



Enbridge Pipelines Inc.
3000, 425 – 1st Street SW
Calgary, Alberta T2P 3L8
Canada
www.enbridge.com

David W. Bryson, P.Eng.
Vice President, Strategy & Integrated Services
Liquids Pipelines
Tel: [REDACTED]
Fax: [REDACTED]
[REDACTED]@enbridge.com s.19(1)

April 15, 2013

**CONFIDENTIAL – PROTECTED B
FILED IN HARD COPY ONLY**

National Energy Board
444 Seventh Avenue S.W.
Calgary, AB T2P 0X8

Attention: Ms. Sheri Young
Secretary of the Board

MAIL ROOM
FILED COURIER
20 APR 15 P 3:27
[REDACTED]

Dear Madam:

Re: Alternative Power Source Corrective Action Plan Development

In response to correspondence from the Board, dated 15 March 2013¹, Enbridge Pipelines Inc. (Enbridge) takes the opportunity to file, in hard copy, its Corrective Action Plan (CAP). Enbridge also wishes to thank the Board for acceding to the Company's proposed course of action to date.

The attached CAP addresses AVC NEB # 1112-059, 1112-060 and 1112-063, issued on May 14, 2012.² Enbridge notes that Assurances of Voluntary Compliance (AVC), which this CAP intends to address, are out of scope for e-filing. This CAP contains sensitive information and records that are routinely treated as confidential and their distribution controlled within Enbridge. Because the release of this information could compromise aspects of Enbridge's business and possibly the security of its facilities, the company respectfully requests that none of it be made available to the public without first notifying Enbridge and allowing it to address such a request, in accordance with the Government Security Policy.

As a starting point, Enbridge believes that its system, as currently configured, operates in a manner that is safe to the public and environment. Nevertheless, Enbridge agrees with the NEB that the installation of the ESD push-buttons will enhance system safety. Enbridge can advise that installation of these devices is nearly complete.

With respect to the installation of back-up generators, Enbridge notes that such alternate power sources would only be employed in rare cases. The control part of Enbridge's Emergency Shut-

¹ Enbridge notes that an erratum was issued by the Board 20 March 2013, for ease, however, Enbridge refers to the original correspondence.

² Enbridge advised by letter dated 8 April 2013, that the issue at the Bakken Pump Station has been addressed. Any subsequent correspondence on that facility will be addressed separately.

Down System (PLC and I/O interface) is already backed up with an uninterruptible power supply. It is only in the event of a power outage and an emergency situation occurring simultaneously that the alternate power source would be called upon to isolate the station. In that regard, Enbridge still has questions with respect to the need, from a practical perspective, for installing power generation of this nature. Nevertheless, Enbridge's CAP addresses the requirement to install alternate sources of power. Given that these devices could significantly impact system operation and the fact that their employment would likely only occur in rare circumstances, the company proposes a schedule that is measured, in the sense that Enbridge is carefully considering the impacts of installing this equipment on the system, while at the same time ensuring that the proper designs, protocols and procedures are developed.

Turning to the 15 March 2013 correspondence, to date, Enbridge has provided the NEB with information supporting the completion of each of the steps provided in Enbridge's correspondence dated 18 October 2012. Since the information is already in the Board's possession, Enbridge does not propose to resubmit it. A discussion with the NEB inspector confirmed the Board would be amenable to this approach.

With respect to the contents of the CAP, Enbridge submits that the ameliorative actions contained therein will bring Enbridge into compliance with paragraph 12(a) of the *Onshore Pipeline Regulations* and clause 4.14.3.3 of CSA Z662-11. The CAP provides the locations, timelines and details of the work to be completed and includes actions designed to correct the deficiencies that have led to the non-compliance.

Enbridge agrees with the Board that management systems are an effective way to help companies assess and manage risks associated with the operations of their facilities. This includes processes associated with management of change. In that regard, Enbridge has included in its CAP reference to these items.

