANY ASSISTANCE REQUIRED	HAZARDS TO PERSONS, PROPERTY OR ENVIRONMENT

K — ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS

During the routine treatment and discharge of oily storm water in the Mary River Bulk Fuel Storage Facility (MRY-6), contaminated water was pumped down below the level that allowed for efficient treatment. Free phase residual product (fuel), was inadvertently pumped through the treatment system, which overwhelmed the systems' capacity to fully treat the water. Upon noticing the problem the operator shut the system down and stopped the treatment and discharge system process. Absorbent materials were used to contain the free phase product. A vacuum truck was used to remove the free phase product / contaminated water from the area. The discharge from the treatment system was to a small isolated pool of standing water located immediately adjacent to the fuel farm berm. This area is normally dry, however due to the recent pumping activities and rainfall events; standing water has accumulated in this area. (Continued...)

L	REPORTED TO SPILL LINE BY **Jim Millard**	POSITION **Enviro Supervisor**	EMPLOYER **Baffinland Iron Mine**	LOCATION CALLING FROM	TELEPHONE **902-403-1337**
M	ANY ALTERNATE CONTACT **Allan Knight**	POSITION **Enviro Coordinator**	EMPLOYER **Baffinland Iron Mine**	ALTERNATE CONTACT LOCATION	ALTERNATE TELEPHONE **647-693-9447**

REPORT LINE USE ONLY

N	RECEIVED AT SPILL LINE BY	POSITION STATION OPERATOR	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8130

LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC | SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN | FILE STATUS ☐ OPEN ☐ CLOSED

AGENCY	CONTACT NAME	CONTACT TIME	REMARKS
LEAD AGENCY			
FIRST SUPPORT AGENCY			
SECOND SUPPORT AGENCY			
THIRD SUPPORT AGENCY			

DWG. NO. H349000-2100-10-015-0002

MILNE INLET

SEALIFT BARGE LANDING AREA

DRAINAGE DIVERSION DITCH SEE DETAIL-1

EFFLUENT DISCHARGE LOCATION TO RECEIVING ENVIRONMENT N:7976482.047 E:503211.450

MP-C-A

LAYDOWN A1 EARTHWORKS CONTRACTOR YARD

FUEL TANK FARM

RAMP TO BEACH

MP-C-G

MP-C-H

10 ML P-50 DIESEL

MP-C-C

MP-C-D

MP-C-E

MP-C-F

5 ML P-50 DIESEL

EXISTING HTO CABIN

LAYDOWN B1

October 29, 2013 Spill - Lift Station Breach

LAYDOWN A1 AREA

SERVICES AREA PAD B3 SITE FACILITIES, INCLUDING:

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

EXISTING POLISHING WASTE STABILIZATION POND

750,000L JET A FUEL

INCINERATOR

POWER GENERATORS

POLISHING WASTE STABILIZATION POND

HAZARDOUS WASTE BERM

EXISTING BLADDER FARM

CAMP INFRASTRUCTURE PAD B2 SITE FACILITIES, INCLUDING:

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

LINED STORAGE AREA

EXISTING TRAILER CAMP

LINED STORAGE

EXISTING WASTE WATER TREATMENT FACILITY

LAYDOWN AREA

MP-C-B

AIRSTRIP

WASTE DISPOSAL LAND FARM

ROCK QUARRY NO.1

PROJECT DEVELOPMENT AREA

EXISTING LAND LEASE BOUNDARY

POTABLE WATER SUPPLY

CONSTRUCTION PAD C CONCRETE BATCH PLANT

TOTE ROAD

PROPOSED EXTENT OF QUARRY

PERMITTED OPEN BURN PIT AREA

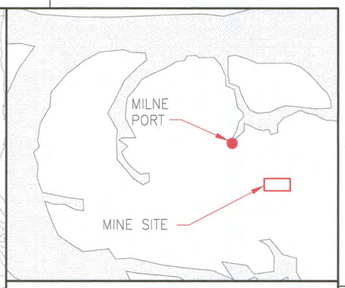
BORROW PITS

BORROW SOURCE NO.1

MILNE INLET TOTE ROAD

PHILLIPS CREEK

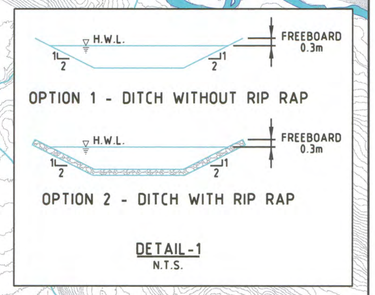
0 50 100 150 200 250
SCALE IN METRES



KEY PLAN

LEGEND

- WATER
- PROPOSED QUARRY
- LAYDOWN AREA (CONSTRUCTION PHASE)
- ADVANCED EXPLORATION UNDER EXISTING TYPE 'B' WATER LICENSE
- EARLY WORKS (MAY TO JULY 2013) UNDER NEW TYPE 'B' WATER LICENSE (IN PROCESS)
- CONSTRUCTION PHASE UNDER FUTURE TYPE 'A' WATER LICENSE (JULY TO DECEMBER 2013)
- POTENTIAL DEVELOPMENT AREA
- BAFFINLAND'S COMMERCIAL LEASE ON INUIT OWNED LAND
- EXISTING DRAINAGE
- EXISTING DRAINAGE (TO BE DIVERTED)
- SURFACE DRAINAGE DIVERSION
- INTERNAL SURFACE DRAINAGE
- OVERLAND FLOW PATH
- RIDGE LINE (HIGH POINT)
- CATCHMENT AREA
- PROPOSED CULVERT
- EXISTING CULVERT (LOCATION APPROXIMATE)
- PROPOSED ROAD
- EXISTING ROAD
- WATER QUALITY MONITORING LOCATION (MP-C-)
- H.W.L. HIGH WATER LEVEL
- WATER DIVERSION BERM
- WATER DIVERSION DAM
- RAISED ELEVATION FOR WATER DIVERSION
- POTENTIAL SEDIMENTATION POND LOCATION (IF REQUIRED)



DETAIL-1
N.T.S.

NOTES:

1. TOPOGRAPHY PROVIDED BY TERRAPOINT CANADA INC.
2. COORDINATE GRID IS SHOWN IN UTM (NAD 83) ZONE 17 AND IS IN METRES
3. CONTOURS ARE IN METRES. CONTOUR INTERVAL IS 1.5 METRES.
4. AS-CONSTRUCTED INFORMATION PROVIDED BY GENIVAR IN 2008.

DRAWING NO.	DRAWING TITLE
REFERENCE DRAWINGS	

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

REGISTERED PROFESSIONAL ENGINEER
M. M. S. HASSAN
LICENSEE
NT/NU

REV.	ISSUE FOR	AUTH. BY	DATE
A	FOR PERMITTING	SH MM	2013-03-28
ISSUE AUTHORIZATION			

HATCH™

DESIGNED BY K. FALLAHI DATE 2013-03-28	DRAWN BY M. MCDOUGALD DATE 2013-03-28
CHECKED BY A. MOHEBKHANI DATE 2013-03-28	DISCIP. ENGR. S. HASSAN DATE 2013-03-28
PROJ. DES. CRORD T. THERTELL DATE 2013-03-28	PROJ. ENGR. J. CLELAND DATE 2013-03-28
PROJ. MGR. S. PERRY DATE 2013-03-28	

Baffinland Iron Mines Corporation

MARY RIVER PROJECT

MILNE PORT
SITE LAYOUT
DRAINAGE PLAN

SCALE 1:5000 OR AS NOTED

DWG. NO. H349000-2100-10-015-0002

REV. A

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28/03/2013 11:46:21 AM
mcd064322

13 10 29 – Sewage Spill Behind Lift Station

13 10 29 Sewage Spill Under Camp

13 10 29 Tank Breech

October 29th Lift Station Sewage Spill Cleanup

Submission Date: Nov 11, 2013

Resource Management Officer
Nunavut Field Operations
Aboriginal Affairs and Northern Development Canada
Box 100
Iqaluit, NU X0A 0H0
keima@aandc.gc.ca, Justin.Hack@aandc-aadnc.gc.ca

Manager, Major Projects
Qikiqtani Inuit Assocation
P.O. Box 219
Iqaluit, NU X0A 0H0
swbathory@qia.ca

Re: Follow-up to Spill Reported on Oct 31th, 2013
Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On October 30th, 2013, at approximately 15:30h, a spill occurred at the Milne Port Sewage Treatment Facility during offloading of a truck transferring waste sewage effluent. During off-loading into the camp's main lift station, the lift station's pump engaged and pumped the contents of the tank over to the Sewage Treatment Plant. The influent screening equipment at the STP overflowed as a result of hydraulic overloading.

Immediate and Follow-Up Action:

The line from the lift station to the STP was immediately closed and resources were deployed to clean up the spill. A conservative estimate of 1000 litres was discharged to the adjacent ground surface. Due to snow cover conditions, much of the effluent was absorbed by the snow which limited the impact area to 15 square meters and allowed for easy clean up. The contaminated snow and effluent was transferred to the Milne Exploration Phase Sewage PWSP (MP-MRY-04a). It was determined that the lift station pump moves higher volumes than the respective pumps in the sewage treatment facility. With this in mind, the floats in the lift station have been moved closer together to pump less volume, although on a more frequent cycle.

