APPENDIX 29-5. EXPLOSIVE MANAGEMENT PLAN

AGNICO EAGLE

MELIADINE GOLD MINE

Explosives Management Plan

MARCH 2025
VERSION 11

ᓇᐃᓈᖅᓯᒪᔪᖅ

ᖄᖅᑕᖅᑐᓄᑦ ᐊᐅᓚᑦᑎᓂᕐᒧᑦ ᐸᕐᓇᐅᑎ (ᐸᕐᓇᐅᑎ) ᑐᑭᓯᐅᒪᔾᔪᑎᑕᖃᖅᑐᖅ ᖄᖅᑕᖅᑐᓕᐅᖅᑐᓂᒃ, ᐃᖏᕐᕋᔭᒃᑐᓕᕆᔨᓂᒃ, ᑐᖅᑯᖅᓯᒪᕕᖕᓂᑦ, ᐱᓕᕆᐊᖑᓂᖏᓐᓂᒃ, ᐊᒪᓗ ᐊᑐᖅᑕᐅᓂᖏᑦ ᖄᖅᑕᖅᑐᐃᑦ ᐊᒡᓃᑯᒃᑯᓐᓂᑦ. ᑕᒪᑐᒧᖓ ᐱᔾᔪᑎᖃᖅᑐᑦ ᑕᕆᐅᑯᑦ ᐊᐅᓚᖅᑎᑦᑎᖃᑦᑕᕐᓂᕐᒧᑦ ᐊᒪᓗ ᑕᕆᐅᕐᒥᐅᑕᓂᒃ ᐊᒡᓃᑯᒃᑯᑦ ᐊᐅᓚᖅᑎᑦᑎᖃᑦᑕᕐᓂᕐᒧᑦ ᐊᐅᓚᑦᑎᓂᖅ ᐸᕐᓇᐅᑎ-ᖓᓐᓃᑐᖅ (Agnico Eagle 2018). ᑲᓇᑕᐅᑉ ᐊᒪᓗ ᓄᓇᕗᑦ ᒪᓕᒐᓗᐊᖓᑦ, ᐅᖃᐅᓯᖃᖅᑐᖅ ᐊᐅᓚᑦᑎᓂᕐᒥᒃ ᐊᒪᓗ ᐊᑐᕐᓂᕐᒥᒃ ᖄᖅᑕᖅᑐᓂᒃ ᐅᑯᐊᖑᔪᑦ: ᑲᓇᑕ – *ᖄᖅᑕᖅᑐᓄᑦ ᐱᖁᔭᖅ ᐊᒪᓗ ᒪᓕᒐᐃᑦ; ᐊᒡᔭᖅᑐᐃᓂᖅ ᐅᓗᕆᐊᓇᖅᑐᓂᒃ ᐱᖁᑎᓂᒃ ᐱᖁᔭᖅ ᐊᒪᓗ ᒪᓕᒐᐃᑦ; ᑲᓇᑕᒥᑦ ᐃᑯᐊᓪᓚᒃᑐᓕᕆᓂᕐᒧᑦ ᓇᓗᓇᐃᑯᑕᖅ ᐊᒪᓗ ᑲᓇᑕ; ᓄᓇᕗᑦ – ᖄᖅᑕᖅᑐᓂᒃ ᐊᑐᕐᓂᕐᒧᑦ ᐱᖁᔭᖅ ᐊᒪᓗ ᐊᒡᔭᖅᑐᐃᓂᖅ ᐅᓗᕆᐊᓇᖅᑐᓂᒃ ᐱᖁᑎᓂᒃ ᐱᖁᔭᖅ ᐊᒪᓗ ᒪᓕᒐᐃᑦ; ᐅᔭᕋᖕᓂᐊᕐᕕᖕᒥᑦ ᐋᓐᓂᐊᖃᖅᑕᐃᓕᒪᓂᖅ ᐊᒪᓗ ᐊᑦᑕᓇᖅᑐᒦᑎᕐᑎᑦᑕᐃᓕᒪᓂᕐᒧᑦ ᐱᖁᔭᖅ ᐊᒪᓗ ᒪᓕᒐᐃᑦ; ᐊᒪᓗ ᐊᑦᑕᓇᖅᑐᒦᑎᕐᑎᑦᑕᐃᓕᒪᓂᕐᒧᑦ ᐱᖁᔭᖅ ᐊᒪᓗ ᒪᓕᒐᐃᑦ.*

ᐊᒡᓃᑯᒃᑯᑦ ᐊᑐᖃᑦᑕᖅᑐᑦ ᐊᑯᑉᓕᖅᓯᒪᔪᓂᑦ ᖄᖅᑕᖅᑐᓂᒃ ᐊᐅᓚᑕᐅᔪᓂᒃ ᖄᖅᑎᕆᓂᕐᒧᑦ ᐅᖓᑕᐅᑦᑎᓯᒪᔪᓄᑦ, ᐊᒃᑕᑰᖅᑕᐅᔪᑦ ᐅᔭᖅᖃᓄᑦ, ᐅᔭᕋᒃᑕᖅᑕᐅᔪᓄᑦ, ᓴᓇᕙᓪᐊᓂᕐᒧᑦ ᐊᑐᖅᑕᐅᔪᑦ ᐅᔭᖅᑲᓄᑦ, ᖁᐊᖅᓯᒪᔪᑦ ᐅᔭᕋᒃᑕᖅᑕᐅᔪᑦ ᑲᑎᓯᒪᔪᓄᑦ, ᐊᒻᒪᓗ ᓯᐅᕋᕐᒧᑦ ᓄᓇᐅᑉ ᖄᖓᓂᑦ ᐊᒻᒪᓗ ᓄᓇᐅᑉ ᐃᓗᐊᓂᑦ ᓴᓇᔭᕙᓪᓕᐊᑎᓪᓗᒋᑦ ᐊᐅᓛᖅᑎᑦᑎᓂᕐᓄᓪᓗ ᐅᔭᕋᒃᑕᓇᐊᕐᒥᑦ. ᐊᓯᖏᑦ ᖄᖅᑕᖅᑐᐃᑦ ᐊᑐᖅᑕᐅᖃᑦᑕᕈᓐᓇᕐᒥᔪᑦ ᐊᓯᖏᓐᓄᑦ ᐱᓕᕆᐊᕐᓄᑦ.

