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ENBRIDGE

August 25, 2009

Mr. Ivan A. Huntoon
Director, Central Region PHMSA
901 Locust Street, Suite 462
Kansas City, MO 64108-2641

RE: CPF 3-2009-1016M

Dear Mr. Huntoon:

In response to your Notice of Amendment letter dated July 28, 2009, we offer the following information, as the operator of Vector Pipeline L.P.

PHMSA Finding:

1. *After an in-line inspection has been completed on a pipeline segment, the external corrosion factor is replaced by the ILI factor, which is solely dependent on the timeframe length from the previous ILI assessment. This masks the usefulness of other important information (e.g., coating conditions, soil characteristics, parallel AC) concerning initiation and growth of external corrosion.*

Enbridge Response:

See attached excerpts from the Enbridge documents that address this concern:

- Pipeline Integrity Corrosion Growth Rate Plan – Version 1.2, Section 3.2 Level 2, page 6.
- Pipeline Integrity Cathodic Protection Program – Version 1.2, Section 8.3 and 8.4, page 7.
-

PHMSA Finding:

2. *The Vector ECDA plan does not specify the physical spacing of readings (and the practices for changing the spacing as needed) such that suspected corrosion activity on the segment can be detected and located as required by NACE RP0502-2002, Section 4.2.3. During the inspection, Vector provided draft revisions of the ECDA plan that, if finalized and implemented, will address this issue.*

Enbridge Response:

See attached excerpt from the Enbridge document that address this concern:

- Transmission Gas Standard: External Corrosion Direct Assessment Procedure – Vector Pipeline, Rev. 03, Section 4.3 Aboveground Procedure Review (4.3.2.8 Step-by-Step Instructions), page 42.

PHMSA Finding:

3. *Vector's procedures do not provide a definition of discovery meeting Section 192.933(b) requirements. Vector's procedures define discovery as occurring when the Master Dig List is delivered to the Project Manager. However, per the rule, discovery is to be established when an operator has adequate information about the condition to determine that it presents a potential threat to the integrity of the pipeline. Depending on circumstances, Vector may have adequate information when it receives the preliminary internal inspection report, gathers and integrates information from other inspections, or when it receives the final internal inspection report. During the inspection, Vector provided proposed procedural revisions that, if finalized and implemented, will resolve this issue.*

Enbridge Response:

See attached excerpts from the Enbridge documents that address this concern:

- Pipeline Integrity Excavation Program – Version 3.3, Section 2.0 Preliminary Feature Reporting and Section 4.0 Master Dig List Preparation.
- Pipeline Integrity Procedure PI-03, Section 4.3, page 2.

PHMSA Finding:

4. *The Vector integrity management does not require that areas near unmonitored encroachments be excavated or that above ground surveys using methods defined in NACE RP0502-2002 be conducted. During the inspection, Vector provided proposed procedural revisions that, if finalized and implemented, will resolve this issue.*

Enbridge Response:

See attached excerpt from the Enbridge document that addresses this concern:

- Operating & Maintenance Procedures Book 3, Section 03-02-01 Right-of-Way Monitoring, Page 3.

We trust that the information contained in the attached documents appropriately addresses each of the four findings identified in your Notice of Amendment letter. However, we remain available to discuss any specific aspects or provide further details, if required.

Sincerely,

Shaun Kavajecz

Attachments

cc: Steve Letwin
Steve Irving
Tom Fridel
Craig Fishbeck
David Bilyk
Dave Hoffman

Enbridge Response No. 1

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PIPELINE INTEGRITY
CORROSION GROWTH RATE PLAN

Enbridge Pipelines Inc.
Enbridge Energy Partners Inc.
Pipeline Integrity
Version 1.2 August 05, 2008