Recommendations:

Several corrective items are being investigated; a) install communication between the screening equipment to temporarily turn off the pumps at the lift station when levels are too high; b) install an overflow tank at the lift station so the problem is not backed up to over flow it, and; c) install communication to shut off the water supply to camp along with shutting off the lift station pumps.

Current Status:

One or more of the preferred options, above, will be selected and implemented.

Should you require further information or clarification on the above noted spill, please feel free to contact on Allan Knight or Trevor Myers at (647) 693-9447 or the undersigned at (902) 403-1337.

Sincerely,

James Millard, M.Sc., P.Geo.
Environmental Manager

Attach: NT-NU SPILL REPORT
Photos

cc. Michael Anderson, Allan Knight, Trevor Myers, Nicolas Kuzyk, Erik Madsen, Baffinland.
Erik Allain, AANDC
Manager of Licencing, NWB

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
TEL: (867) 920-8130
FAX: (867) 873-6924
EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH – DAY – YEAR **July 14, 2013**	REPORT TIME **18:30**	☐ ORIGINAL SPILL REPORT, OR ☐ UPDATE # _____ TO THE ORIGINAL SPILL REPORT	REPORT NUMBER **13 - 253**
B	OCCURRENCE DATE: MONTH – DAY – YEAR **July 14, 2013**	OCCURRENCE TIME **17:30**		

C	LAND USE PERMIT NUMBER (IF APPLICABLE) **QIA Commercial Lease Q10C3001**	WATER LICENCE NUMBER (IF APPLICABLE) **2BB-MRY1114**
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION **Mary River Project Site, Baffin Island, NU**	REGION ☐ NWT ☒ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN
E	LATITUDE DEGREES **71** MINUTES **19** SECONDS **32**	LONGITUDE DEGREES **79** MINUTES **22** SECONDS **24**
F	RESPONSIBLE PARTY OR VESSEL NAME **Baffinland Iron Mines Corp.**	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION **Suite 1016, 120 Adelaide St. W., Toronto, ON**
G	ANY CONTRACTOR INVOLVED	CONTRACTOR ADDRESS OR OFFICE LOCATION

H	PRODUCT SPILLED **P-50 / Jet A Diesel Mixture**	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES **50-75 Litres**	U.N. NUMBER
	SECOND PRODUCT SPILLED (IF APPLICABLE)	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER
I	SPILL SOURCE **Oily Water Separator**	SPILL CAUSE **Pumping down Fuel Berm**	AREA OF CONTAMINATION IN SQUARE METRES **10 sq. m.**
J	FACTORS AFFECTING SPILL OR RECOVERY **Oily water/sand**	DESCRIBE ANY ASSISTANCE REQUIRED	HAZARDS TO PERSONS, PROPERTY OR ENVIRONMENT

K — ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS

During the routine treatment and discharge of oily storm water in the Mary River Bulk Fuel Storage Facility (MRY-6), contaminated water was pumped down below the level that allowed for efficient treatment. Free phase residual product (fuel), was inadvertently pumped through the treatment system, which overwhelmed the systems' capacity to fully treat the water. Upon noticing the problem the operator shut the system down and stopped the treatment and discharge system process. Absorbent materials were used to contain the free phase product. A vacuum truck was used to remove the free phase product / contaminated water from the area. The discharge from the treatment system was to a small isolated pool of standing water located immediately adjacent to the fuel farm berm. This area is normally dry, however due to the recent pumping activities and rainfall events; standing water has accumulated in this area. (Continued...)

L	REPORTED TO SPILL LINE BY **Jim Millard**	POSITION **Enviro Supervisor**	EMPLOYER **Baffinland Iron Mine**	LOCATION CALLING FROM	TELEPHONE **902-403-1337**
M	ANY ALTERNATE CONTACT **Allan Knight**	POSITION **Enviro Coordinator**	EMPLOYER **Baffinland Iron Mine**	ALTERNATE CONTACT LOCATION	ALTERNATE TELEPHONE **647-693-9447**

REPORT LINE USE ONLY

N	RECEIVED AT SPILL LINE BY	POSITION STATION OPERATOR	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8130

LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC | SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN | FILE STATUS ☐ OPEN ☐ CLOSED