ᑕᒪᓗᒃᑖᖅᑲᔭᖅ ᐱᖁᑏᑦ ᖄᖅᑎᕆᓂᕐᒧᑦ ᐊᑐᖅᑕᐅᖃᑦᑕᖅᑐᑦ ᐊᐅᓪᓚᖅᑎᑕᐅᖃᑦᑕᖅᑐᑦ ᐅᒥᐊᕐᔪᐊᒃᑯᑦ ᖃᑉᓗᓈᑦ ᓄᓇᖓᓐᓂᑦ ᑲᖏᖅᖠᓂᕐᒧᑦ, ᐅᓯᓕᖅᑐᖅᑕᐅᑉᓗᑎᒃ ᓯᑲᐅᓄᑦ ᐅᒥᐊᕐᔪᐊᑉ ᑭᓴᖅᓯᒪᕝᕕᒋᔭᖓᓂᑦ, ᐊᒡᔭᖅᑕᐅᑉᓗᑎᓪᓗ ᐃᑎᕝᕕᐊᓄᑦ. ᖁᑎᒃᑯᑦ, ᐱᖁᑏᑦ ᑎᖕᒥᓲᒃᑯᑦ ᑎᑭᑎᑕᐅᖃᑦᑕᓇᐊᖅᑲᔪᑦ ᑕᒪᒃᑯᓄᖓ ᐅᓯᖃᑦᑕᖅᑐᒃᑯᑦ ᐸᕐᓇᐅᑕᐅᓯᒪᙱᑦᑐᓄᑦ ᐱᓕᕆᐊᕐᓄᑦ. ᐅᒥᐊᕐᔪᐊᒃᑯᑦ ᑎᑭᑎᔭᐅᔪᑦ ᖄᖅᑕᖅᑐᓄᑦ ᐃᓗᓕᖃᖅᓱᑎᒃ ᐱᖁᑎᓂᒃ ᓄᓇᒃᑰᕈᑎᒃᑯᑦ ᐊᒡᔭᖅᑕᐅᓂᐊᓵᖅᓱᑎᒃ ᐅᔭᕋᒃᑕᓇᐊᕐᒧᑦ, ᑐᖅᑯᖅᑕᐅᓯᒪᓚᐅᐱᓪᓚᖃᑦᑕᖅᑐᑦ, ᐃᓚᐅᙱᑦᑐᑐᐊᖅᐸᓪᓗᑎᒃ ᐆᖅᓯᒪᔪᑦ ᖄᖅᑕᖅᑐᐃᑦ, ᖁᑦᑎᒃᓯᒋᐊᑭᑏᑦ, ᐊᒻᒪᓗ ᒪᑐᐃᑦ, ᐊᒡᔭᖅᑕᐅᓂᐊᖅᓱᑎᓪᓗ ᐅᔭᕋᒃᑕᓇᐊᕐᒧᑦ ᐅᓯᖏᔭᖅᑕᐅᕌᓂᑉᐸᑕ ᓯᑲᐅᒥᑦ. ᑕᒪᒃᑯᐊ ᑐᖅᑯᖅᑕᐅᓯᒪᓚᐅᐱᓪᓚᕆᐊᖃᕐᒪᑕ ᑲᖏᖅᖠᓂᐅᑉ, ᖃᐅᔨᓴᖅᑕᐅᖏᓐᓇᖅᑐᑦ ᐊᒡᓃᑯᒃᑯᑦ ᐱᓕᕆᔨᖏᓐᓄᑦ ᑭᓯᐊᓂ ᐊᒡᔭᖅᑕᐅᔭᓐᓇᖅᓯᔭᕌᖓᑕ ᐅᔭᕋᒃᑕᓇᐊᕐᒧᑦ.

ᐅᔭᕋᒃᑕᓇᐊᕐᒥᑦ ᐱᖁᑏᑦ ᐱᔾᔪᑎᖃᖅᑐᑦ ᖄᖅᑕᖅᑐᓄᑦ ᐃᓚᐅᔪᑦ i) ᐊᑯᑉᓕᖅᑎᕆᕝᕕᒃ (ᓄᓇᐅᑉ ᖄᖓᓂᑦ), ii) ᖄᖅᑕᖅᑐᓂᒃ ᐃᓕᓯᕝᕖᑦ ᑐᖅᑯᕐᓂᐊᕐᓗᒋᑦ ᐆᖅᓯᒪᔪᑦ ᖄᖅᑕᖅᑐᐃᑦ, ᐱᒋᐊᖅᑎᑦᑎᔾᔪᑏᑦ ᐃᓚᐅᑉᓗᑎᒃ ᖄᖅᓯᔾᔪᑏᑦ ᐊᒻᒪᓗ ᐊᑯᑉᓕᖅᑐᐃᓂᕐᒧᑦ ᐆᓇᔭᐅᔪᑦ ᐊᒻᒪᓗ iii) ᓄᓇᐅᑉ ᖄᖓᓂᑦ ᑐᖅᑯᖅᓯᓯᒪᕝᕕᒃ ᐊᑐᖅᑕᐅᔪᓄᑦ ᐊᑯᑉᓕᖅᑎᕆᓂᐊᕐᓗᓂ. ᐋᖅᑭᒃᓱᖅᓯᒪᔪᖅ ᐊᑯᑉᓕᖅᑎᕆᕝᕕᒃ ᐊᑐᓕᖅᑎᑕᐅᓚᐅᖅᑐᖅ

ᐋᒡᔪᓯᕐᕕᒃ 12, 2017-ᒥᑦ; ᓇᒻᒥᓂᕆᔭᐅᔪᖅ ᐊᒻᒪᓗ ᐊᐅᓚᑕᐅᖃᑦᑕᖅᓱᓂ ᖄᖅᑕᖅᑐᖅᑖᕐᕕᐅᖃᑦᑕᖅᑐᒧᑦ.