Enbridge looks forward to discussing this matter further with the Board. In that respect, please not hesitate to contact [REDACTED] by email at [REDACTED]@enbridge.com or [REDACTED] at [REDACTED]@enbridge.com.

s.19(1)

Sincerely,

[REDACTED]
David Bryson
VP, Strategy & Integrated Services

Attachment



ESD Alternate Power Source
Corrective Action Plan

DRAFT Revision 0

April 11, 2013

Table of Contents

| | |
|--|----|
| 1) Executive Summary | 3 |
| 2) Engineering Design Standards | 4 |
| a. Technical Bulletin | 4 |
| b. Design Standard | 4 |
| 3) Facilities Upgrades – Back-up Power | 5 |
| 4) Interim Plan to Manage | 7 |
| 5) Management of Change | 7 |
| Appendix A – Technical Bulletin | 8 |
| Appendix B - Standards Content | 10 |
| Appendix C - In-Service Summary | 11 |
| MAINLINE Phase 1 | 11 |
| MAINLINE Phase 2 | 12 |
| MAINLINE Phase 3 | 13 |
| Westspur System | 14 |
| Enbridge Norman Wells Pipeline | 15 |

1) Executive Summary

s.16(2)(c)

s.20(1)(b.1)

As a result of National Energy Board (NEB) inspections of several Enbridge pump and terminal facilities, the NEB directed an upgrade to such facilities to include alternate power sources capable of operating the station's Emergency Shut-Down (ESD) system in accordance with section 12 (a) of the *National Energy Board Onshore Pipeline Regulations* (NEB OPR).¹ Similar deficiencies were identified at [REDACTED] Terminal, [REDACTED] Terminal, [REDACTED] Line 9 pump station and [REDACTED] pump station.

The intent of this corrective action plan is to address the deficiencies at stations that do not meet the requirement for alternate power sources, and to address systemic improvements demonstrating proactive compliance on future projects.

Enbridge's corrective action plan will implement a three (3) year staged program to install an alternative power source capable of operating emergency shutdown systems at terminals and pump stations within Canada. The proposed implementation timing depends on key equipment vendors and construction contractors. Resourcing strains that persist in Western Canada have potential to adversely impact implementation timing, but Enbridge will strive to meet its proposed schedule. Enbridge's planned final in-service date for the entire program is Q-4 2016. If, at any time during the implementation of this program, potential slippage to schedule appears likely, Enbridge will notify the NEB in advance.

Additionally the corrective action plan includes updates to engineering standards and key management systems, discussed below.

Enbridge is in the process of installing ESD pushbuttons at pump stations to achieve compliance with CSA Z662-11 section 4.14.3.3 (c). Commissioning is scheduled to be complete April 2013.

Additionally, Enbridge has addressed the issue identified in AVC 1213-283, regarding the Bakken Pump Station, issued 9 October 2012. Enbridge Bakken Pipeline Company Inc. installed a generator set at the Bakken Pump Station in March 2013 and will keep the Board apprised of any further developments with respect to that facility.

¹ The AVC was issued pursuant to the former *Onshore Pipeline Regulations, 1999*.

2) Engineering Design Standards

a. Technical Bulletin

A technical bulletin has been issued to ensure requirements for an Alternate Power Source for Emergency Shutdown Systems are addressed and implemented in the interim until technical standards are revised. Bulletins reflect changes to specific design and/or maintenance practices, and will be immediately implemented for all new facilities and for any planned modifications to existing assets. Bulletins are not retroactive and are not intended to drive retrofitting of any existing assets unless there is a stand-alone business case that supports that type of action. The Technical Bulletin is attached at Appendix A.

Responsible Department: Operations Engineering

Completion date: Issued April 10, 2013

b. Design Standard

Design Standards specify Enbridge's engineering requirements for the design of Enbridge pipeline facilities. They are intended to minimize design variance between sites, assist in compliance with regulatory requirements and industry codes, provide a controlled method to change design practice and provide a means to maintain and check design quality. Design Standards focus on considerations, philosophy and rationale aimed at Design Engineers as end users.

Appendix B provides an outline of standard content for Enbridge Engineering Design Standards.

