

National Energy
Board



Office national
de l'énergie

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10 March 2016

To: All companies under National Energy Board jurisdiction,
Canadian Energy Pipeline Association,
Canadian Association of Petroleum Producers, and
Provincial and Territorial Regulators

**Subject: National Energy Board Information Advisory
NEB IA 2016-001**

The National Energy Board (the Board) has issued the attached Information Advisory regarding the effect of methanol used as a drying agent on carbon steel pipelines following construction. The Board expects that this Information Advisory be given wide circulation to all relevant personnel within your organization.

Yours truly,

Original signed by

Sheri Young
Secretary of the Board

Attachment

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The effect of methanol on carbon steel pipelines

Basis for Issuance

On 10 February 2014 the Transportation Safety Board of Canada issued Pipeline Safety Advisory – 01/14 regarding the effect of methanol on carbon steels. The TSB also issued its pipeline investigation report (P13H0013) for the crude oil pipeline leak on Enbridge Pipelines Inc. (Enbridge) Line 21 at kilometer post (KP) 391 near Wrigley, NWT.

Background

The TSB investigated the crude oil release of 8 February 2013 on Enbridge Line 21 at KP 391 when oil-contaminated soil was detected during an investigative dig. The TSB's key findings into the cause and contributing factors were:

- The pipeline failure occurred at a through-wall crack located near a girth weld;
- The defect was a result of internal stress corrosion cracking (SCC) through 98% of the pipe wall thickness;
- The defect had likely initiated prior the pipeline being commissioned in 1985;
- The cracking originated near the girth weld due to the high residual tensile stress on the pipeline inner diameter at that location;
- The defect propagated through the remaining 2% of the pipe wall thickness as a result of fatigue caused by normal pipeline operations;
- The methanol used following the pneumatic test at the time of construction had likely produced an internal pipe environment that was conducive to the initiation and propagation of SCC; and
- Under specific environmental and stress conditions, methanol-induced intergranular cracking can occur in some pipe steel.

In its Safety Advisory, the TSB recommended the NEB review the practices relating to the use of methanol as a drying agent and to consult with industry to better understand its effect on internal SCC in carbon steels.

Enbridge and Det Norske Veritas (USA) Inc. (DNV GL) presented a paper regarding methanol-induced axial stress corrosion cracking (SCC) in a northern Canadian liquids pipeline at the International Pipeline Conference (IPC) in fall 2014. The paper outlines the major findings from a laboratory research program initiated to determine whether pipeline steels are susceptible to methanol-induced SCC.

NEB Expectations

The NEB has consulted with regulated companies, industry associations, and other regulatory agencies and has found no basis for suspecting that methanol as a drying agent in pipelines can lead directly to SCC. However, considering the above instance encountered by Enbridge and other instances when internal SCC has been found in vessels storing methanol to be used for hydrate control or as a drying agent, NEB regulated companies are advised to avoid storing anhydrous methanol in active or to be active pipelines.

The NEB regulated companies are cautioned that in the event the use of any alcohol-based drying agent is contemplated, a thorough study (including the effect of storage time) of the potential to cause cracking (including SCC) should be undertaken and documented in the company's Integrity Management Program.

For More Information

For further information please refer to the following documents:

1. The TSB Safety Advisory – 01/14
2. The TSB Pipeline Investigation Report P13H0013
3. Proceedings of the 2014 10th International Pipeline Conference IPC2014-33033