ᐃᑲᔪᐃᓂᕐᒧᑦ ᐊᑦᑕᓇᖅᑐᖅᑕᖃᙱᓪᓗᒍ ᑐᖅᑯᖅᑕᐅᓯᒪᑦᑎᐊᕐᓗᑎᒡᓗ ᐅᖅᓱᐊᓗᐃᑦ, ᐅᓗᕆᐊᓇᖅᑐᑦ, ᐊᒻᒪᓗ ᐅᓗᕆᐊᓇᖅᑐᑦ ᐊᒃᑕᑯᐃᑦ, ᖃᓄᐃᖕᖓᓂᖕᒋᓐᓅᖕᖓᔪᑦ ᐱᕐᑯᑏᑦ ᒪᓯᖕᓂᐊᖅᑐᑦ ᐊᔾᔨᒌᖕᒋᑦᑐᓂᒃ ᒪᓯᒃᑕᐅᔫᒃᓴᓂᒃ ᐋᕿᒃᑕᐅᔪᑦ ᒪᓯᒐᓂᒃ ᑲᒪᔨᐅᔪᓄᑦ. ᐊᑯᑉᓯᖅᑎᓇᕝᕕᒃ ᐋᖅᑭᒃᓱᖅᑕᐅᓯᒪᔪᖅ ᐃᓚᓯᐅᑎᔭᐅᓯᒪᑉᓗᓂ ᓇᑎᖕᒐᓂᑦ ᑐᖅᑯᖅᓯᓯᒪᕝᕕᒃ. ᐱᕐᑯᑏᑦ ᖄᖅᑕᖅᑐᓯᖕᒧᐊᖅᑐᑦ ᑐᖅᑯᖅᑕᐅᓯᒪᓂᐊᖅᑐᑦ ᒪᓯᒡᓗᒋᑦ ᒪᓯᒐᐃᑦ. ᑯᕕᔪᖅᑲᖅᐸᑦ, ᑯᕕᔪᓂᒃ ᓂᕆᐅᓇᙱᑦᑐᓯᕆᓂᕐᒧᑦ ᐸᕐᓇᐅᑎ ᐊᑐᓯᖅᑎᑕᐅᓂᐊᖅᑐᖅ ᐊᒻᒪᓗ ᐱᕐᑯᑏᑦ ᑖᑉᑯᓄᙵ ᐊᑐᖅᑕᐅᓗᑎᒃ ᐊᑕᐅᓯᕐᑏᑎᑦᑎᓂᕐᒧᑦ ᑯᕕᔪᓯᓇᔾᔪᑏᑦ. ᖃᓄᐃᓯᑦᑕᐃᓯᒪᑎᑦᑎᓂᓗᒃᑖᑦ ᐊᒻᒪᓗ ᓯᕐᑯᒥᑦᑐᓯᕆᓅᑦ ᐱᓯᕆᐊᖕᒍᓂᐊᖅᑐᑦ ᐊᒻᒪᓗ ᑎᑎᕋᐅᓯᐅᓗᑎᒃ ᒪᓯᒡᓗᒋᑦ ᐊᐅᓛᕐᓂᕐᒧᑦ ᐊᑐᖅᑕᐅᖃᑦᑕᖅᑐᑦ. ᑐᐊᕕᓇᖅᑐᒧᑦ ᐅᐸᓗᐊᓂᕐᒧᑦ ᐸᕐᓇᐅᑎ, ᑐᓂᔭᐅᔪᖅ ᖄᖅᑕᖅᑐᓂᒃ ᐱᕝᕕᐅᖃᑦᑕᖅᑐᓄᑦ ᐊᒻᒪᓗ ᓴᓇᔭᐅᔪᒥᑦ, ᐱᓯᕆᐊᖅᑲᖅᑐᖅ ᐱᐅᖕᒋᔫᒃᑯᑦ ᖃᓄᐃᓯᓂᐅᔪᓂᒃ, ᓲᕐᓗ ᐱᓂᕐᓗᐊᖅᑭᓂᒃᑯᑦ ᖄᖅᑐᖅᑲᖅᐸᑦ, ᑎᑎᖅᑲᖅ ᒪᓂᒪᑎᑕᐅᔪᖅ ᐊᑯᑉᓯᖅᑎᓇᕝᕕᖕᒥᑦ ᑕᑯᔭᐅᕆᐊᖃᑦᑕᕈᓐᓇᖅᓱᓂ.

EXECUTIVE SUMMARY

This Explosives Management Plan (the Plan) provides information on the manufacture, transport, storage, handling, and use of explosives at the Agnico Eagle Mines Limited (Agnico Eagle) Meliadine Gold Mine (Mine). Aspects related to marine shipping and marine mammals are presented in Agnico Eagle's Shipping Management Plan. The main federal and territorial legislation, which cover the control and use of explosives are: Canada - *Explosives Act* and *Regulations; Transport of Dangerous Goods Act and Regulations; National Fire Code of Canada;* Nunavut - *Explosives Use Act* and *Regulations, Transportation of Dangerous Goods Act* and *Regulations*; *Mine Health and Safety Act* and *Regulations*; *Fire Prevention Act* and *Regulations;* and *Safety Act* and *Regulations*.

Agnico Eagle uses emulsion-based explosives for controlled blasting of overburden, waste rock, ore, construction rock, frozen ore stockpile, and granular material on surface and underground during the construction and operation phases of the Mine. Other explosives may be used for specifics projects.

Most products required for blasting activities are shipped by vessel from the south to Rankin Inlet, loaded onto barges at the vessel anchoring location, and transported to Itivia. On occasion, product must be flown up on dedicated cargos for unplanned work. During sealift reception of explosive product, after the barges are unloaded, sea cans holding the raw products will be temporarily stored before being trucked to the mine site, with the only exceptions being packaged explosives, boosters, and caps, which will be transported directly to the mine site after being unloaded from the barge. In the event that these products require temporary storage in Rankin Inlet, they will remain under constant surveillance by Agnico Eagle personnel until transportation to site becomes possible.

Mine infrastructure related to explosives includes an i) Emulsion Plant (surface), ii) Explosive Magazines for storage of packaged explosives, initiation products including detonators and emulsion bins and iii) surface storage of raw materials used in the preparation of emulsion. The modular Emulsion Plant was commissioned in December 12, 2017; it is owned and operated by the Explosive supplier.

To assist in the safe and secure storage of fuels, hazardous materials, and hazardous wastes, design criteria of the infrastructure follows the various guidelines set by regulatory bodies. The Emulsion Plant is modular plant with integrated containment storage in the floor. Products entering the composition of explosives will be stored in accordance with the regulations. In the event of a spill, the Spill Contingency Plan will be put into operation and appropriate equipment will be used to contain spilled materials. All preventive and breakdown maintenance will be carried out and recorded in accordance with standard operating procedures. An Emergency Response Plan, provided by the Explosive supplier and on-site manufacturer, addresses worst-case scenarios, such as an accidental explosion; this document is available at the plant for consultation.

TABLE OF CONTENTS

TABLES AND FIGURES

DOCUMENT CONTROL

Version	Date	Section	Page	Revision	Author
1	October 2012			First draft of the Explosives Management Plan	Blandine Arseneault, Env. Superintendent, Agnico Eagle Ryan Vanengen, Biologist, Agnico Eagle
2	March 2013			DEIS re-submission	No change; rebranding
3	April 2014	3.3-3.4 3.5	8-9 10	Added details on best practices and types of explosives Reduced instantaneous pressure change from 100 to 50 kPa	Josée Noël, Environmental Coordinator, Agnico Eagle John Witteman, Env. Consultant, Agnico Eagle
4	April 2015			Update of entire document for submission for Type A Water Licence	François Petrucci, Agnico Eagle
5	March 2018			General revision	Stephen David, Engineering Department, Agnico Eagle
6	March 2020			General revision	Vanessa Smith, Projects Coordinator, Agnico Eagle
7	March 2021			General revision	Vanessa Smith, Projects Coordinator, Agnico Eagle
8	April 2022			General revision	Jean-François Horth, Open Pit Engineering Coordinator, Agnico Eagle
9	March 2023			General revision	Jean-François Horth, Open Pit Engineering Coordinator, Agnico Eagle
10	March 2024			General revision, updated Section 2.2	Meliadine Engineering Department
11	March 2025			Appendix A was updated. No other changes to the document.	Meliadine Engineering Department

ACRONYMS

Agnico Eagle	Agnico Eagle Mines Limited
AWAR	All-weather Access Road
CCME	Canadian Council of Ministers of the Environment
MMU	Mobile Manufacturing Unit
NEQ	Net explosive quantity
NIRB	Nunavut Impact Review Board
NRCAN	Natural Resource Canada
NWB	Nunavut Water Board
NWT	Northwest Territories
Nu	Nunavut
PAL	Firearms Possession and Acquisition Licence
PHC	Petroleum Hydrocarbons
Plan	Explosives Management Plan
WHMIS	Workplace Hazardous Materials Information System

SECTION 1 • INTRODUCTION

1.1 Overview

Agnico Eagle Mines Limited (Agnico Eagle) uses explosives for controlled blasting of overburden, waste rock, ore, construction rock, frozen ore stockpile, granular material on surface and underground during the construction and operations phases of the Meliadine Mine.

