

Integrity Assessment – West Leg – Line 5 Straits

June 20, 2020 (issued)

June 21, 2020 (revised: first dive post ROV inspection results)

June 24, 2020 (revised: i) additional dive activity, ii) ROV flight path clarification, iii) follow-up dive data confirmation and iv) expanded historical ILI analysis)

Summary

The West Leg of the Line 5 Straits was inspected and assessed on June 19, 2020, as a precautionary measure following mechanical damage being found on a pipe support anchor on the East Leg. Across the entire West Leg, no mechanical damage was observed on any support anchors. This inspection identified a visual anomaly (“feature of interest”) consisting of disturbed biota and a small light-colored patch. Review of previous inspection data (close interval survey, metal loss ILI and geometry ILI) revealed no anomalies in the vicinity near the feature of interest. The feature of interest is similar to calcareous deposits observed during all previous Line 5 Straits work. Calcareous deposits are a protective build up from minerals naturally occurring in the water and demonstrate effective corrosion protection using cathodic protection. Based on these examinations and the pipe nominal pipe wall thickness of 0.812”, this feature does not present an integrity concern to the pipeline and does not interfere with normal operations.

Follow-up dive examinations were completed on June 21 and June 22, 2020 and confirmed that there was no bare metal, no physical damage and that a coating repair was not required.

Assessment

Remote Operated Vehicle (ROV) and Diver Inspection:

The Enbridge marine contractor conducted a full inspection of the West Leg of the Dual Pipelines using ROV equipped with video imaging. This inspection was completed following evidence of damage to a pipe support on the East Leg pipeline (EP-17-1). The inspection included a single ROV flight over the West Leg pipeline that allowed the top and sides of the pipe to be observed. The visual inspection confirmed that none of the pipe support anchors on the West Leg have experienced any damage. The inspection identified a single new feature of interest (see figures 1, 2 and 3, below).

The feature of interest identified by ROV on the West leg is comprised of an area of disturbed biota (quagga mussel encrustation is removed) with a small light-colored patch (approximately 50 square inches). The light-colored patch are calcareous deposits formed by the proper operation of the cathodic protection system. The images show there was no bare metal or mechanical damage and the pipe was protected by coating and cathodic protection. The follow up dives confirmed all ROV findings, and additional details were collected. The feature measurements from Diver was found to be slightly larger (~70 square inches) than the estimate previously provided based on ROV images. The feature of interest did not require repair.



Figure 1: Location (overview)

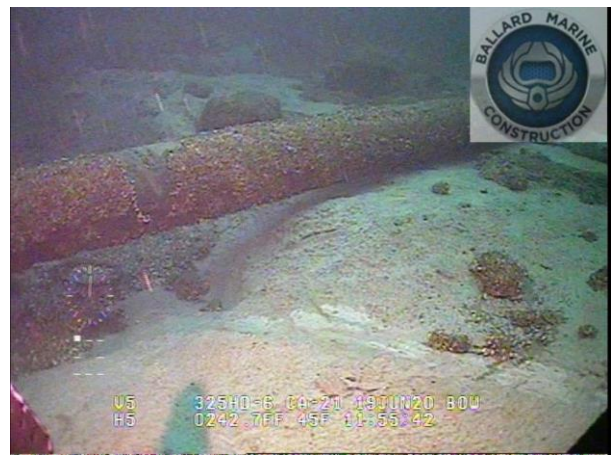


Figure 2: Location (close)



Figure 3: Feature of Interest (close)

Close Interval Survey (CIS):

Enbridge conducted a comprehensive cathodic protection CIS across entire pipeline in 2018/2019. The results of the survey have been previously reported. No cathodic protection anomalies were reported on either of the Dual Pipelines, therefore indicating effective operation of the corrosion protection systems.

The area containing the feature of interest on the West pipeline was carefully examined for electrical variations to determine any signs of coating damage. No electrical anomalies were identified, indicating that there was insufficient exposed metal to alter local protection levels at the time of the CIS. Figure 4 presents the segment of survey containing the feature of interest, with the location of the feature highlighted.

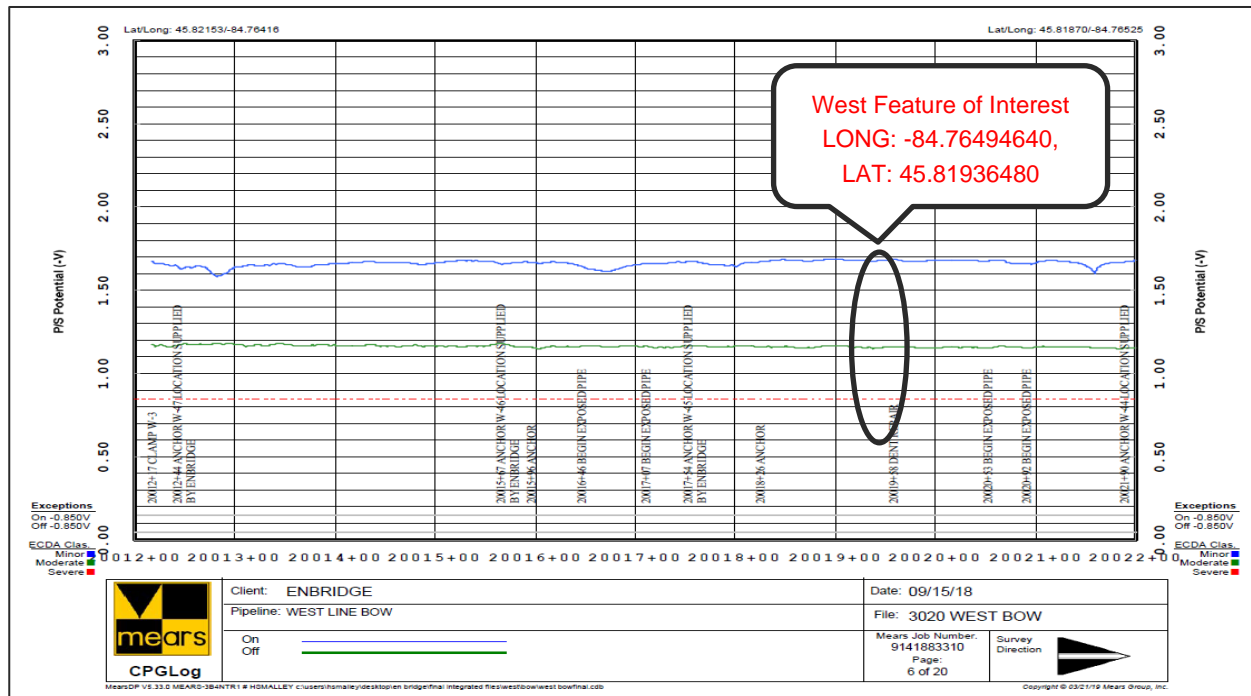


Figure 4: CIS of the Segment Containing Feature of Interest (Feature identified)

Metal Loss and Geometry ILI:

The West Pipeline through the Straits was inspected to detect metal loss using BHGE Magnescan MFL4CAL on January 17, 2020, this tool provides simultaneous collection of metal loss inspection data as well as geometric inspection data. Additionally, Enbridge has inspected the West Pipeline through the Straits to detect metal loss and geometric features annually since 2017. Following this event all reports have been reviewed and there are no features that require repair on the entire West Leg pipeline.

Conclusions:

Based on ROV and dive inspection data, with further support from the recent ILI inspection data and CIS, the feature of interest does not constitute an integrity concern to the pipeline and does not interfere with normal operation and also that repair is not required at this site.

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