

DESIGN REPORT FOR FUEL FARM ENLARGMENT

HOPE BAY -BOSTON CAMP, NUNAVUT



August 5th, 2022 Revision: R0 Doc. N°: 6207-416-132-REP-001

Tt Project N°: 711-48747



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Work Package: NA		
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PERMIT TO PRACTICE TETRA TECH QE INC.

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5/8/2022

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INTRODUCTION

1.1 PROJECT OVERVIEW

Agnico Eagle Mines Ltd (Agnico Eagle) is proposing to install eight (8) horizontal tanks for fuel storage at their Boston Camp near Hope Bay in Nunavut. The camp is used for exploration purposes and the activities on site are carried on mainly during summertime. Each tank is double-walled and has an approximate capacity of 50,000L. The tanks are reused from another site of Agnico Eagle and will be recertified by an independent and specialized firm before commissioning. Spill basins will be deployed underneath and around the tanks to prevent small spills from hose handlings.

Figure 1 and Figure 2 below indicate the geographical location of Hope Bay and the fuel farm location at Boston Camp.





Fig.1: Hope Bay / Boston Camp - Site location

Fig. 2: Boston Camp - Fuel Farm location

1.2 PURPOSE OF THE REPORT

Agnico Eagle retained Tetra Tech to design the pad and the layout of the additional tanks. The mechanical equipment such as tanks and piping are selected and inspected by Agnico Eagle. Tetra Tech is not involved in the construction Quality Assurance and Quality Control (QA/QC), neither in the process for the certification, inspection and refurbishing of the tanks.

This report is intended to present the design basis, codes and regulations overview, specific considerations, engineering design and construction details related to the project.

This report includes the final design and construction drawings for fuel storage facilities as specified under Nunavut Water Board (NWB) Water License 2BB-BOS1727.

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1.3 SCHEDULE

Existing pad upgrades works are planned to begin in August 2022 and the installation of the tanks in September 2022. The commissioning of the new fuel storage tanks is planned to be completed in spring 2023.

1.4 INCLUSIONS AND EXCLUSIONS

The following items are included in the design report:

- Upgrades of the existing pad
- Layout of the tanks
- Installation of the tanks
- Installation of the spill basins
- Testing, calibration, and inspection of the tanks

Any elements not mentioned in the Inclusions are considered excluded from the design report.

1.5 ENGINEERING DOCUMENTS

The construction drawings are provided in Appendix A.

2 CODES AND STANDARDS

The codes and standards applicable to the project are listed in Table 1.

The proposed system complies with the Codes and Standards.

Table 1: List of Applicable Codes and standards

Abbreviation	Title		
API	American Petroleum Institute		
CCME Code of Practice (PN1326)	Environmental Code of Practice for Above Ground and Underground Storage Tank Systems Containing Petroleum and Allied Products.		
CSA	Canadian Standards Association		
DRFS	Design Rationale for Fuel Storage and Distribution Facilities		
NFCC (2015)	National Fire Code of Canada		
R-125-95 NWT	Consolidated Mine Health and Safety Act		
STI	Steel Tank Institute		
ULC	Underwriters Laboratories of Canada		



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GENERAL DESCRIPTION OF THE PROPOSED INSTALLATION

3.1 EXISITING SITE DESCRIPTION

The Boston Camp is an existing facility located at approximately 60 km south of Hope Bay in Nunavut. The Boston Camp is part of the former TMAC Resources Hope Bay mine complex that has been recently acquired by Agnico Eagle. Some exploration activities are currently conducted by Agnico Eagle in the area, and the camp is used as the logistic center for the exploration activities. This site currently includes lodging facilities, a Sewage Treatment Plant, a fuel farm, and some storage buildings. The camp is only accessible by helicopter during summertime and by a winter ice track during wintertime.

A survey by drone has been conducted in 2021 by the surveyor firm "Corriveau JL" and is used as a reference for the design of the project.

With regard to the geotechnical conditions of the site, it was observed that the rock is very shallow and there is an existing pad composed of a layer of granular fill of about 1 meter thick. Based on that information, the soil is considered suitable for the construction of the proposed fuel farm.

3.2 DESCRIPTION OF THE PROPOSED INSTALLATION

There will be eight (8) additional horizontal steel tanks at Boston Camp. The tanks will be used for diesel storage, except for one which will be used for Jet A fuel storage. The tanks are reused tanks decommissioned from another site of Agnico Eagle and have been relocated at Boston Camp. Refer to Section 4 for details on tanks.