AGENCY	CONTACT NAME	CONTACT TIME	REMARKS
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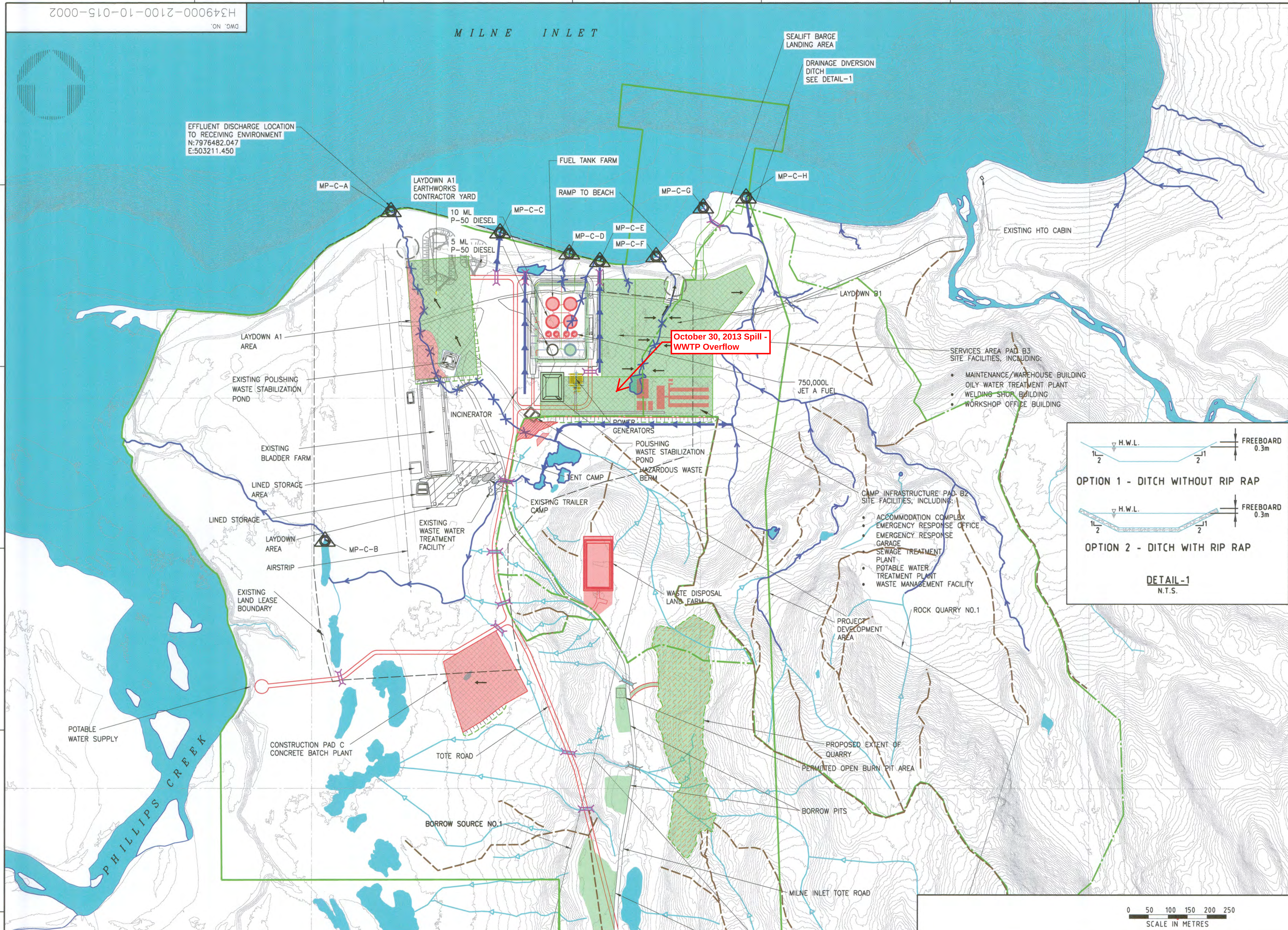
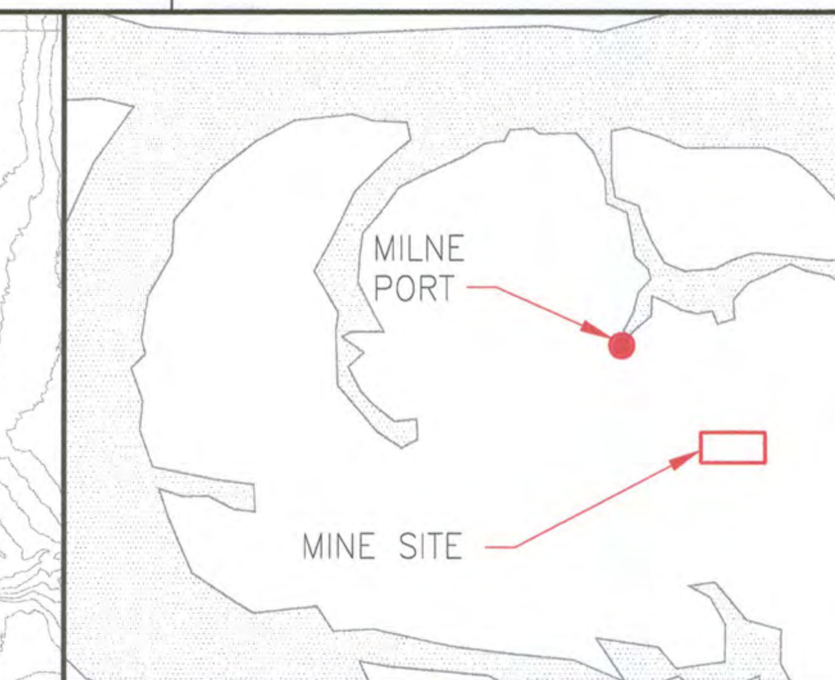
FIRST SUPPORT AGENCY			
SECOND SUPPORT AGENCY			
THIRD SUPPORT AGENCY			

