CONSTRUCTION SUMMARY REPORT
Whale Tail Fuel Storage Tank and Containment Facilities

Agnico Eagle Mines Ltd

Report

653281-0004-40ER-0005_0

November 8, 2019

Authorized Signatory:

REGISTERED PROFESSIONAL ENGINEER
I. GAGNON
LICENSEE
NT/NU
L3940
2019-11-08

Israël Gagnon, P.Eng., MBA
Mechanical engineer

EXECUTIVE SUMMARY

SNC Lavalin Stavibel inc. was retained by Agnico Eagle Mines Limited to prepare a construction summary (as-built) report for the fuel storage tank and containment facilities of the Whale Tail Gold Project, Nunavut. SNC Lavalin Stavibel inc. previously prepared the construction drawings and specifications as well as the design report for the fuel storage tank and containment facilities.

SNC Lavalin Stavibel inc. wasn't involved in the construction of the fuel storage tank and containment facilities, the information presented in this report was provided in part by Agnico Eagle.

The construction of the fuel storage tank and containment facilities was completed in July 2019. The construction monitoring and quality assurance was managed by Agnico Eagle.

This report summarizes the construction as-built information for the fuel storage tank and containment facilities.

Table of Contents

1. Introduction 4

2. Construction Summary 4

2.1 Site location plan 4

2.2 Fuel tank size 5

2.3 Tank Foundations Design 5

2.4 Berms Design 5

2.5 Secondary Containment Capacity 6

2.6 Secondary Containment Imperviousness 7

2.7 Secondary Containment Drainage 7

2.8 Drawings and photographs 7

3. Field decisions 7

3.1 Equipment and controls 7

3.2 Piping 7

4. Mitigation measure 8

5. Construction monitoring and inspection test plan 8

5.1 Membrane 8

5.2 Tank weld 8

Appendices

Appendix A Final Construction drawings

Appendix B Final P&ID

Appendix C Tank testing result

Appendix D Photographs

1. Introduction

This document presents the fuel storage tank and containment facilities construction summary report required by the Water Licence 2AM-WTP1826 Part D Item 15. As required by Water Licence Schedule D, this report contains the final design and construction drawings, a summary of construction activities including photographic recorded before, during and after construction. The as-built drawings, detailed explanation of field decision to reflect any deviations from the original construction drawings/plans and how such deviations may affect performance of engineered structures, a discussion of the mitigation measures implemented during construction and its effectiveness are also presented.

2. Construction Summary

2.1 Site location plan

Agnico Eagle is developing the Whale Tail Project in the Kivalliq Region of Nunavut (65°24’25” N, 96°41’50” W). The 99,878-hectare Amaruq property is located on Inuit-owned and federal crown land, approximately 55 km north of the Meadowbank mine. The Meadowbank mine is accessible from Baker Lake, located 70 kilometers to the south.