The following existing standards may require revision to include reference to specific requirements around Alternate Power Sources for Emergency Shutdown Systems:

- D02-101 – Design Basis, Electrical, Instrumentation, and Control
- D02-103 – Design Basis Station and Terminal
- D10-104 – Auxiliary Power Supplies

A comprehensive review of all engineering standards is scheduled to ensure cross references are revised for consistency and clarity.

Responsible Department: Operations Engineering

Completion date: November 30, 2013

3) Facilities Upgrades - Back-up Power

s.20(1)(b)

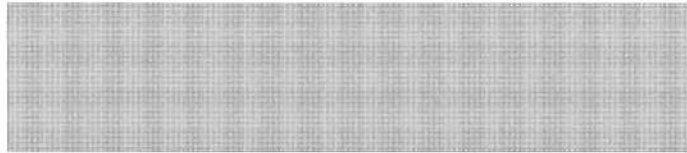
Auxiliary backup power by [REDACTED] will be installed at the affected facilities to meet the requirements of NEB OPR, section 12. To mitigate the effects of a single point of power supply failure, Enbridge has an operating and design philosophy of not supplying power to more than two (2) stations from one main power transformer. This philosophy will be applied to back-up power for critical emergency shutdown systems, and therefore no more than two (2) stations shall have a common back-up power supply.

The following summarizes critical loads that will transfer to alternate power during a power outage:

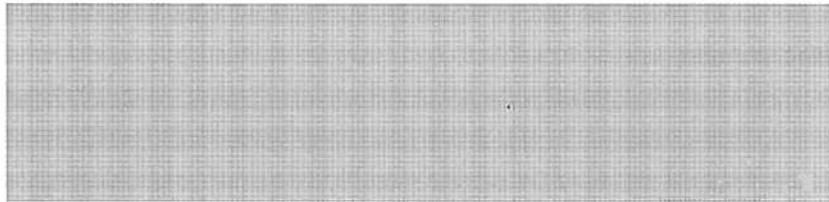
1. Terminals:

s.20(1)(b.1)

s.16(2)(c)



2. Mainline Stations:



The basis for sizing [REDACTED] for mainline pump stations will be for emergency supply to either 3 or 6 Motor Operated Valves (MOV) operating concurrently. [REDACTED]

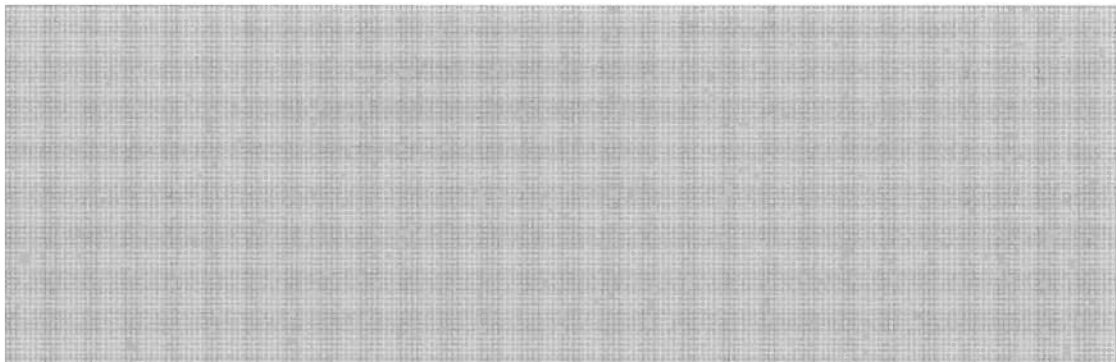
s.20(1)(b)

[REDACTED] will be specified for Emergency Standby duty. The required capacity for each installation must be verified during detailed design as valve actuator motor sizing variance between facilities will impact site requirements.