H349000-2100-10-015-0002
DWG. NO.





KEY PLAN

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- PROPOSED QUARRY
- LAYDOWN AREA (CONSTRUCTION PHASE)
- ADVANCED EXPLORATION AREA UNDER EXISTING TYPE 'B' WATER LICENSE
- EARLY WORKS (MAY TO JULY 2013) UNDER NEW TYPE 'B' WATER LICENSE (IN PROCESS)
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- BAFFINLAND'S COMMERCIAL LEASE ON INUIT OWNED LAND
- EXISTING DRAINAGE
- EXISTING DRAINAGE (TO BE DIVERTED)
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- RIDGE LINE (HIGH POINT)
- CATCHMENT AREA
- PROPOSED CULVERT
- EXISTING CULVERT (LOCATION APPROXIMATE)
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- H.W.L. HIGH WATER LEVEL
- WATER DIVERSION BERM
- WATER DIVERSION DAM
- RAISED ELEVATION FOR WATER DIVERSION
- POTENTIAL SEDIMENTATION POND LOCATION (IF REQUIRED)

NOTES:

1. TOPOGRAPHY PROVIDED BY TERRAPOINT CANADA INC.
2. COORDINATE GRID IS SHOWN IN UTM (NAD 83) ZONE 17 AND IS IN METRES
3. CONTOURS ARE IN METRES. CONTOUR INTERVAL IS 1.5 METRES.
4. AS-CONSTRUCTED INFORMATION PROVIDED BY GENIVAR IN 2008.

DRAWING NO.	DRAWING TITLE
REFERENCE DRAWINGS	

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

REGISTERED PROFESSIONAL ENGINEER — M. M. S. HASSAN — LICENSEE — NT/NU

REV.	ISSUE FOR	AUTH.	BY	DATE
A	FOR PERMITTING	SH	MM	2013-03-28

ISSUE AUTHORIZATION

HATCH

DESIGNED BY K. FALLAHI DATE 2013-03-28	DRAWN BY M. MCDOUGALD DATE 2013-03-28
CHECKED BY A. MOHEBKHANI DATE 2013-03-28	DISCIP. ENGR. S. HASSAN DATE 2013-03-28
PROJ. DES. COORD. T. THERTELL DATE 2013-03-28	PROJ. ENGR. J. CLELAND DATE 2013-03-28
PROJ. MGR. S. PERRY DATE 2013-03-28	

Baffinland Iron Mines Corporation

MARY RIVER PROJECT

MILNE PORT
SITE LAYOUT
DRAINAGE PLAN

SCALE 1:5000 OR AS NOTED

DWG. NO. H349000-2100-10-015-0002

REV. A

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28/03/2013 11:46:21 AM
mcdo64322

Figure 1. Sewage spill at Sewage treatment plant

Figure 2. Sewage spill cleaned-up

Submission Date: December 8, 2013

Resource Management Officer
Nunavut Field Operations
Aboriginal Affairs and Northern Development Canada
Box 100
Iqaluit, NU X0A 0H0
Justin.Hack@aandc-aadnc.gc.ca

Manager, Major Projects
Qikiqtani Inuit Association
P.O. Box 219
Iqaluit, NU X0A 0H0
swbathory@qia.ca

Re: Follow-up to Spill Reported on Nov 9th, 2013
Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On November 8th, 2013, at 1600h, a leak of untreated sewage effluent was detected at the SE lift station of the Shanco Camp at the Milne Port location. The discharge sewage line had frozen causing the lift station to overflow and spill approximately 700 litres.

Immediate and Follow-Up Action:

All facilities in the Shanco Camp were locked out immediately and the system was depressurized. Sewage in and around the lift station was removed using the vacuum truck onsite. The contaminated snow, ice and remaining untreated sewage effluent were transferred to the Milne Exploration Phase Sewage PWSP (MP-MRY-04a).

Recommendations:

The cause of the frozen sewage line appears to have been caused by the heat trace being inadvertently powered off during a fire alarm in the camp the previous night. Personnel with responsibility for the site electrical system have been advised of the incident and, in future, there will be a procedure or checklist in place to prevent this situation from occurring again.