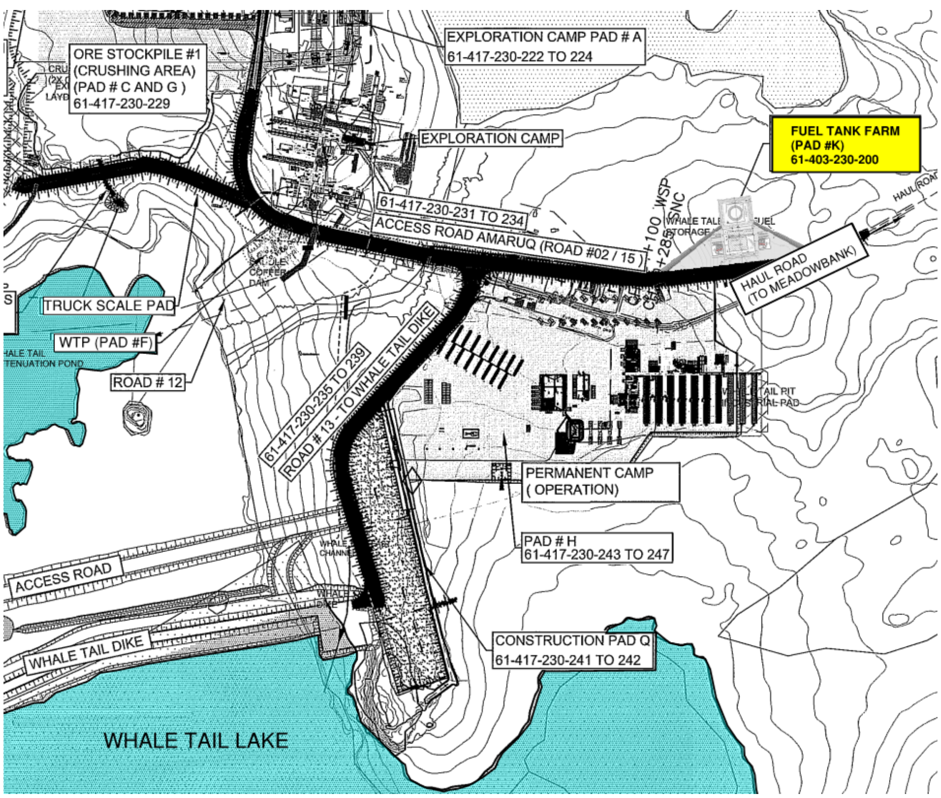


Figure 1 – Whale Tail Fuel Farm Site Overview (extract from drawing 61-403-230-205)

2.2 Fuel tank size

Fuel farm includes one (1) fuel storage tank on the Whale Tail mine site.

The Table 1 below presents the tank main dimensions.

Table 1 – Description of the fuel farm

Fuel farm Description	Mine site fuel farm (Whale Tail)
Product	Diesel
Volume (liter)	1.5 M
Diameter (m)	17.37
Height (m)	7.24

The detailed design of the Fuel Farm is presented in drawings in Appendix A.

2.3 Tank Foundations Design

The tank foundation pad is built 400 mm higher than the surrounding ground with a minimum total thickness of 900 mm of compacted material which includes the liner system. A 1.2 m shoulder surround the tank with a slope of 1V:1.5H away from the tank. The embankments of the foundation pad are no steeper than 1V:2H.

The Table 2 below presents the design parameters for the tank foundations.

Table 2 – Design parameters for the tank foundations

Tank Foundation Pad	
Tank Diameter (m)	17.37
Tank foundation pad top (m)	28.0 x 28.0
Tank foundation pad average thickness, above surrounding ground (m)	1.8
Slope on shoulder	1V:1.5H
Embankment slope	1V:2H

2.4 Berms Design

The storage tank is enclosed inside berms to contain accidental spillage of fuel product. The berms are made of granular material and are made impervious with a geomembrane.

The design parameters for the berms surrounding the fuel Tank are presented in the table below.

Table 3 - Design parameters for fuel farm Berms

Tank Farm Berms	
Berms length (distance between the outer sides of the Berms) (m)	48
Berms width (distance between the outer sides of the Berms) (m)	28
Berms height (min) (m)	1.3
Containment height (m)	1.0
Berms flat top width (m)	2.5
Berms embankment slope	1V:2H
Impervious area (m²)	± 5 000*

* This includes the base membrane that covers the bottom inside the Berms, the area under the maneuvering area for filling the machinery and the additional waterproof surfaces placed 0.5 m below the stopping perimeters for heavy machinery (double protection for operations).

2.5 Secondary Containment Capacity

The required capacity of the fuel farms was calculated based on the following codes and regulations:

- National Fire Code of Canada (NFCC);
- National Fire Protection Association (NFPA); and
- Design Rationale for Fuel Storage and Distribution Facility (DRFS).

As per the latest edition of NFCC, art. 4.3.7.3, the required secondary containment capacity for a fuel farm must have a volumetric capacity of not less than the sum of:

- A) The capacity of the largest storage tank located in the contained space, and;
- B) 10% of the greater of:
  - i. The capacity specified in Clause (A), or;
  - ii. The aggregate capacity of all other storage Tanks located in the contained space.

The volume occupied by the Tank foundation is considered in the total secondary containment capacity. The height of the secondary containment capacity is 300 mm lower than the berms' maximum elevation. Based on the above mentioned, the secondary containment capacity requirements and the available capacity for fuel farms are summarized in the Table 4.

Table 4 – Fuel farm containment capacity

Fuel farm	
Volume (liter)	1.5 M

Required Containment Capacity (liter)	1.65 M
Available Containment Capacity* (liter)	1.79 M
Is Available containment > Required containment	YES

2.6 Secondary Containment Imperviousness

As per NFCC art. 4.3.7.2, the base and walls of the fuel farms secondary containment are designed, constructed and maintained to withstand full hydrostatic head and provide a permeability of not more than 10^{-6} cm/s to the flammable liquids or combustible liquids contained in the storage tank. The berm is impervious to avoid any seepage into the environment. A 5.10 mm ES-2 Coletanche geomembrane provide adequate imperviousness.

