NATIONAL TRANSPORTATION SAFETY BOARD

Washington, D.C.

Integrity Management Report (IMP)
Attachment V
REFERENCE 3

IR 401: The working relationship and roles between pipeline integrity and risk model.

07-26-10
Marcshall, MI
DCA10-MP-007

MP 608 – Marshall, Michigan Incident
NTSB/PHMSA Information Request No. 365

Reference: Enbridge / NTSB Verbal Discussion of February 21, 2012

Preamble:

Request: **Further describe the working relationship and roles between Pipeline Integrity and the Risk Model at the three identified timeframes of 2001, 2005, and 2010.**

Response:

Copy of PI ILI History and Schedule Report (2011).xls

2001

Enbridge has implemented pipeline integrity activities, largely in the form of in line inspection followed by analysis and field repair, on its system since the early 1970's. I have attached an excel spreadsheet that provides a historical review of the inspection activities completed on each individual pipeline. The purpose of providing this is to give background to the level of integrity information that was available in 2001 when the HCA IMP rule came into effect. I don't expect you to review the spreadsheet in detail as it contains a large number of worksheets however a brief review shows that the Enbridge system had been inspected long before the 2001 timeframe. Most sections had multiple inspections with various technologies including geometry, MFL, and Ultrasonics. Note that as we discussed, the crack tools were being developed through the 1990's and were improving in performance through the 2000 timeframe such that the technical value in completing these inspections was realized. Enbridge was instrumental in developing the crack tools by its use of the tools and collaborating with the ILI vendors. The interaction Pipeline Integrity maintained with the Enbridge risk model in the 2001 timeframe was that Pipeline Integrity provided inputs to the risk model in the form of likelihood factors of pipeline damage due to corrosion, denting, cracking etc. The model required identification of weighting and likelihood factors being developed based on coating type, pipe type, age, service history, and other relevant pipeline characteristics and operating conditions. The Pipeline Integrity group had an established approach to determining re-inspection intervals and tool technology selection at the time and the results of the risk model were nominally utilized to support inspection planning based on high consequence segment recognition.

2005

In the 2005 timeframe the Pipeline Integrity department continued to provide the relative risk model activities with threat likelihood inputs. The variable weightings and likelihood factors were periodically reviewed and modified as described in the response to IR 244. Recall that the model is intended to bring together the risk of failure for all threats to pipeline safety including those that are managed outside of the Pipeline Integrity department. Items such as incorrect operations, third party damage, etc. are included in the model but are not inputs that Pipeline Integrity provides. In the 2005 timeframe, the CFR 195 rules required pipeline operators to have completed a baseline inspection of at least 50% of its pipeline system. During the 2006 IMP audit conducted by PHMSA, Enbridge reported that as of Dec. 31, 2005 Enbridge had completed baseline inspection of 76% of its system and that the required timelines had been met. Given the experience with in line inspection prior to 2001, Enbridge had chosen to only utilize inspection activities that had occurred after the rule was in place as a baseline inspection activity. Further, at this time Enbridge had been utilizing the consequence information generated from the risk model to reduce this inspection interval by up to 1 year for those segments in the highest 2/3 of the consequence ranking.

2008

In 2008, the risk model utilized essentially the same approach for determining overall risk as previous, relative to the Pipeline Integrity inputs. There were some adjustments as described in IR's 244 and 337 to improve the characterization of the cracking risk within the overall scoring of pipeline segments in the model. Enhanced uses of the output information from the model included the identification of top risk areas and taking action to reduce risk at these locations. The output was also continued to be utilized in determining inspection or excavation planning to enhance the decisions being made using the well developed Pipeline Integrity processes and procedures. It is Enbridge's view that the whole risk evaluation resulting from the risk model work is best utilized to make decisions on overall risk such as the top risk area approach. The specific decisions around inspection of certain pipeline segments and excavation of features discovered by ILI require more detailed information and uncertainty evaluations, as described in the various PI Procedure documents, than can be determined by a relative risk model. As such, Enbridge continues to make these critical decisions using the specific information sets generated by the detailed ILI data reviews, fitness for purpose evaluations, site specific consequence data, etc.