Current Status:

The Shanco Camp water system is shut off and depressurized. All occupants are now out of the Shanco camp and have moved into the Matrix camp. The spill cleanup is complete. Approximately 3 cubes of contaminated snow and ice was removed and placed in the old PWSP.

Should you require further information or clarification on the above noted spill, please feel free to contact Allan Knight or Trevor Myers at (647) 693-9447, or the undersigned at (902) 403-1337.

Sincerely,

James Millard, M.Sc., P.Geo
Senior Environmental Superintendent

Attach NT-NU Spill Report
Photos
cc. Michael Anderson, Allan Knight, Trevor Myers, Nicolas Kuzyk, Erik Madsen (Baffinland).
Erik Allain, AANDC, Manager of Licencing (NWB)

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During the routine treatment and discharge of oily storm water in the Mary River Bulk Fuel Storage Facility (MRY-6), contaminated water was pumped down below the level that allowed for efficient treatment. Free phase residual product (fuel), was inadvertently pumped through the treatment system, which overwhelmed the systems' capacity to fully treat the water. Upon noticing the problem the operator shut the system down and stopped the treatment and discharge system process. Absorbent materials were used to contain the free phase product. A vacuum truck was used to remove the free phase product / contaminated water from the area. The discharge from the treatment system was to a small isolated pool of standing water located immediately adjacent to the fuel farm berm. This area is normally dry, however due to the recent pumping activities and rainfall events; standing water has accumulated in this area. (Continued...)

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M	ANY ALTERNATE CONTACT **Allan Knight**	POSITION **Enviro Coordinator**	EMPLOYER **Baffinland Iron Mine**	ALTERNATE CONTACT LOCATION	ALTERNATE TELEPHONE **647-693-9447**

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AGENCY	CONTACT NAME	CONTACT TIME	REMARKS
LEAD AGENCY			
FIRST SUPPORT AGENCY			
SECOND SUPPORT AGENCY			
THIRD SUPPORT AGENCY			

13 11 08 - Milne Port - SE Lift Station Shanco - 700 Liters

13 11 11 – Milne Port – SE Lift Station Shanco – After Clean Up

DWG. NO. H349000-2100-10-015-0002

MILNE INLET

SEALIFT BARGE LANDING AREA

DRAINAGE DIVERSION DITCH SEE DETAIL-1

EFFLUENT DISCHARGE LOCATION TO RECEIVING ENVIRONMENT N:7976482.047 E:503211.450

MP-C-A

LAYDOWN A1 EARTHWORKS CONTRACTOR YARD

FUEL TANK FARM

RAMP TO BEACH

MP-C-G

MP-C-H

10 ML P-50 DIESEL

MP-C-C

MP-C-D

MP-C-E

MP-C-F

5 ML P-50 DIESEL

EXISTING HTO CABIN

LAYDOWN B1

LAYDOWN A1 AREA

SERVICES AREA PAD B3 SITE FACILITIES, INCLUDING:

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

EXISTING POLISHING WASTE STABILIZATION POND

750,000L JET A FUEL

INCINERATOR

POWER GENERATORS

November 8, 2013 Spill SE Shanco Lift Station

EXISTING BLADDER FARM

POLISHING WASTE STABILIZATION POND

HAZARDOUS WASTE BERM

CAMP

LINED STORAGE AREA

EXISTING TRAILER CAMP

CAMP INFRASTRUCTURE PAD B2 SITE FACILITIES, INCLUDING:

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

LINED STORAGE

LAYDOWN AREA

MP-C-B

EXISTING WASTE WATER TREATMENT FACILITY

AIRSTRIP

WASTE DISPOSAL LAND FARM

EXISTING LAND LEASE BOUNDARY

PROJECT DEVELOPMENT AREA

ROCK QUARRY NO.1

POTABLE WATER SUPPLY

CONSTRUCTION PAD C CONCRETE BATCH PLANT

TOTE ROAD

PROPOSED EXTENT OF QUARRY

PERMITTED OPEN BURN PIT AREA

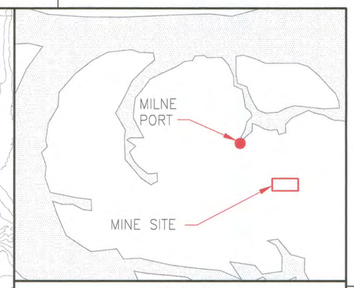
BORROW PITS

BORROW SOURCE NO.1

PHILLIPS CREEK

MILNE INLET TOTE ROAD

0 50 100 150 200 250
SCALE IN METRES



KEY PLAN

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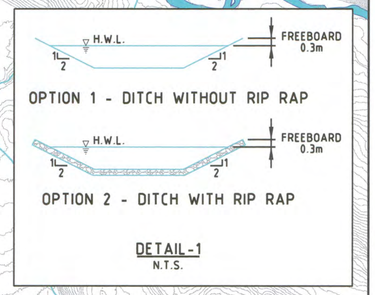

DETAIL-1
N.T.S.