2.7 Secondary Containment Drainage

The finished grade of the secondary containment is sloped away from the Tank to drain the runoff water. The bottom of the berms surface is built with slopes that will allow accidental spills to be concentrated at a low point. A drainage basin located at the low point allows the recovery by pumping accumulations of rainwater and accidental spills.

2.8 Drawings and photographs

Fuel farm tank and containment final design and construction drawings are available in the Appendix A, construction pictures are available in Appendix D.

3. Field decisions

3.1 Equipment and controls

Equipment where build in containers and installed without modification on site document 6115-C-230-002-REP-001 Fuel Storage Tank and Containment Facilities Design Report, present the rational and decisions that leaded to its construction. No modification was performed and the Fuel storage tank and containment facilities are operational as they were designed.

On the fuel tank, some piping neck were relocated not to interfere with roof structure.

3.2 Piping

Piping between filling and distributing container and the fuel tank respect the point to point design. The piping isn't exactly as per drawing (can be seen on photos in Appendix D) but respect the P&ID. Modifications made were from site constrains unforeseeable during the design stage. As built drawings can be consult in Appendix B.

4. Mitigation measure

Quarrying activities to build the berm and the containment wasn't near fish bearing waters. During the fuel storage tank and containment facilities construction, no sediment where released in water from construction areas and no water where used to manage dust emissions from construction activity.

5. Construction monitoring and inspection test plan

5.1 Membrane

The manufacture and supply of the liner system for the fuel farm comply with ASTM standard. The manufacturer provided a certification stating that the material proposed has physical properties that meet the required values. The rolls of liner were labelled, packaged, shipped, off-loaded, stored and handled by appropriate means to prevent damage to the material.

The subgrade surface was inspected by an Engineer to verify suitability prior to installation of the liner system. A minimum thickness of fill covering the liner is maintained for operating equipment over the liner to prevent any damage. The installation of the liner system was performed by a qualified technician. All seaming, patching, welding operations, and testing were performed by a qualified technician. Joints/seams between liners panels were welded using the manufacturer's recommended procedures and equipment. The backfill material was placed in accordance with the drawings and specifications for the maximum lift thickness, compaction requirements and final grade levels.

During membrane installation, visual testing by a qualified worker were carried. Those tests were done on cooled bitumen. Joints were tested with a round-tipped trowel to ensure that the weld were not separating. All defects were clearly marked for repair.

5.2 Tank weld

During the tank construction, a testing protocol was followed based on the construction team procedure. This procedure ensure that the tank meet API Standard 650. In it, the contractor registers welder's qualifications, confirm construction material quality and outline is testing procedure. The results from weld tests are also registered. Testing on weld took place during the whole construction process. To review those results, the procedure materials quality and weld inspection results can be consulted in Appendix C.