1.2 Purpose and Scope

This Explosives Management Plan (the Plan) provides information on explosives manufacture, transport, storage, handling, and use at the Project and its conformity with Section 9.4.13 of the Nunavut Impact Review Board (NIRB) *Guidelines for the Preparation of an Environmental Impact Statement for Agnico Eagle Mines Ltd.'s Meliadine Project (NIRB File No. 11MN034),* and with the Nunavut Water Board (NWB)'s *Mining and Milling: Supplemental Information Guideline for Mine Development*.

1.3 Related Documents

Documents containing information related to this Plan include the following:

- Environmental Management and Protection Plan;
- Risk Management and Emergency Response Plan;
- Spill Contingency Plan;
- Landfill and Waste Management Plan;
- Hazardous Materials Management Plan;
- Borrow Pits and Quarries Management Plan;
- Water Management Plan;
- Meliadine Emergency Response Plan;
- Meliadine Crisis Management Plan;
- Oil Pollution Emergency Plan and Oil Pollution Prevention Plan.

1.4 Applicable Legislation

The control and use of explosives within Canada and Nunavut is covered by existing federal and territorial Acts and Regulations. The Mine has implemented operational policies and procedures, which meet or exceed applicable legislation. Applicable Acts, Regulations, and Guidelines are listed in Table 1-1.

Table 1-1 Applicable Legislation to Explosives Management

Acts	Regulations	Guidelines
Federal		
Canadian Environmental Protection Act (1999 c.33)	*Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations (SOR/2008-197)* *Environmental Emergency Regulations* (SOR/2019-51) *Cross-border Movement of Hazardous Waste and Hazardous Recyclable Material Regulations (SOR/2021-25)*	*Canadian Council of the Ministers of Environment - Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products* Notice with respect to substances in the National Pollutant Release Inventory Canada-Wide Standards for Petroleum Hydrocarbons (PHC) In Soil
Fisheries Act (R.S.C. c. F-14)	*Metal Diamond Mining Effluent Regulations* (SOR/ 2002-222)	Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters
Explosives Act (1985 c.E-17)	*Explosives Regulations* (C.R.C., c. 599) *Ammonium Nitrate and Fuel Oil Order* (C.R.C., c. 598)	Blasting Explosives and Initiation Systems: Storage, Possession, Transportation, Destruction and Sale
National Fire Code of Canada (2010)		
Transport of Dangerous Goods Act (1992, c.34)	*Transportation of Dangerous Goods Regulations* (SOR/2001-286)	
Territorial – Nunavut		
Environmental Protection Act (RSNWT (Nu) 1988, c E-7)	*Spill Contingency Planning and Reporting Regulations* (NWT Reg (Nu) 068-93) *Used Oil and Waste Fuel Management Regulations* (NWT Reg 064-2003)	Guideline for the General Management of Hazardous Waste in Nunavut Guideline for Industrial Waste Discharges in Nunavut Guideline for the Management of Waste
Mine Health And Safety Act (SNWT (Nu) 1994, c 25)	*Mine Health And Safety Regulations* (NWT Reg (Nu) 125-95)	
Explosives Use Act (RSNWT (Nu) 1988, c E-10)	*Explosives Regulations* (RRNWT (Nu) 1990 c E-27)	
Fire Prevention Act (RSNWT (Nu) 1988, c F-6)	*Fire Prevention Regulations* (RRNWT (Nu) 1990 c F-12)	
Safety Act (RSNWT 1988, c.S-1)	*General Safety Regulations* (RRNWT (Nu) 1990 c S-1) *Work Site Hazardous Materials Information System Regulations* (RSNWT 1988, C 81 (Supp))	
Transportation Of Dangerous Goods Act (1990, RSNWT (Nu) 1988, c 81 (Supp))	*Transportation Of Dangerous Goods Regulations* (1991, NWT Reg (Nu) 095-91)	

SECTION 2 • MANUFACTURE OF EXPLOSIVES

2.1 Infrastructure

Construction and production blasting of the Mine requires a combination of emulsion and packaged products. The Emulsion Plant, owned and operated by Dyno Nobel, began manufacturing emulsion explosives on December 12, 2017; the factory license for this operation is included in Appendix A.

General infrastructure for the management of explosives at the mine site includes the following:

- Emulsion Plant;
- Storage of raw materials used in the manufacturing of emulsion; and
- Explosive Magazines for storage of packaged explosives, initiation products including detonators and emulsion bins.

The Emulsion Plant operates 7-days a week on a 24-hour per day basis; a night shift has been added in 2020 to accommodate open pit production. The explosives trucks (2) are based at the Emulsion Plant. There is a separate garage building for the maintenance and washing of trucks and equipment used to handle the explosives in the Emulsion Plant footprint. The water used for the manufacturing of emulsion is fresh water supplied by the Mine. Wastewater generated inside the Emulsion Plant will be collected and disposed in an appropriate method (remaining solids will be disposed in the same manner as unusable emulsion as described in Section 3.6).

2.2 Location

The Emulsion Plant, raw material storage, and magazines will be safely located away from vulnerable facilities, as stipulated by the National Standard of Canada CAN/BNQ 2910-510/2015 Explosives – Quantity Distances guidelines.

The Emulsion Plant is located approximately 1.4 kilometers north-west of the mine site as shown on Figure 2-1.

Figure 2-1 Location of Emulsion Plant & Main Mine infrastructures (MSB, Mill, Dorms)

Figure 2-2 Modular Emulsion Plant and Ammonium Nitrate Storage Pad

The Surface Explosive Magazine is along an access road in relative proximity to the emulsion plant, respecting a D4 distance of 360m.

Figure 2-3 Permanent Surface Magazine Location - the Emulsion Plant Storage

Underground facilities include four Explosive Magazines at Levels 200 (two), 400 and 500, and also five Detonator Magazines located at Levels 200, 300 (two), 400 and 500. These facilities are constructed following good engineering practices.

2.3 Products

The following products are required for manufacturing emulsion:

- surfactant (highly reacted oil mixture);
- ammonium nitrate (AN);
- sodium nitrate;
- water; and
- microballoons.

The explosive trucks (Mobile Manufacturing Unit or MMU) used to deliver emulsion at surface operations will use either water or a mixture of water and glycol during freezing conditions to allow for the pumping of the emulsion into the blastholes.