NOTES:

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REFERENCE DRAWINGS	

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

REGISTERED PROFESSIONAL ENGINEER
M. M. S. HASSAN
LICENSEE
NT/NU

REV.	ISSUE FOR	AUTH. BY	DATE
A	FOR PERMITTING	SH MM	2013-03-28
ISSUE AUTHORIZATION			

HATCH™

DESIGNED BY K. FALLAHI DATE 2013-03-28	DRAWN BY M. MCDOUGALD DATE 2013-03-28
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Baffinland Iron Mines Corporation

MARY RIVER PROJECT

MILNE PORT
SITE LAYOUT
DRAINAGE PLAN

SCALE 1:5000 OR AS NOTED

DWG. NO. H349000-2100-10-015-0002

REV. A

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28/03/2013 11:46:21 AM
mcd064322

Submission Date: December 11, 2013

Resource Management Officer
Nunavut Field Operations
Aboriginal Affairs and Northern Development Canada
Box 100
Iqaluit, NU X0A 0H0
Justin.Hack@aandc-aadnc.gc.ca

Manager, Major Projects
Qikiqtani Inuit Association
P.O. Box 219
Iqaluit, NU X0A 0H0
swbathory@qia.ca

Re: Follow-up to Spill Reported on Nov 10th, 2013
Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On November 9th, 2013, at 22:00h a tractor trailer unit loaded with two sea-cans of ammonium nitrate (AN) lost traction climbing the hill at Km 10 on the Milne Inlet Tote Road. The operator backed the unit down the hill approximately 100 meters and in doing so caused the trailer to slip over the embankment on the right hand side of the road. Both sea-cans of AN broke loose from the trailer. The trailer became disengaged from the tractor and turned over. One of the sea-cans ruptured and spilled approximately 1 cubic meter of AN onto the ground. The tractor remained upright on the shoulder of the road and did not have any damage other than damage to the fifth wheel. There were no fluids leaks from the tractor.

Immediate and Follow-Up Action:

The Tote road was closed to all traffic and the incident scene was secured. First responders confirmed that there were no fluid leaks coming from the tractor and that approximately 1 cubic meter of AN had spilt from the ruptured sea-can. During the day following the incident, the tractor and trailer were recovered, the spilt AN was transferred into a Quatrex bag in secondary containment and the sea-cans were relocated to the side of the road.

Recommendations:

The incident was caused by transporting a load too heavy for the road conditions. To prevent similar incidents from occurring, tractor trailers should be loaded with the appropriate weight for the current road conditions at the time of transport.

Current Status:

The tractor and trailer are currently being repaired. Both sea-cans remain on the side of the Tote road at km 10. Ammonium nitrate has been transferred out of one of the sea-cans and relocated to the Milne Port site. The second sea-can will be emptied of ammonium nitrate as soon as the equipment needed for the transfer is repaired. The spill cleanup is complete. Approximately one (1) cubic meter of ammonium nitrate has been removed from the incident scene and is being stored in secondary containment.

Should you require further information or clarification on the above noted spill, please feel free to contact Allan Knight or Trevor Myers at (647) 693-9447, or the undersigned at (902) 403-1337.

Sincerely,

James Millard, M.Sc., P.Geo
Senior Environmental Superintendent

Attach NT-NU Spill Report, Figure 1: Location Map, Photos 1 and 2.

cc. Michael Anderson, Allan Knight, Trevor Myers, Nicolas Kuzyk, Erik Madsen (Baffinland).
Erik Allain, AANDC, Manager of Licencing (NWB)

NT-NU SPILL REPORT

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K — ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS

During the routine treatment and discharge of oily storm water in the Mary River Bulk Fuel Storage Facility (MRY-6), contaminated water was pumped down below the level that allowed for efficient treatment. Free phase residual product (fuel), was inadvertently pumped through the treatment system, which overwhelmed the systems' capacity to fully treat the water. Upon noticing the problem the operator shut the system down and stopped the treatment and discharge system process. Absorbent materials were used to contain the free phase product. A vacuum truck was used to remove the free phase product / contaminated water from the area. The discharge from the treatment system was to a small isolated pool of standing water located immediately adjacent to the fuel farm berm. This area is normally dry, however due to the recent pumping activities and rainfall events; standing water has accumulated in this area. (Continued...)