The tanks will be located at the south-east corner of the existing pad as shown on Figure 2. The fuel farm pad will be built on the existing pad. The construction of the fuel farm pad is detailed in Section 5.

Even if the tanks are self contained storage tanks because protected by a double wall vacuum-monitored and there is no need for an impervious dike area enclosing the tanks as secondary containment, Agnico Eagle will install the tanks within four spill basins "Insta-Berm" type. Refer to Section 6 for details on Spill basins.

3.3 COMMISSIONING SYSTEM OPERATION AND MAINTENANCE

Prior to commission the equipment of the fuel farm, the tanks will be recertified by an independent and specialized firm (refer to section 4.2 for more details).

For loading operation, the tanks will be filled by mobile tanks installed on sledge coming from Doris mine site and being driven on ice roads. This filling operation will occur once a year during the months of March/April. The fuel will be unloaded from the tanks on demand via a mobile pumping system, equipped to prevent any spill. For both loading/unloading operation, the connections to the tanks will be located within the portable spill basin, as further discussed in section 5.2,

Procedures and equipment such as pump, piping and connexions used for fuel transfer operations will follow good practices established by Agnico Eagle, which comply with Codes and Standards.

A qualified maintenance team will inspect the system (mechanical equipment and piping) on a regular basis as per regulations and codes requirement.



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TANKS DESCRIPTION

4.1 CHARACTERISTICS OF THE TANKS

The eight (8) tanks are horizontal cylindrical steel tanks with vacuum monitored double wall. They each have a volume capacity of approximately 50,000L.

The main characteristics of each tank are specified in Table 1:

Table 1: Characteristics of the tanks.

	TK#1	TK#2	TK#3	TK#4	TK#5	TK#6	TK#7	TK#8
Storage capacity	50 000 L							
Type of product	Jet A	Diesel						
Diameter	8'-4" (2.54m)	8'-4" (2.54m)	8'-4'' (2.54m)	8'-4'' (2.54m)	8'-4'' (2.54m)	8'-4'' (2.54m)	8'-4'' (2.54m)	8'-4'' (2.54m)
Length	33'-4'' (10.16m)	33'-4" (10.16m)	33'-4" (10.16m)	33'-4'' (10.16m)	33'-4'' (10.16m)	33'-4" (10.16m)	33'-4" (10.16m)	33'-4" (10.16m)
Year of manufacture	2011	2012	2012	2012	2012	2012	2012	2012
Manufacturer	AGI Environnement	Desjardins	Soudure FM	Drummond	Soudure FM	Desjardins	Desjardins	Desjardins
ULC standard	CAN/ULC S601-07							
Material	Steel							
Corrosion protection	Paint							
Secondary containment	vacuum monitored double wall							
Inspection date	August 2022 (plan)	August 2022 (plan)	August 2022 (plan)	August 2022 (plan)	August 2022 (plan)	August 2022 (plan)	August 2022 (plan)	August 2022 (plan)
Type of support	Skid	Skid and saddle	Saddle	Saddle	Saddle	Saddle	Skid and Saddle	Saddle

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4.2 TESTING, CALIBRATION, AND INSPECTION OF THE REUSED TANKS

The tanks are reused from another site of Agnico Eagle and have been already delivered to site.

To be in compliance with Codes (ref: NFCC art. 4.3.1.10; CCME art. 3.7.1), the storage tanks shall be inspected and certified to be conform to the following standards:

- CAN/ULC S601 "Shop fabricated steel aboveground tanks for flammable and combustible liquids"
- CAN/ULC S653 "Standard for aboveground horizontal steel contained tank assemblies for flammable and combustible liquids
- CAN/ULC S655 "Standard for aboveground protected tank assemblies for flammable and combustible liquids"
- ULC/Ord-C142.3 "Code requirements for Contained Above Ground Tank Assemblies for Flammable Liquids."

The tanks will be refurbished if required for aboveground use in conformance with good engineering practice such as that described in API 653 "Tank inspection, repair, alteration and Reconstruction" and STI SP031 "Repair of shop fabricated aboveground tanks for storage of flammable and combustible liquids".

Agnico Eagle has retained the services of an independent and specialized firm for the refurbishing, the certification, the calibration and testing of the tanks in compliance with applicable Codes and Standards. The inspection and certification shall be conducted before commissioning of the tanks and an official report will be prepared. It is the responsibility of the specialized firm (upon Agnico Eagle) to verify that the reused tanks will comply with all applicable Code and Standards, listed or not in that section.