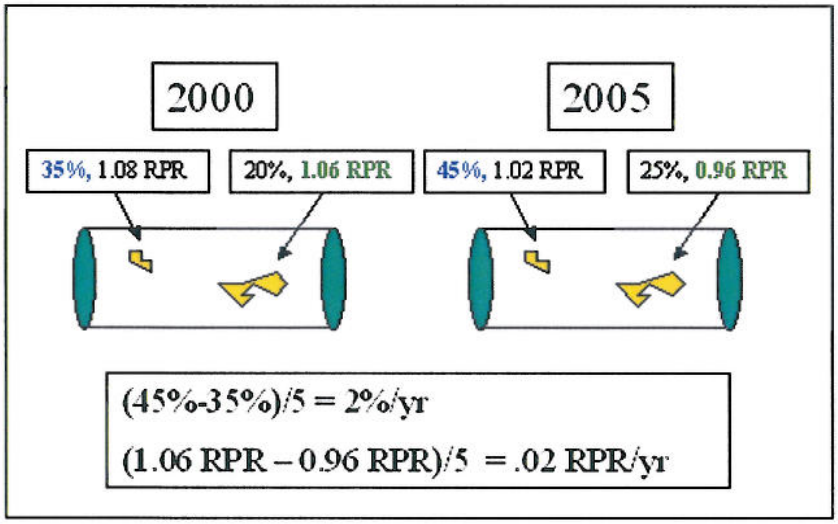

Chart #1 – Example of Level 1 CGR analysis.

If a previous high resolution CGR is not available, a historical based defect specific CGR, using the age of the pipeline, with a safety factor is determined and modified into a representative mean and standard deviation CGR distribution to define the population. In this case an RPR growth rate mean and standard deviation are also determined based on the age of the pipeline.

See the **Level 1 CGR Analysis** chart for further pipeline segment specific CGRs. In some cases, automatic and manual pit-matching are used to validate Level 1 results.

3.2 LEVEL 2

A Level 2 CGR analysis involves additional comparisons between back-to-back high resolutions ILI data to identify corrosion features that have experienced upper bound CGRs. These features are flagged and further investigation, analysis and trending is completed in order to identify any specific drivers or trends (e.g. soil, microbial influenced corrosion, proximity to surface water) that may have contributed to the accelerated CGR. The defects are first screened to remove any obvious errors due to interaction changes or automatic matching errors. Any findings are re-applied to the CGR assumptions used in order to ensure the continual improvement of corrosion repair and assessment programs.

An excel spreadsheet, with a specifically designed macro, aligns and compares corrosion features in both inspections. Features that are appropriately matched and meet the criteria specified in the PI-23 Upper Bound Corrosion Growth Rate Analysis procedure are targeted for further CGR analysis.

Output of the **Level 2 CGR Analysis** report are maintained in accordance to PI-23.

The results from the Level 2 CGR Analysis are retained to allow for future trending to identify any specific correlations between accelerated CGR and site specific attributes. This trending may result in changes to the CGRs used for threat specific risk assessments completed in accordance with the Corrosion Assessment Interval Plan.

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PIPELINE INTEGRITY

CATHODIC PROTECTION PROGRAM

Enbridge Pipelines Inc.
Enbridge Energy Partners Inc.
Pipeline Integrity
Version 1.2 November 28, 2008

8.0 RECORD KEEPING/REPORTING

US and Canadian regulations require diligent record keeping of cathodic protection data necessary to demonstrate compliance with cathodic protection criteria and governing regulations. The following reporting and record keeping requirements represent the minimum allowed by Enbridge.

8.1 RECTIFIER INSPECTION RECORD KEEPING

Rectifier inspection records may be archived using either the standard Rectifier Report forms or a report specific to the region. These records must be maintained in original form at the regional office permanently or until the end of life (EOL) of the pipeline facility.

8.2 BOND INSPECTION RECORD KEEPING

All critical bond, non-critical bonds, reverse current switch and diode inspection records must be archived using the standard Bond Report forms or in a report specific to the region. These records must be maintained in original form at the regional office permanently or until the end of life (EOL) of the pipeline facility.

8.3 ANNUAL INSPECTION RECORD KEEPING

Annual inspections include all standard rectifier and bond inspection results which are archived using the standard Rectifier Report forms and Bond Report forms (or other region-specific formats). In addition, the detailed data identified in section 4.3 of this program document may be bundled in an annual summary report prepared by either Enbridge staff or contract personnel.

It is recommended that the following summary tables be prepared as a minimum:

- P/S readings summary
- Casing summary
- Impressed current source summary
- Sacrificial anodebed summary
- Bond summary
- Damaged equipment summary
- Interference summary (e.g. AC or DC interference)

The annual summary report shall include details and results from any non-routine CP tests that were performed to evaluate the operation and performance of the CP facilities.

These records must be maintained in original form at the regional office permanently.

8.4 ANNUAL REGIONAL REPORTS TO PIPELINE INTEGRITY

Annual regional reports to the Pipeline Integrity department shall be prepared using the Annual CP Status Report Memo. These records must be maintained in original form at the regional office permanently. These reports shall be provided to the Pipeline Integrity CP Coordinator for review and integration into the Corrosion Assessment Interval Plan and Line Summary Documents. Integration may include increasing the CGR assumptions used for threat specific risk assessments conducted in accordance with the Corrosion Assessment Interval Plan.