The following products will be required to achieve blasting activities:

- Bulk or packaged explosives;
- Initiating systems including caps, boosters, detonating cords; and
- Glycol (during freezing conditions).

2.5 Design Criteria

To assist in the safe and secure storage of fuels, hazardous materials, and hazardous wastes, the following is the design basis for the storage areas and facilities related to explosives:

- Design complies with the *National Fire Code*.
- Compliance with the Canadian Council of Ministers of the Environment (CCME), *Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products (2003)*. This CCME code deals with inventory control, inspections, corrosion protection, records, and monitoring. Environment Canada's *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations* outlines registration and documentation requirements for storage tanks.
- Emulsion Plant area is a restricted area, adequately signed indicating that hazardous materials/wastes are stored therein.
- All storage locations are clearly defined and marked to prevent damage to storage drums and containers in the event they are covered by snow.
- Incompatible materials are segregated by chemical compatibility within the storage area to prevent contact between materials in the event of a release.
- The Emulsion Plant respects the 31 metres required separation distance to surface waters.
- The Emulsion Plant is readily accessible for emergency interventions.
- The Emulsion Plant is adequately ventilated to prevent the build-up of noxious or toxic vapors.
- Secondary containment is built into the facility allowing 110% containment of the largest container or tank volume of any chemical within the contained area.
- Adequate spill and emergency response equipment is available at the plant site and in associated storage area (i.e., spill control, fire protection, etc.).

SECTION 3 • HANDLING OF EXPLOSIVES

3.1 Transport

Most products required for blasting activities are shipped by vessel or by dedicated cargo from the south to Rankin Inlet. On occasion, product must be flown up on dedicated cargos for unplanned work. Explosives arriving by sealift are off-loaded at Itivia and transported immediately to site using the Bypass road and All-weather Access Road (AWAR). Once arrived on site, explosives and raw materials for manufacturing explosives are stored in their designated storage locations at the mine site. Explosive material travelling through Rankin Inlet adhere to all regulations regarding transportation of dangerous good set forth by Natural Resource Canada (NRCAN) in the Explosives Act (as amended by the Public Safety Act, 2002).

The handling of explosives on-site is carried out by the supplier and by qualified Agnico Eagle staff (blasters and helper-blasters) holding a valid letter of approval or acceptable equivalent screening documents such as FAST cards, NEXUS cards, a Firearms Possession and Acquisition Licence (PAL), and Permis Général issued by the Sûreté du Québec as stipulated by the Explosives Regulation, 2013. Delivery of explosives on site is dependent of the client: underground or surface.

3.1.1 Surface Transport and Equipment

Surface product is pumped into a 10 tonne capacity explosive truck called MMU. The MMU delivers emulsion to the open pit production blast holes.

Figure 3-1 Mobile modular Emulsion Plant and Explosive Truck

3.1.1 Underground Equipment

Underground product is manufactured and stored in 1.2 tonne capacity BIC emulsion totes.

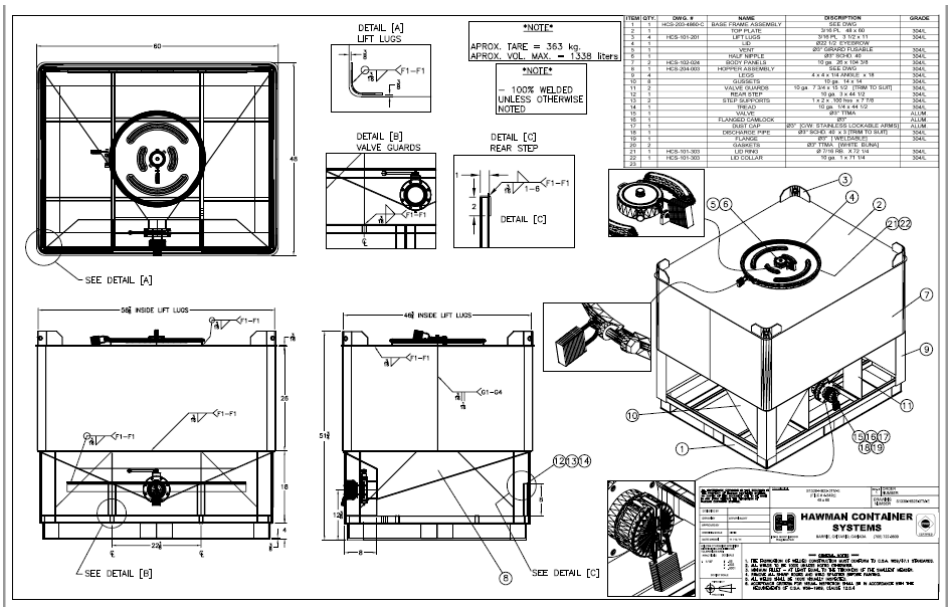

Figure 3-2 Underground Emulsion BIC Storage Bins

These totes are delivered from the Emulsion plant to the underground portal for underground storage. Transportation underground is undertaken by service personnel using a boom truck.

An underground emulsion charger is used to deliver emulsion to the workface. This proprietary mobile unit is the DynoMiner Advance system, supplied and serviced by Dyno Nobel, designed to deliver Dyno Nobel's TITAN 7000 range of water resistant pumpable bulk emulsion explosives to the workface for development mining. This unit is mounted on an EC3 Maclean Carrier. These units are only operated by people having specific training in addition to the required explosive handling requirements.

Figure 3-3 Underground Emulsion Charger – Dyno Loader

3.2 Storage

After the barges are unloaded, sea cans holding the raw products will be temporarily stored at Itivia before being trucked to the mine site, with the exception of all explosives material including initiation systems which are transported directly to the mine site after being unloaded from the barges. Products which are temporarily stored at Itiva will have the doors of the sea cans placed against each other so the sea can doors cannot be opened, or with the doors placed against the wall of another seacan. In the event that these products require temporary storage in Rankin Inlet, they will remain under constant surveillance by Agnico Eagle personnel or qualified contractors until safe transportation to site is available.

3.1.1 Surface Storage

On the mine site, raw materials such as sodium nitrate and ammonium nitrate used in the preparation of emulsion will be contained in 1- tonne tote bags, and stored in sea cans (capacity of approximately 20,000 kilograms each). Raw materials of different and incompatible types will be stored in separate sea cans to prevent their mixing. Raw materials will also be stored away from any other products as required by explosive regulations.

Initiation systems including detonators and product under the same classification will be stored in Detonator Magazines (surface and underground). Packaged explosives including boosters and detonating cord, and bulk explosives will be stored in Explosive Magazine.

Figure 3-4 Surface Explosive Magazines and Berms

The location and positioning of surface magazines are placed based on a total Net Explosive Quantity (NEQ) of 237,000 kg of explosives with a temporary allowance of 310,000 kg. The required separation distance outlined in the National Standard of Canada CAN/BNQ 2910-510/2015 Explosives – Quantity Distances guidelines is followed.