4.3 LAYOUT OF THE TANKS

The eight (8) tanks will be installed on a upgraded pad laying on the existing pad after, within spill berm enclosures.

There will be two tanks within each spill basin.

The spacing between the tanks in the proposed layout is 1.5m (minimum), which complies with the Code (ref: NFCC, art.4.3.2.2), requiring that the minimum spacing between the tanks shall be 1m.

The layout of the tanks is shown on Drawing 62-416-230-002 provided in appendix A.

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SECONDARY CONTAINMENT AND SPILL BASINS

5.1 SECONDARY CONTAINMENT

As per Code (ref: NFCC art. 4.3.7.1 and art. 4.3.7.4), since the tanks are self contained ULC approved horizontal tanks with integral secondary containment, there is no need for an additional secondary containment for the tanks.

5.2 SPILL BASINS DESCRIPTION

To prevent product from spilling onto the ground and contaminating the environment during hose handlings, the tanks will be installed within some portable spill basins. The spill basin consists of a collapsible berm called "Insta-Berm" as manufactured by SEI-Industries. It is made with the fire resistant "Arctic-Shield Heavyweight" fabric which is a polyester nonwoven liner coated with Thermal Poly Urethane. The fabric is certified to CAN/ULC-S668-12, features chemical and fire resistance properties and is cold crack resistant to -50°C. In addition to superior abrasion resistance, the fabric remains flexible in freezing temperatures making it ideal for set up during winter and use in arctic region. Picture 1 below provides an illustration of the "Insta-Berm" spill basin system that will be installed.

The dimensions of the "Insta-Berm" spill basin that will be used is: 30'x40'x20" (LxWxH).

It is intended to install 4 spill basins which will enclose 2 tanks each.

In order to protect the fabric of the spill basins from any damage from sharp stones, a geotextile layer will be installed underneath each basin. In addition, an HDPE liner will be deployed inside each basin underneath tanks skid to protect the fabrics of the basin from tanks pressure and shearing during installation.



Picture 1: "Insta-Berm" spill basin illustration

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5.3 WATER MANAGEMENT

The fuel farm pad will be gently sloped to enable runoff water to flow down toward the existing pad. The spill basins will be kept clean at all times.

The spill basins will be laid on the fuel farm pad and will have a slight slope. Rainwater will accumulate at the low point area within each one the spill basin and will be pumped regularly with a sump pump to the water treatment pond already in service at the camp site. The water in the pond is tested prior to discharge to the environment.

6 EXISITNG PAD UPGRADES

At the proposed location of the fuel farm, the existing pad is built on the bedrock and is composed of a layer of granular fill of about 1 meter thick. The pad will be leveled and graded with a slope of 1.5% for drainage purposes. An additional layer of compacted granular fill 20 mm minus will be placed to compose a specific fuel farm pad that will support the tanks.

The dimension of the proposed fuel farm pad is approximately 23mx30m, which represents a surface of 690 m2. This surface is sufficient to place the 4 spill basins and still allow a circulation alley between them to provide easy access and clear snow from the facilities during winter.

The fuel farm pad will provide a firm, gravelled surface for the tanks foundation. The embankments of the pad will not be steeper than 1V:2H.

The construction of the fuel farm pad is detailed on drawing 62-416-132-001 provided in Appendix A.

7 LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of Agnico Eagle Mines Ltd. and their agents. Tetra Tech 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 Agnico Eagle Mines Ltd., 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. Tetra Tech accepts no responsibility for losses, claims, expenses or damages, if any, suffered by a third party as a result of any decisions made or actions based on this report. Use of this report is subject to the terms and conditions stated in Tetra Tech's Services Agreement.

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APPENDIX A – CONSTRUCTION DRAWINGS

Number	Title	Rev
62-416-230-001	AGNICO EAGLE - EXPLORATION DIVISION 62 - HOPE BAY / BOSTON CAMP 230- GENERAL EARTH WORKS PLAN VIEW, SECTIONS AND DETAILS FUEL FARM PREPARATION OF THE PAD	R0
62-416-230-002	AGNICO EAGLE - EXPLORATION DIVISION 62 - HOPE BAY / BOSTON CAMP 230- GENERAL EARTH WORKS PLAN VIEW, SECTIONS AND DETAILS FUEL FARM PROPOSED TANKS LAYOUT	R0