L	REPORTED TO SPILL LINE BY **Jim Millard**	POSITION **Enviro Supervisor**	EMPLOYER **Baffinland Iron Mine**	LOCATION CALLING FROM	TELEPHONE **902-403-1337**
M	ANY ALTERNATE CONTACT **Allan Knight**	POSITION **Enviro Coordinator**	EMPLOYER **Baffinland Iron Mine**	ALTERNATE CONTACT LOCATION	ALTERNATE TELEPHONE **647-693-9447**

REPORT LINE USE ONLY

N	RECEIVED AT SPILL LINE BY	POSITION STATION OPERATOR	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8130

LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC | SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN | FILE STATUS ☐ OPEN ☐ CLOSED

AGENCY	CONTACT NAME	CONTACT TIME	REMARKS
LEAD AGENCY			
FIRST SUPPORT AGENCY			
SECOND SUPPORT AGENCY			
THIRD SUPPORT AGENCY			

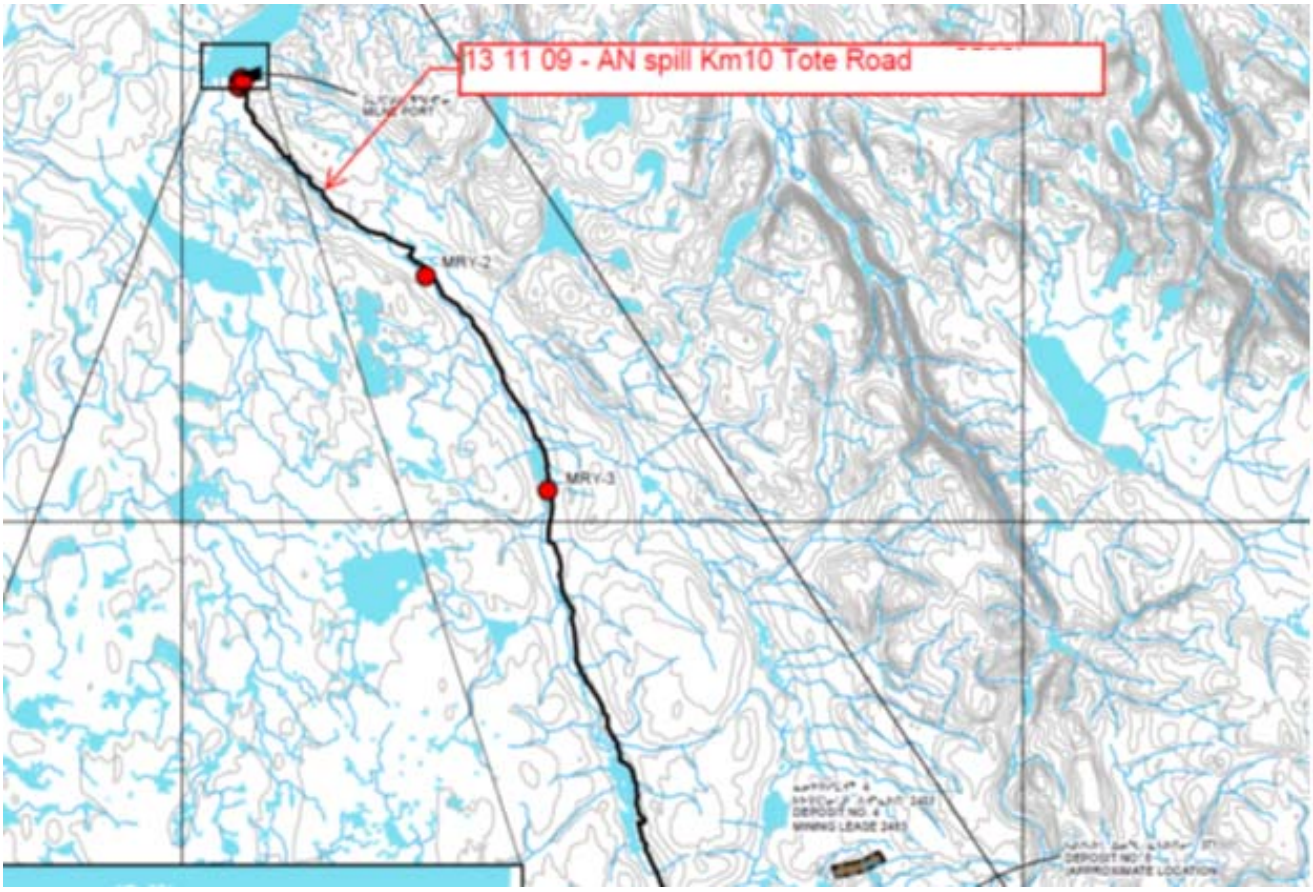

Figure 1 - Location of AN Spill on Tote Road

Photo 1 – Spilt Ammonium Nitrate (approx. 1 m^3)

Photo 2 – Scene of the Incident after Recovery and Spill Clean up