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Revision 0.3
7/31/07

VECTOR PIPELINE™

ECDA Procedure – Transmission Gas Standard

Privileged & Confidential

safety information. Also, refer to NACE Standard RP0177[12] for additional information about electrical safety.

4.3.2.6 Instrumentation

A list of equipment by name and model number that is allowed for the inspection. This list should also include special measurement equipment that will be used in case of special field situations such as stray currents. Any equipment not included on this list must be approved by the EPM prior to its use.

4.3.2.7 Personnel Qualifications

The qualification requirements of the personnel conducting the exam, including how the personnel were trained on the specific procedure.

4.3.2.8 Step-by-step Instructions

Specific, easy to follow instructions on conducting the survey. These instructions shall include:

- **Calibration:** The calibration of the equipment prior to and during the survey
- **Equipment Connection:** The connection of instrumentation, the set-up interrupters,
- **Pipe Location:** The method of locating the pipe
- **Measurements:** The method of taking measurements and the frequency or interval the measurements should be taken
- **Survey Spacing:** The adjustment of interval spacing as necessary to reliably identify indication locations with repeatability along the survey.
- **Special Diagnostics:** The techniques and when they are used to address special field situations
- **Distance Measurement:** The method of tracking the distance traveled along the survey. The frequency of geo-references.
- **Recording Data:** The recording of data, and special diagnostic techniques.

4.3.3 Procedure Preparation and Approval

The procedure shall document the person who prepared it and the date it was prepared. It shall have been reviewed and approved by a

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PIPELINE INTEGRITY
EXCAVATION PROGRAM

Enbridge Pipelines Inc.
Enbridge Energy Partners Inc.
Pipeline Integrity
Version 3.3 July 27, 2007

1.0 INTRODUCTION

Pipeline safety is a key component of the Enbridge philosophy and its long-term business strategy. Enbridge is recognized as a leader in the development of integrity tools, programs and methodologies and is recognized by stakeholders and regulators as a proactive, responsible and reputable pipeline company.

Enbridge achieves this goal by utilizing a conservative expert based approach to managing risk on pipelines. This approach allows Enbridge to inspect, analyze, investigate, and mitigate defects before they exceed fitness for purpose criteria and ensures the continued safe operation of the pipeline system.

This document is intended to serve as a guideline outlining the process that Enbridge follows when developing mainline rehabilitation programs.

The Pipeline Integrity department is responsible for evaluating the risk associated with metal loss, cracks, geometry-related issues and determining the appropriate inspection timeline for each pipeline segment. Pipeline segments are evaluated and inspected in accordance with both NEB and DOT regulatory requirements and in accordance with internal assessment processes that outline the specific risks of various pipeline segments. The process outlined in this document incorporates the requirements as defined in the pipeline regulations and regulatory codes for the jurisdictions in which Enbridge operates its pipeline system. The type of inspection completed (i.e. metal loss, high resolution geometry, crack, etc) is determined by evaluating the specific risk factors associated with the pipeline segment in conjunction with historical operating conditions, previous In-Line Inspections (ILI) and the determination of the pipeline segment defect susceptibility.

2.0 PRELIMINARY FEATURE REPORTING

Features requiring immediate attention (as defined in the work order or contract) are identified by the ILI Vendor upon discovery and prior to the generation of a Final ILI Report. These features are communicated to Enbridge via preliminary reporting or direct communication and may include features meeting the "immediate repair conditions" as identified by the HCA rules.

These features are reviewed immediately and the processes specified in the proceeding sections are completed in an expedited manner not to exceed 5 days.

In accordance with Section 4.0, discovery of condition is established when adequate information about the condition is obtained to determine that it presents a potential threat to the integrity of the pipeline.

3.0 IN-LINE INSPECTION REPORT

The Final ILI Report is accepted as valid in accordance with Part 2 of the QA/QC Form. ILI reports are validated per Pipeline Integrity Procedure PI-01, PI-06 and PI-07. ILI reports pertaining to crack and dent defects are validated through engineering assessments completed by the Materials Technology Group. These validation processes ensure consistency with past ILI reports and excavation results.

Upon completion of the validation process, the Integrity Programs Project Managers will oversee the development and implementation of a rehabilitation program to assess and repair features that meet Enbridge criteria.

4.0 MASTER DIG LIST PREPARATION

The Project Managers will coordinate the activities associated with developing an Excavation and Repair Program to assess any features that require investigation in the field.