Power distribution modifications for auxiliary power to emergency shutdown critical loads will not impact station and facility operating and control philosophies under normal operations.

s.20(1)(b.1)

s.16(2)(c)



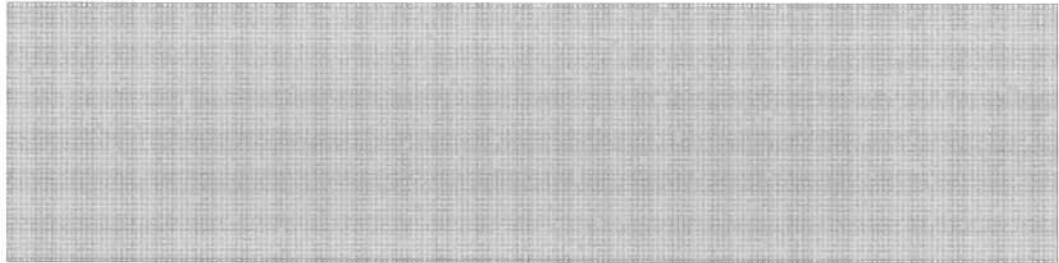
Transfer back to normal power shall be a planned operation without causing any disruption to the operations.

Due to the magnitude and complexity of the upgrades required to comply with the requirements contained in NEB OPR and CSA Z662-11, a 3 year staged program of facility upgrades is proposed. Since the scope of these upgrades will require equipment installation and/or modifications at most terminals and pump stations currently in operation, the upgrades will require differing execution strategies outlined as follows:

Terminals:

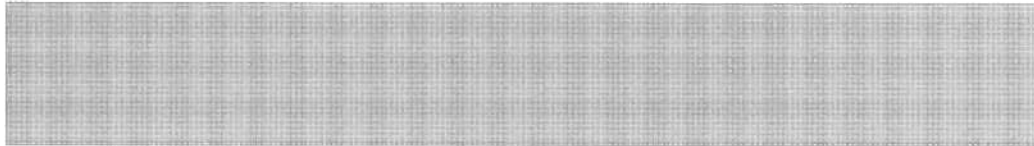
A multi-year staged implementation is required for a terminal:

s.20(1)(b)



Mainline Stations:

s.20(1)(b)



Timing for each implementation phase is staggered over calendar years as follows:

- Phase 1: 2013-2014
- Phase 2: 2014-2015
- Phase 3: 2015-2016

A program implementation schedule for all facilities requiring alternate power supply upgrades is detailed in Appendix C, which will be reassessed after the first year to determine whether advances in facility construction and in-service timing are feasible in subsequent program years.

Responsible Department: Liquids Pipelines – Canadian Projects
Enbridge Major Projects
Enbridge Pipelines (Westspur) Inc.

Completion date: Refer to Appendix C for in-service summary by system & phase.

4) Interim Plan to Manage

In the interim, potential outages resulting from loss of primary power will continue to be monitored & managed

s.20(1)(b.1)

s.16(2)(c)

Responsible Department: Canadian Field Operations
Control Centre Operations
Completion date: Ongoing Quarterly, commencing Q1 2014 until done.

5) Management of Change

Parts 2(a) and (b) of this CAP address the steps that Enbridge has taken (and continues to take) to ensure this type of non-compliance event does not occur in the future.

Enbridge has existing processes for management of change and is currently developing an integrated management system that is designed to incorporate management of change throughout its various management systems and processes. The management systems, as well as management of change, will undergo regular health checks, reviews and audits for continuous improvement purposes.

Responsible Department: Risk Compliance and Integrated Management
Operations Engineering

Completion date: March 31, 2014

Appendix A - Technical Bulletin

BUL-050-2013

Enbridge Pipelines Inc.
10201 Jasper Avenue
P.O. Box 398
Edmonton, AB T5J 2J9
Canada
www.enbridge.com