Appendix A

Final construction drawing

Appendix B

Final P&ID / As built

Appendix C

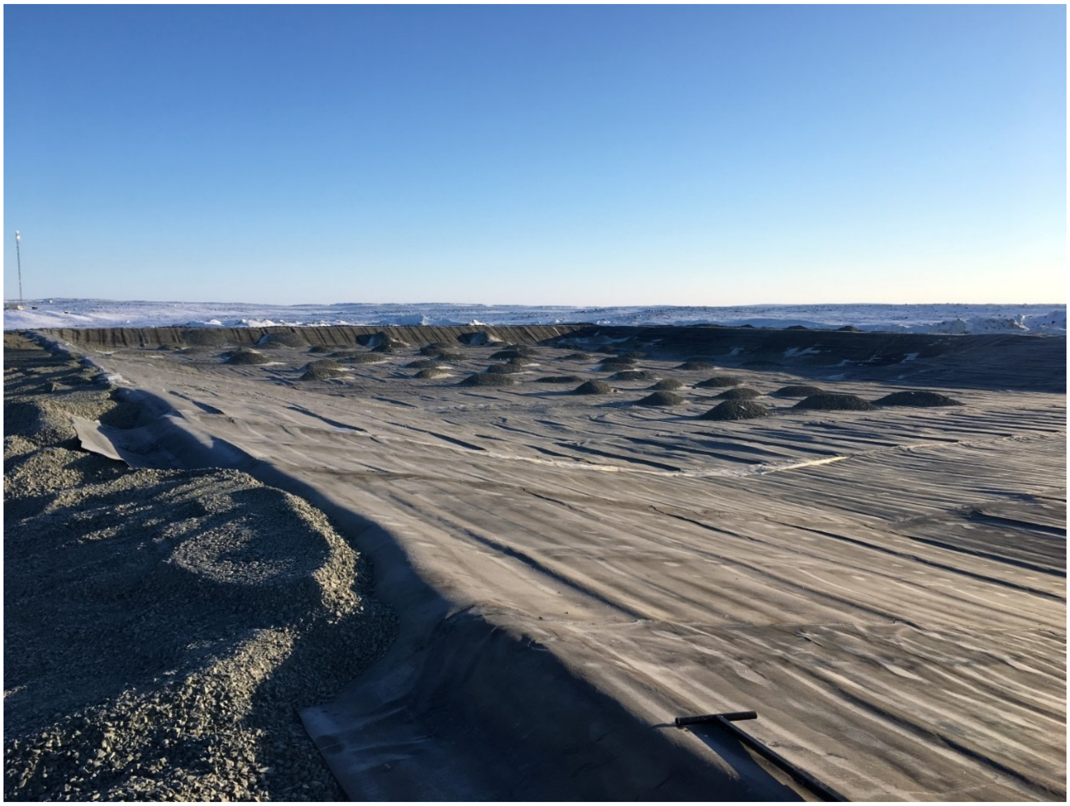
Fuel tank handover package

Appendix D

Photographs

General site view showing tank location (red mark)

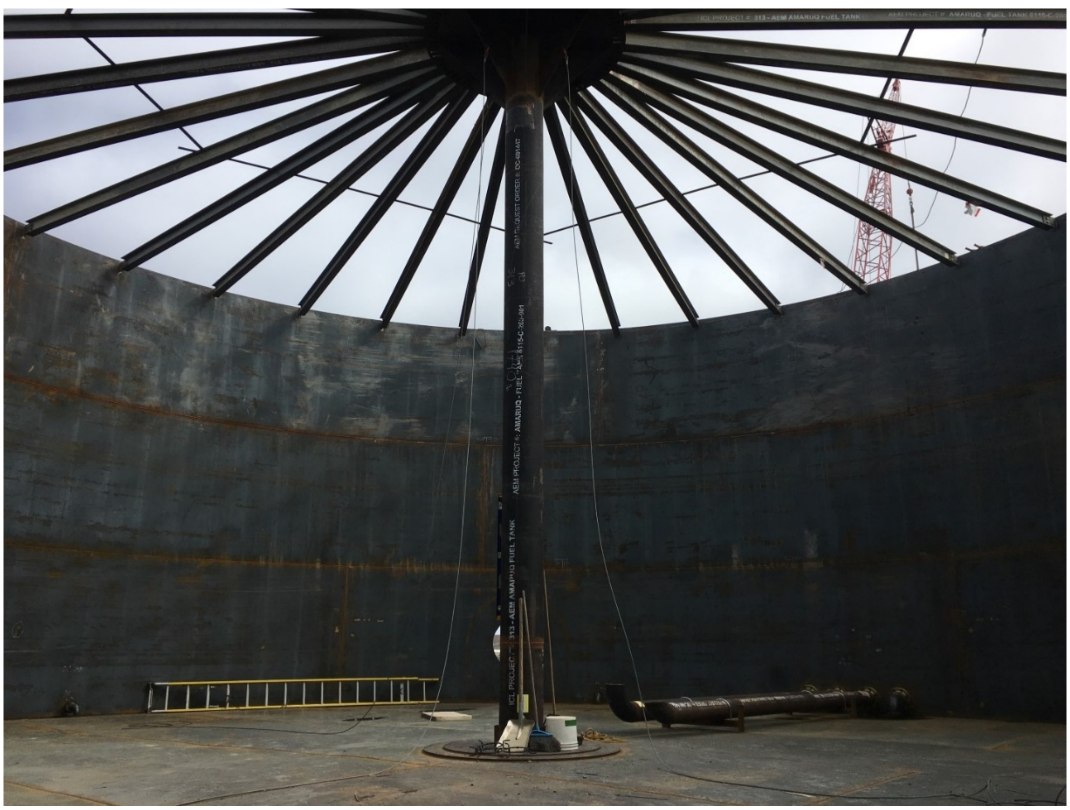
Pad and Berm construction



Containment membrane installation

Tank floor construction

Tank wall welding



Tank roof structure

Piping to and from fuel tank

Final tank and containment layout