There are currently fourteen (14) permanent surface explosive storage magazines which store both explosive and initiation products for surface and underground applications. These storages have been relocated late 2020 since they were in the Open pit footprint.

All surface magazines are grounded to satisfy the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines and the Mines Health and Safety Regulations article 14.04 Surface Magazines. Electrical, Heating and Lighting. There are 40 m of diamond drill rods that are connected to a grounding ring to ensure an effective ground in the event of a lightning event.

Figure 3-5 Surface Explosive Magazines – Grounding

3.1.1 Underground Storage

There are nine underground storage areas; these magazines are managed and permitted according the NU/NWT Mines Health and Safety Regulations. The detailed construction drawings for each excavation type are show below

- *Underground explosive magazines include L200 (x2), L400 and L500.*
- *Underground detonator magazines include L200, L300 (x2), L400 and L500.*

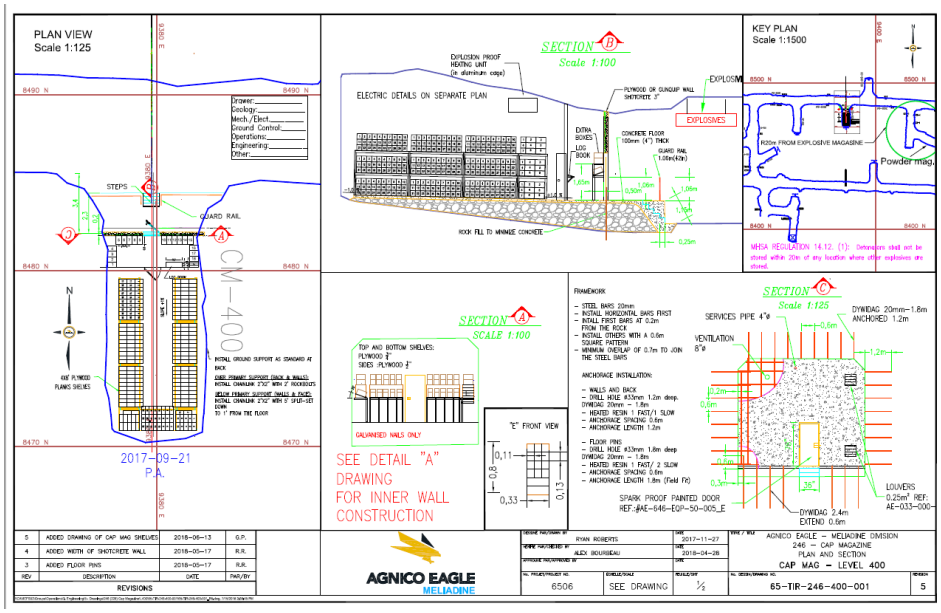

Figure 3-6 Underground Detonator Magazines Design

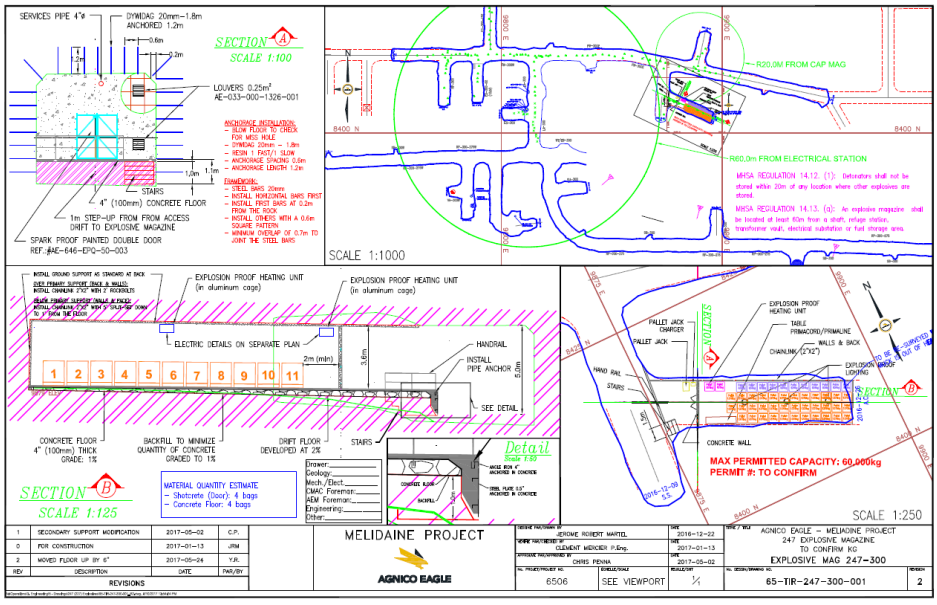

Figure 3-7 Underground Explosive Magazines Design

3.3 Blasting Activities

Blasting occurs at the end of each shift, up to two times per day for both underground and surface blasting. The quarries, and possibly the borrow pits and stockpiles in some instances, may also require

the use of explosives. At the end of all blasting activities, unused explosives will be returned to their respective storage magazines without undue delay.

Blasting using nonel initiation systems is the general practice for surface and electronical initiation systems for underground operations. The blasting patterns will favor maximal fragmentation, which will reduce energy consumption related to the crushing at the mill. Blasting will be carried out by certified blasters who will follow blasting regulations and safe practices. The responsibility for blasting will be split between appropriately trained mine personnel and the explosives supplier.

For safety, environmental, and economical reasons, blast designs will be optimized and will include measures that favor complete detonation of all explosives. Drill patterns, explosive loads, and initiation methods will be designed and performed by experienced professionals, and will be adaptively managed to make necessary adjustments should any problems be observed. Having a single explosives supplier and trained certified blasters loading the holes and performing blasting activities ensures consistency and efficiency of the activity and reduces likelihood of spills.

3.4 Type of Explosives

There is a large selection of explosives use for production blasting during surface, underground and construction blasting. The following table summarizes the most common products used at the Mine.