Technical Standards Bulletin

| | |
|---|-------------------------------------|
| Title: Alternate Source of Power Supply for ESD Valves (Canada Only) | |
| Bulletin #: BUL-050-2013 | Date: April 10, 2013 |
| Issued By: Operations Engineering, Power | |
| Approved By: [REDACTED] | Sr. Manager, Operations Engineering |
| This Change is Effective Immediately | |
| In Reference To: | |
| Design Standard D02-101 – Design Basis, Electrical, Instrumentation, and Control Design Standard D02-103 – Design Basis Station and Terminal Design Standard D10-104 – Auxiliary Power Supplies | |
| This bulletin is to clarify that pump stations shall be equipped with an alternate source of power supply capable of operating station's Emergency Shutdown (ESD) valves as specified in Enbridge design standard D10-104, Rev 0.0 (1999), Section 4.1.3. According to Enbridge design standard D12-102, Rev 1.0 (2006) Section 4.1.5: | |
| [REDACTED] | |
| Applicability: All projects that have not received AFE approval. All projects in early stage (Gate 1 to 3) shall incorporate this requirement in the design. All other projects in later stage (Gate 4 and above) will be considered in the program that is being developed by LP Development Engineering. | |

s.19(1)

s.20(1)(b.1)

s.16(2)(c)

Appendix A - Technical Bulletin

BUL-050-2013

Justification:

National Energy Board (NEB) during its inspection of Enbridge facilities had identified the lack of alternate source of power capable of operating the station's Emergency Shut-Down (ESD) system as per OPR-99 section 12(a). This non-compliance was identified at the [redacted] Terminal, the [redacted] terminal, the [redacted] Line 9 pump station and the [redacted] pump station.

On-shore Pipeline Regulations 1999 (OPR 99) – Section 12

A compressor station or pump station shall be equipped with an alternate source of power capable of operating the station's emergency shut-down system.

LP Development Engineering is developing a program to implement alternate power supply at existing stations under NEB regulations.

s.20(1)(b.1)

s.16(2)(c)

Appendix B - Standards Content

The following is an excerpt from **DESIGN STANDARD D01-102 - 2008 POLICY AND STYLE FOR ENGINEERING STANDARDS**

1. Scope
2. Related Standards and Definitions
 - 2.1 Company Standards
 - 2.2 Regulatory Standards
 - 2.3 Industry Standards
 - 2.4 Definitions
 - 2.5 Abbreviations
3. Design Procedure Summary
4. Design
 - 4.1 Use and Types
 - 4.2 Design and Operating Conditions
 - 4.3 Specific Design Topics
5. Procurement
6. Figures
7. Revisions/Exceptions

Appendix C - In-Service Summary

MAINLINE Phase 1

s.20(1)(b.1)
s.16(2)(c)

s.20(1)(b)

| LOCATION | QUARTER IN SERVICE (Year - Qtr #) | | | | | | | Terminal | No. of stations | Notes |
|----------|-----------------------------------|--------|--------|--------|---------|---------|---------|----------|-----------------|-----------------------|
| | Line 1 | Line 2 | Line 3 | Line 4 | Line 13 | Line 65 | Line 67 | | | |
| | | | | | | | | | 4 | Terminal Stage 1 |
| | | | | | | | | | 4 | |
| | | | | | | | | | 4 | |
| | | | | | | | | | 1 | Terminal Stage 1 only |
| | | | | | | | | | 5 | |
| | | | | | | | | | 4 | |
| | | | | | | | | | 5 | |
| | | | | | | | | | 6 | Terminal Stage 1 |
| | | | | | | | | | 8 | |

| LOCATION | QUARTER IN SERVICE (Year - Qtr #) | | | | | | | Terminal | No. of stations | Notes |
|----------|-----------------------------------|--------|--------|--------|---------|---------|---------|----------|-----------------|------------------|
| | Line 5 | Line 6 | Line 7 | Line 9 | Line 10 | Line 11 | Line 11 | | | |
| | | | | | | | | | 2 | by L9 Reversal |
| | | | | | | | | | | by L9 Reversal |
| | | | | | | | | | | by L9 Reversal |
| | | | | | | | | | | by L9 Reversal |
| | | | | | | | | | 2 | Terminal Stage 1 |
| | | | | | | | | | 1 | by L9 Reversal |
| | | | | | | | | | 1 | by L9 Reversal |
| | | | | | | | | | 1 | by L9 Reversal |

s.20(1)(b)

s.20(1)(b.1)
s.16(2)(c)

s.20(1)(b.1)

s.16(2)(c)

s.20(1)(b)