The first step in the development of the excavation program is to develop a Master Dig List from the Final ILI Report. The Master Dig List includes all features that meet the Enbridge excavation criteria that have not been excavated, assessed and repaired in the past. Pipeline Integrity Procedure PI-03 (Developing a Master Dig List) describes the steps that are to be followed in creating the Master Dig List.

In accordance with United States Regulation 49 CFR Part 192 and 195 discovery of condition is established when adequate information about the condition is obtained to determine that it presents a potential threat to the integrity of the pipeline. An anomaly will be considered discovered once it has been reviewed in accordance with PI-03.

The date of discovery will be recorded in the Master Dig List. The Project Managers shall, as much as practicable, ensure that Discovery is made within 180 days of completion of ILI field activities. The delivery of the Master Dig List will trigger time lines associated with High Consequence Area (HCA) repair requirements. If the 180 day timeframe is exceeded the Project Manager shall document the reasons for the variance and any recommendations to reduce the likelihood of future such occurrences.

5.0 PRESSURE RESTRICTION

From the Master Dig List the Project Manager determines if pressure restrictions are required in accordance with Pipeline Integrity Procedure PI-04 and implements the restrictions. If a pressure restriction cannot be implemented for the immediate repair condition, the Project Manager shall notify the US Compliance Coordinator immediately.

4.3 Any features that meet the defect selection criteria but have been adequately repaired shall be designated as previously repaired in the Master Dig List. The reasoning for removing the feature shall be clearly documented as part of the Master Dig List. This is considered the Date of Discovery (Canada and US) as there is adequate information to determine if any features present a potential threat to the integrity of the pipeline. The Date of Discovery is then documented in the Master Dig List.

NOTE: Numerous Dates of Discovery may be documented in the Master Dig List. This may occur as preliminary features from the ILI Vendor may be reported prior to receiving the Final ILI Report.

4.4 The Master Dig List is then sent to the Project Manager for approval.

4.5 Once the Master Dig List has been approved, the Project Manager identifies the appropriate pressure restrictions to be imposed based on Pipeline Integrity Procedure PI-06.

4.6 At this time the Project Manager may determine that a phased excavation program may be required. Any excavations that will not be completed within 1 year of the Date of Discovery requires documented approval from a Materials Technology or Integrity Analysis Engineer. All decisions will be appropriately documented in the Master Dig List.

4.7 Excavation packages are created in accordance with Pipeline Integrity Procedure PI-02.

5.0 Defect Selection Criteria

The criteria used to prepare the Master Dig List is different depending on the ILI tool technology that is used to assess the features:

5.1 MFL Metal Loss

A corrosion feature (internal or external) that meets any of the following criteria shall be included in the Master Dig List and will require assessment and repair:

- **Depth >=50%**
- **LAPA or RStreng RPR =<1.00**
- **Dents associated with metal loss**
- **Dents on welds >2% (depth per geometery tool)**

Alternatively a safety factor criterion may be used in accordance with Engineering Standard D03-101. It shall be clearly identified on the Master Dig List if a safety factor criterion has been used.

5.2 USWM Metal Loss Inspection

A corrosion feature (internal or external) that meets any of the following criteria shall be included in the Master Dig List and will require assessment and repair:

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Workers must immediately report abnormal conditions or, if the pipeline is at risk, must take appropriate action along the ROW.

If prior, unknown excavation or disturbance is discovered over the pipeline or within the pipeline right of way contact Region Management. Region Management must notify Pipeline Integrity and Compliance in order to determine a course of action that may include:

- additional investigation, excavation and over-line surveys (as per NACE standards)
- temporary pressure reductions
- line shutdown

Pipeline Integrity is responsible for documenting all additional actions taken.

Compliance is responsible for ensuring all regulatory notifications are completed and documented, as required.

Aerial Patrols

Advise the patrol pilot in advance (a) of any significant activity on the pipeline system and (b) if natural gas will be vented to the atmosphere on the ROW.

Any abnormal surface condition or activity observed by the pilot must be immediately reported by radio to the closest attended location or, if unable to make contact, by telephone to the respective control center.

GAS

Leak Detection Surveys

For Class 1 and 2 locations, use leak detection equipment to conduct leakage surveys of the entire ROW at least once each calendar year at intervals not exceeding 15 months.

For Class 3 locations, use leak detection equipment to conduct leakage surveys at least twice each calendar year at intervals not exceeding 7 ½ months.

ENB (NW)

Geotechnical Assessments

Slope monitoring on the ROW must include data from instrumented slopes, thaw settlement areas and frost heave sites.