Table 3-1 Type and class of Surface Explosives

Supplier Name	Description	Class	VELOCITY (m/s)	DETONATION PRESSURE (Kbars)	SHELF LIFE
ELECTRIC SUPERSTARTER *(NEQ. 0.0570kg/100)*	Electric Instant Detonator	1.4B	-	-	3 yr
NONEL EZ DET *(NEQ. 0.1125kg/100)*	Nonelectric Blast Initiation System	1.1B	-	-	3 yr
NONEL EZTL *(NEQ. 0.0240kg/100)*	Nonelectric Trunkline Delay Detonators	1.4B	-	-	3 yr
NONEL MS Connectors	Bi-directional units with 46cm shock tube	1.1B	-	-	3 yr
NONEL Lead Line *(NEQ. 0.0044kg/100)*	Nonelectric Shock Tube	1.4S	-	-	3 yr
TROJAN SPARTAN *(450G & 200G)*	Cast Booster	1.1D	7,550	235	5 yr
TITAN 1000G *(SURFACE)*	Unsensitized Gassable Bulk Emulsion Matrix	1.5D	4,500	61	2wks
PRIMACORD 5 *(5.3g/m)*	Detonating Cord	1.1D	-	-	5yr
PRIMALINE 85 *(85g/m)* *(NEQ. 27.2kg/1000ft)*	Detonating Cord	1.1D	6,300	-	5 yr

Table 3-2 Type and class of Underground Explosives

Supplier Name	Description	Class	VELOCITY (m/s)	DETONATION PRESSURE (Kbars)	SHELF LIFE
ELECTRIC SUPERSTARTER *(NEQ. 0.0570kg/100)*	Electric Instant Detonator	1.4B	-	-	3 yr
NONEL LP SERIES	Detonator	1.1B	-	-	3 yr
DIGISHOT PLUS *(NEQ. 0.100kg/100)*	Electric Initiation Sys.	1.4B	-	-	3 yr
TROJAN SPARTAN *(200G, 90G, 20G)*	Cast Booster	1.1D	7,550	235	5 yr
DUPLEX LEAD WIRE	Wire Blasting				
TITAN 7000G *(UNDERGROUND)*	Sensitized Bulk Emulsion	1.5D	5,500	91	3 mo
DYNO AP	Sm. Diam. Detonator Sensitive Emulsion	1.1D	4,700	63	1 yr

3.5 Blast Monitoring for the Protection of Fish

Monitoring to evaluate blast related peak particle velocity and overpressure to protect nearby fish bearing waters will be conducted to ensure blast operations are within the Guidelines for the Use of Explosives in or Near Canadian Waters (Wright and Hopky, 1998) as modified by the DFO for use in the North. The following requirements are applicable to the Mine:

- No explosive is to be detonated in or near fish habitat that produces, or is likely to produce, an instantaneous pressure change (i.e. overpressure) greater than 50 kPa in the swim bladder of a fish.

- No explosive is to be detonated that produces, or is likely to produce, a peak particle velocity greater than 13 mm/sec in a spawning bed during the period of egg incubation.

For additional details on blast monitoring, please refer to Agnico Eagle's Blast Monitoring Program, which is revised annually and is in in compliance with Project Certificate No.006 issued by the NIRB.

3.6 Disposal of Wastes

Disposal of regular waste follow the Landfill and Waste Management Plan for the Mine.

Any hazardous material that requires disposal is handled according to the Mine's Hazardous Materials Management Plan.

Used water generated at the Emulsion Plant is recirculated back into the process or is sent down south for disposal. Remaining solids are disposed in the same manner as unusable emulsion as described below.

Any unusable/unused emulsion waste, as well as other explosive products whose expiry date has passed, are destroyed following site-specific procedures depending on the nature of the product. The most efficient method to destroy expired product is during open pit blasting in blastholes.

Empty explosive boxes or bags are burned on-site by site service (Energy & Infrastructure) trained personnel.

SECTION 4 • SPILLS

4.1 Spill Prevention

The Emulsion Plant is a modular plant with built in-floor spill containment with a 110 % containment capacity of the largest spill. All facilities related to explosives handling on-site will be secured (locked) and regularly inspected by site security.

More details regarding spill preventive methods are provided in Spill Contingency Plan. The following is a summary of the main aspects:

- All storage tanks containing products that enter the composition of explosives will be in accordance with the provisions of regulations (e.g., National Fire Code, *Environmental Protection Act*).
- In case of a spill, the Spill Contingency Plan will be put into action and appropriate equipment will be used to contain the liquids or solids spilled.
- All preventive and breakdown maintenance will be carried out and recorded in accordance with standard operating procedures.

4.2 Intervention in Case of a Spill

Table 4-1 summarizes procedures to be applied in case of a leak or a spill of a product used in the manufacture of emulsion. Means of disposal of waste are also included. More details regarding hazardous materials and spill management are provided in the Spill Contingency Plan.

Table 4-1 Procedures in Case of Leaks and Spills of Explosive Products[1]

Product	Description	Spill and Leak Procedures	Waste Disposal
Ammonium Nitrate	Odorless, white to light, tan crystalline solid.	Remove source of heat and ignition. Sweep or shovel (non-sparking ie aluminium etc) spill into a clean, non-combustible non metal container. Wash remaining trace residues with water. Wear rubber gloves and safety glasses to prevent contact with skin and eyes.	Dispose of as-is in approved containers. As much as possible, remove, the spilled material as a solid.
Surfactant	Dyed or pale yellow liquid with petroleum odor.	Eliminate any source of ignition. Prevent spills from entering watercourses or drainage systems. Contain with sand or earth. Recover with pump or inert absorbent material, and place in clean container(s). Wear safety glasses and rubber gloves to prevent contact with eyes and skin.	Dispose as specified in the Hazardous Material Management Plan.
Emulsion	Blasting agent.	Remove all sources of heat and ignition. Prevent spills from entering watercourses or drainage systems. If a large amount of emulsion is involved, contain spill with earth or sand. Recover spilled material with a diaphragm pump. Use of a diaphragm pump also requires an air compressor. Limitation of the pump suction is approximately 2.5 metres, pump discharge is approximately 8 metres. Use a screening device on pump suction hose. Out of area spills will require taking two pumps and extra hose. Transfer the product into a tanker trailer or clean 200 litre non-metal drums. If a small amount of emulsion is involved, transfer material into a clean plastic container with a plastic or non-sparking shovel ie aluminum. Label tanker trailer or drums. Wear rubber gloves and rubber boots.	Recycle product, if possible. If not practical, detonate in a blasthole, or if a large amount is involved, demulsify with liquid detergent.
Sodium Nitrate prill	Oxydizing agent, white to light yellow crystals, faint odour.	In the event of a spill or leak, contact the vendor for advice. Wear respirator, protective clothing, and gloves. Vacuuming is the recommended method to clean-up spills. Do not sweep or use compressed air for clean-up. Recover spilled material using non-combustible materials, such as vermiculite. Use non-sparking tools and place in covered containers for disposal. Any recovered material may be used for its intended purpose, depending on contamination.	Waste material will need to be shipped south and disposed at an approved hazardous waste treatment/disposal facility in accordance with the Hazardous Material Management Plan.

[1] *Table will be updated on a regular basis considering the WHMIS sheets.*

SECTION 5 • PERSONNEL TRAINING PROGRAM

Only trained and certified persons will work with explosives or have access to unsupervised explosives. The explosives personnel will undertake formal training and on-the-job training to ensure compliance with legislation. Training requirements will include (but will not be limited to) the following:

- Approval Letter issued by Natural Resource Canada allowing access to a high-hazard explosive (types E, I, and D) or equivalent (Permis Général (Québec residents), FAST card, NEXUS card, or a Firearms Possession and Acquisition Licence (PAL))
- Specific fire procedures as per the *Federal Explosives Act*;
- First aid;
- Transportation of Dangerous Goods;
- Blasting certificate; and
- Workplace Hazardous Materials Information System (WHMIS).