MAINLINE Phase 2

| LOCATION | QUARTER IN SERVICE (Year - Qtr #) | | | | | | | Terminal | No. of stations | Notes |
|----------|-----------------------------------|--------|--------|--------|---------|---------|---------|----------|-----------------|------------------|
| | Line 1 | Line 2 | Line 3 | Line 4 | Line 13 | Line 65 | Line 67 | | | |
| | | | | | | | | | | Terminal Stage 2 |
| | | | | | | | | | 3 | Terminal Stage 1 |
| | | | | | | | | | 6 | Terminal Stage 2 |
| | | | | | | | | | 5 | |
| | | | | | | | | | 5 | |
| | | | | | | | | | 4 | |
| | | | | | | | | | 5 | |
| | | | | | | | | | 5 | |
| | | | | | | | | | 3 | Terminal Stage 2 |
| | | | | | | | | | 5 | Terminal Stage 1 |

| LOCATION | QUARTER IN SERVICE (Year - Qtr #) | | | | | | Terminal | No. of stations | Notes | |
|----------|-----------------------------------|--------|--------|--------|---------|---------|----------|-----------------|-------|------------------|
| | Line 5 | Line 6 | Line 7 | Line 9 | Line 10 | Line 11 | | | | |
| | | | | | | | | | | Terminal Stage 1 |
| | | | | | | | | | 2 | Terminal Stage 2 |

s.20(1)(b)

12

s.20(1)(b.1)

s.16(2)(c)

s.20(1)(b)

s.20(1)(b.1)

s.16(2)(c)

MAINLINE PHASE 3

| LOCATION | QUARTER IN SERVICE (Year - Qtr #) | | | | | | | Terminal | No. of stations | Notes |
|----------------|-----------------------------------|--------|--------|--------|---------|---------|---------|----------|-----------------|------------------|
| | Line 1 | Line 2 | Line 3 | Line 4 | Line 13 | Line 65 | Line 67 | | | |
| WESTERN REGION | | | | | | | | | 3 | |
| | | | | | | | | | 4 | Terminal Stage 2 |
| | | | | | | | | | 6 | Terminal Stage 2 |
| | | | | | | | | | 2 | |
| | | | | | | | | | 3 | |
| | | | | | | | | | 3 | Terminal Stage 2 |

| LOCATION | Line 5 | Line 6 | Line 7 | Line 9 | Line 10 | Line 11 | Terminal | No. of stations | Notes |
|----------|----------------|--------|--------|--------|---------|---------|----------|-----------------|------------------|
| | EASTERN REGION | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | Terminal Stage 2 |

s.20(1)(b)

s.20(1)(b.1)

s.16(2)(c)

Westspur System

| LOCATION | QUARTER IN SERVICE (Year - Qtr #) | STAGE 1 | | STAGE 2 | | STAGE 3 | | Notes |
|------------|-----------------------------------|-----------------|------------|-----------------|------------|-----------------|------------|---------------|
| | | No. of stations | | No. of stations | | No. of stations | | |
| [REDACTED] | [REDACTED] | 1 | [REDACTED] | 1 | [REDACTED] | 1 | [REDACTED] | |
| | | 1 | [REDACTED] | | [REDACTED] | | [REDACTED] | Terminal only |

s.20(1)(b)

s.20(1)(b)

s.20(1)(b)

s.20(1)(b.1)

s.16(2)(c)

Enbridge Norman Wells Pipeline

| QUARTER IN SERVICE (Year - Qtr #) | | STAGE 1 | STAGE 2 | STAGE 3 | Notes |
|-----------------------------------|------------|-----------------|-----------------|-----------------------------|-------|
| SITE | Line 21 | No. of stations | No. of stations | No. of stations + terminals | |
| Northern Rg | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] | |
| | | 1 | 1 | 1 | |
| | | | | | |

s.20(1)(b)

s.20(1)(b)

s.20(1)(b)

s.20(1)(b.1)

s.16(2)(c)

