

**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.

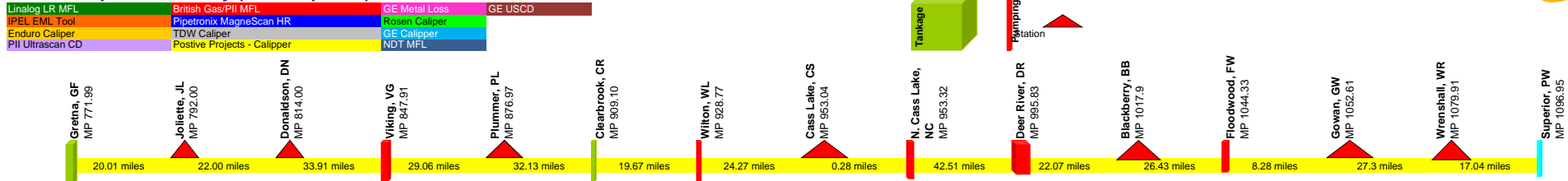
2008

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.

# Line 2, 26 inch Gretna - Superior



## In-Line Inspection History (and Proposed)



Year	Inspection History	Year
1974	Linalog LR MFL ILI - Run May through June 1974	1974
1975		1975
1976		1976
1977		1977
1978		1978
1979		1979
1980		1980
1981		1981
1982		1982
1983		1983
1984		1984
1985		1985
1986	IPEL EML Inspection tool - Run June 1986	1986
1987		1987
1988		1988
1989		1989
1990		1990
1991		1991
1992		1992
1993	Enduro Bend and Caliper Survey - Run May 1993 British Gas Metal Loss Survey - Run May 1993	1993
1994		1994
1995		1995
1996		1996
1997	TDW Caliper Survey - September 1997 PII Metal Loss Survey - Run August 1997	1997
1998		1998
1999		1999
2000		2000
2001	TDW Caliper Survey - June 2001 PII Ultrascan CD - November 2001 Completed 64.85 miles PII Ultrascan CD - June 2002 - Completed 72.269 miles	2001
2002	PII Metal Loss IMU - March 20 - April 2, 2002	2002
2003		2003
2004		2004
2005		2005
2006		2006
2007	GE MagnaScan May 23-26, 2007 GE Calliper March 28, 2007	2007
2008		2008
2009	PII Ultrascan CD August 18-20, 2009 Rosen Caliper June 11, 2009	2009
2010		2010
2011		2011

Survey collected first 106 miles. Issued 2 separate reports June 12, 1993 and the reanalyzed report March 30, 1994 Gretna-Chapman 5516-65

Grand Rapids 4.1 miles analyzed. Run October 14, 1994.

**Traps:**  
 Gretna (Sending)  
 Clearbrook (Sending & Receiving)  
 Deer River (Sending & Receiving)  
 Superior (Receiving)

\* Deer River trap removed in 2009.