SECTION 6 • BLASTING SAFETY MEASURES

6.1 Surface

Blasting safety procedures for breaking rock and frozen material are as follows for blasting on the surface:

- Unauthorized personnel are not allowed inside a posted blast area whether the holes have been loaded or not.
- The blasting supervisor and the blaster are responsible for the safe handling, loading, and connection of a blast.
- The drill and blast supervisor is responsible for the evacuation of all personnel and equipment from the blast area and the guarding of the blast.
- The Open Pit General Supervisor is responsible for notifying the Meliadine site affected by a particular blast, 24hrs in advance by e-mail and with the notification board at the entrance.
- Guards will be posted prior to blast time and must remain guarding until they are told verbally by the drill and blast supervisor that they can leave their position.
- Once guards are posted, the blast area must be inspected by the drill and blast supervisor to ensure that no personnel or equipment remain inside the blast area.
- A blast-warning siren will be sounded for one minute; three minutes after this, the blast will be fired.
- The blaster will only fire the blast when given a direct verbal order to do so by the drill and blast supervisor.
- Before firing a shot, the blaster must ensure the immediate area is clear (i.e., aircraft, etc.).
- The drill and blast supervisor and blaster will inspect the fired shot for indications of any problems, such as misfires or cut-offs.
- Areas in which charged holes are awaiting firing shall be guarded or posted against unauthorized entry.
- Vehicles containing explosives shall not be taken to the repair shop or any other building for any purpose, with the exception of the MMU truck containing unused bulk emulsion. At the end of the shift, the MMU will be parked inside the explosive plant for usage the next day. No open flames or welding are to be used for field repairs unless explosives are first removed.
- All loaded patterns, in addition to being marked with blasting signs, will be clearly delineated to outline the pattern when necessary.
- Redrills shall be marked in an appropriate way and be designated by a member of the blasting crew; the marker shall be firmly implanted in the cuttings of the hole to be redrilled. The marker shall be removed by the driller before drilling and inverted in the hole after drilling for pickup by the blasting crew.
- Where redrills are required on loaded patterns, the drill must be guided by the blasting supervisor or blaster or a responsible person designated by them.

- Service vehicles and fuel trucks are not allowed on a loaded pattern; the drill must pull well clear of the loaded holes before any service or maintenance can be done on it. Where the drill cannot be moved and service is required, it may be done only under the direct supervision of the blast supervisor or designate, and all loaded holes must be covered.

6.2 Underground

Blasting safety procedures for breaking rock are as follows for underground operations:

- Underground blasts will occur at approximately the same time during the day.
- All employees working underground must be back on surface and have removed their badges from the presence board.
- Before blasting, the responsible supervisor makes sure that there are no badges remaining on the presence board.

SECTION 7 • INTERNAL AUDIT AND INSPECTION

Internal audits and inspections of all components related to the Explosives Management Plan will be conducted as required by the regulations. Inspections for physical condition and serviceability will be done on a regular basis by qualified personnel, and the results recorded according to quality and safety standard operating procedures. Qualified personnel will perform regular inspections of the Emulsion Plant.

Underground magazines are inspected weekly as required by Article 14.08. (1) of the Mines Health and Safety Regulations which required that *each magazine shall be operated and maintained (a) in the charge of an authorized person who shall carry out a weekly inspection of the magazine and record the results in a log-book.*

SECTION 8 • EMERGENCY RESPONSE PLAN

A detailed Emergency Response Plan has been developed by the explosives supplier, which addresses potential incidents involving the manufacturing, transport, handling, and storage of explosives and related products. It will prescribe the actions that the supplier and Agnico Eagle employees must take to ensure employee and public safety in the event of an emergency.

The following situations (worst case scenarios) will be addressed relative to explosives in the Emergency Response Plan:

- fire/explosion;
- storage tank failure;
- spills from product delivery trucks;
- spills from raw material delivery trucks;
- process spills;
- shut-down due to weather, floods, lightning, fires, explosions, and other threats to the security and operation of supplier's facilities, equipment and material;
- bomb threats; and
- quantities of spills that are reportable to the supplier and authorities.

REFERENCES

Agnico Eagle (Agnico Eagle Mines Limited). 2014a. Shipping Management Plan, Final Environmental Impact Statement, Meliadine Gold Project, Nunavut, Volume 8, Support Document 8-1.

Agnico Eagle. 2014b. Occupational Health and Safety Plan, Final Environmental Impact Statement, Meliadine Gold Project, Nunavut, Volume 9, Support Document 9-6.

Agnico Eagle. 2014c. Oil Pollution Emergency Management Plan, Final Environmental Impact Statement, Meliadine Gold Project, Nunavut, Volume 8, Support Document 8-2.

CCME (Canadian Council of Ministers of the Environment). 2003. Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products. Available on-line: http://www.ec.gc.ca/lcpe-cepa/default.asp?lang=En&n=61B26EE8-1

Godard, D.R., L. Peters, R. Evans, K. Wautier, P.A. Cott, B. Hanna, and V. Palace. 2008. Development of histopathology tools to assess instantaneous pressure change-induced effects in rainbow trout (*Oncorhynchus mykiss*) early life stages. Environmental Studies Research Funds Report # 164. Winnipeg.93 p.

Wright, D.G., and G.E. Hopky. 1998. Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters. Canadian Technical Report of Fisheries and Aquatic Sciences 2107. Science Directorate, Central and Arctic Region, and Habitat Management & Environmental Science Directorate, Department of Fisheries and Oceans (DFO).

APPENDIX A • FACTORY LICENCE

Natural Resources Canada | Ressources naturelles Canada

Protected B

Factory Licence or Manufacturing Certificate and Terms and Conditions

Name and Address of Holder	Licence/certificate location	Licence/Certficate Number
Pierre St-Georges Dyno Nobel Canada Inc 355 rue De La Bergerie L'Orignal, Ontario, K0B 1K0 Canada	Rankin Inlet, Nunavut	F1-076821/E
	Expiry Date 2026-01-31	Amendment Number 26-00

As per Section 7(1) of the *Explosives Act*, **the Minister has issued the above certificate/licence. The following terms and conditions (if any) pursuant to Section 7(2), in addition to those prescribed by the *Explosives Regulations, 2013* apply to this licence or certificate.**

1) Every mobile process unit at a client site, that is not at a mine or quarry, must be located at an acceptable distance from surrounding structures and infrastructure and from places where people are likely to be present. Acceptable distance is determined by the Minister on the basis of risk of harm to people or property, taking into account the quantity and type of explosives that are to be manufactured, the raw material to be used, the manufacturing operations to be carried out, the strength, proximity and use of surrounding structures and infrastructure and the number of people likely to be in the vicinity of the mobile process unit.

Kim Tully

Issue Date 2024-09-12 1/1
For the Minister of Natural Resources Canada

Canada