



U.S. Department
of Transportation
**Pipeline and Hazardous
Materials Safety
Administration**

901 Locust Street, Suite 480
Kansas City, MO 64106

VIA ELECTRONIC MAIL TO: michael.koby@enbridge.com

June 29, 2020

Michael Koby
Vice President, US Operations
Enbridge Inc.
5400 Westheimer Court
Houston, Texas 77056

Re: Enbridge's Line 5

Dear Mr. Koby:

The U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA) initiated an investigation into the integrity of Enbridge Energy, Limited Partnership's (Enbridge) Line 5 following notification from your company regarding the identification of a displaced anchor on the east leg of the two underwater pipeline segments crossing the Straits of Mackinac (Straits).

On June 18, 2020, Enbridge notified PHMSA that it had identified a displaced anchor on the east leg of Line 5 while the company was conducting annual inspection and maintenance activities. Enbridge also notified PHMSA that it had shut down both the east and west legs of Line 5 upon discovery of the displaced anchor. The displaced anchor was located at a water depth of about 220-240 feet in the Straits. Enbridge explained that the anchor displacement was first identified by a remotely operated vehicle (ROV) and was subsequently confirmed by divers. The east leg of Line 5 remains shut down as PHMSA continues its investigation and as Enbridge further analyzes the condition of the east leg.

As for the west leg, located approximately 1000 feet to the west of the east leg of the pipeline, Enbridge conducted an ROV assessment on June 19, 2020, and found no evidence of impact or damage to that leg. Enbridge notified PHMSA of these findings on June 19 and 20, 2020. On June 20, 2020, PHMSA notified Enbridge via email that it had no objection to Enbridge restarting the west leg of Line 5. PHMSA's review of video footage from the ROV of the west leg, as well as other technical information provided by Enbridge, provided no indication of any safety related concerns regarding the west leg. PHMSA did ask that Enbridge restart the west leg during daylight

hours, that it monitor the restart, and that it notify public officials in advance of the restart. We understand that Enbridge complied with these conditions when it restarted the west leg.

PHMSA places the highest priority on ensuring that Enbridge is taking all steps necessary to maintain the safety of Line 5 and its twin pipeline crossing through the Straits, and is continuing its in-depth investigation into the displaced anchor on the east leg of Line 5. PHMSA is verifying Enbridge's current assessment that the anchor movement does not pose any integrity or safety concerns.

Based on its examination of the information available to date, PHMSA believes additional data collection and analysis is necessary prior to restart of the east leg of Line 5. Accordingly, PHMSA is requesting that Enbridge provide the following information and conduct the identified analyses, as listed below. PHMSA also may request additional information and analysis from Enbridge depending on a review of the responses and results provided.

1. Provide Enbridge's detailed work plan, with schedules, that will ensure the pipeline is safe prior to returning it to operational service.
2. Provide a dimensional drawing(s) of the anchor locations 150 feet upstream and downstream of the damaged anchor with a profile showing the pipeline elevations before and after the anchor was damaged. Include the butt weld locations on these drawings. If support is supplied by other means such as clay channel mounds, designate those locations.
3. Show any known spans from "bottom of pipe" to "Straits bottom/mudline" 150 feet upstream and downstream of the damaged anchor.
4. If the anchor is not providing any support, how much lower may the pipe deflect without exceeding allowable stresses?
5. Previously, crack tools were used to assess for circumferentially oriented cracks present in girth welds. Are there any indications of circumferential crack-like anomalies located in girth welds influenced by the displacement/deformation/damage to this anchor? Are there anomalies of any type in this vicinity that would be possibly aggravated due to additional stresses caused by settlement of pipe? Identify and document location(s) and stresses.
6. If pipe is being supported by the damaged anchor, it appears that the saddle has shifted, so that the pipe would be "supported" by a single point at the edge of the saddle vs. resting on a larger area of the entire saddle as-designed. Does this "point load" (vs. a distributed load) cause problematic stress intensification?
7. Is Enbridge considering temporary remedial measures such as grout bags under the pipe at the damaged anchor?

8. Provide access to historical ROV recordings at the damaged anchor location and adjacent anchors.
9. Provide the condition of the anchors and confirm if both legs were installed, if either leg is broken/sheared, and describe any other damage to the anchor.
10. Engage an independent, third-party expert to perform stress analysis and an engineering assessment to confirm the safety of the pipeline to operate. The expert's background should include familiarity with subsea pipeline analysis to consider the unusual conditions at the Straits. The expert analysis must be based upon known facts of this anchor displacement and not be entirely theoretical.
11. Analyze available Inertial Mapping Unit data to ascertain whether the pipe has moved. If the pipe has moved, conduct an analysis to determine if pipe stress is within allowable limits considering the possibility of circumferential cracks in girth welds. Provide a comparison of the actual engineering calculations showing stresses currently on the pipeline with those obtained prior to the anchor displacement. The engineering analysis should include environmental factors such as thermal, current loading, vortex shedding/currents, pipe-end conditions for stresses, buoyancy/product/pipe weight effects, etc.
12. What are Enbridge's plans for a near term inline inspection? What tool(s) would be selected and why?

Additionally, this letter confirms that Enbridge indicated during a June 22, 2020 meeting with PHMSA that it would provide the following requested information:

13. Dimensions of displaced anchor including bottom strap and top beam from pipe, etc.
14. Timeline of inspection and maintenance activities on the east leg including activities where the displaced anchor may have been referenced.
15. ROV recordings at the displaced anchor location taken after the damage occurred.
16. Information regarding how far the anchor bottom strap moved along the pipeline due to the displacement.
17. Inspection dry film coating documents.
18. Diver inspection reports.
19. Direction which the anchor deflected during displacement.
20. Location and distance of upstream and downstream anchors.

PHMSA requests that Enbridge provide responses to items 13 through 20 to the Director, Central Region, within 15 days of your receipt of this letter. As for items 1 through 12, PHMSA requests that Enbridge provide responses to the Director, Central Region, within 30 days of your receipt of this letter. For each document you submit, please provide a copy in electronic format whenever possible. Be advised that all material you submit in response to this request is subject to being made publicly available. If you believe that any portion of your responsive material qualifies for confidential treatment under 5 U.S.C. 552(b), you must submit, in addition to the complete original document, a second copy of the document with the portions you believe qualify for confidential treatment containing redactions along with an explanation for why you believe the redacted information qualifies for confidential treatment under 5 U.S.C. 552(b).

PHMSA will continue its investigation of the displaced anchor on the east leg of Line 5 and may take further action should it identify a safety concern, including action pursuant to 49 C.F.R. §§ 190.233 or 190.239, if warranted. With regard to the west leg, PHMSA has not identified any safety concerns and, based on available information, has no technical or safety-related objection to the continued operation of that leg.

Thank you for your continuing cooperation. If you require additional information, please contact me by phone at (816) 308-3884 or via email at Allan.Beshore@dot.gov.

Sincerely,

Allan C. Beshore
Director, Central Region
Office of Pipeline Safety, PHMSA

Cc: Mr. Alan Mayberry, Associate Administrator for Pipeline Safety, PHMSA
Ms. Linda Daugherty, Deputy Associate Administrator for Field Operations, Office of Pipeline Safety, PHMSA
Mr. David Stafford, Enbridge Inc., Manager, US Pipeline Compliance
(David.Stafford@enbridge.com)