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Oct. 9, 2018

Mr. Stephen Stadius
Senate Committee on Commerce, Science and Transportation
427 Hart Senate Office Building
Washington, DC 20510

Re: Aug. 20, 2018 Commerce Committee Field Hearing

Dear Mr. Stadius:

Please find enclosed Enbridge's follow-up responses and specific materials related to requests made of the company during the Senate Commerce Committee's Aug. 20, 2018 field hearing entitled "Pipeline Safety in the Great Lakes: Incident Prevention and Response Efforts at the Straits of Mackinac."

Feel free to reach out to me directly, or to my colleague, Peter Holran (at 202-347-3387) with any additional questions.

Respectfully,

Peter V. Sheffield

Cc: Ms. Catherine Barrett

**Senate Committee on Commerce, Science and Transportation
Field Hearing
Traverse City, Michigan
August 20, 2018**

**Submission for the Hearing Record
by
David Bryson
Senior Vice President, Operations, Liquid Pipelines
Enbridge**

The following information is being submitted for the hearing record for the August 20, 2018 Senate Committee on Commerce, Science, and Transportation hearing titled, "Pipeline Safety in the Great Lakes: Incident Prevention and Response Efforts at the Straits of Mackinac."

This informational was requested by Senator Gary Peters.

Request 1:

...will you provide full documentation of the damage sustained to Line 5 by the anchor strike, including all video and images?

Response 1:

Enbridge is providing to the Committee photographic and video evidence of the impacted areas for both the East and West pipelines of the Enbridge Line 5 Straits of Mackinac crossing. This information is contained on an accompanying memory stick.

The photographic and video evidence is the same information which Enbridge has provided to the U.S. Coast Guard for its ongoing 46 CFR part 4 Investigation of the events of April 1, 2018, including the alleged strike of the Enbridge pipelines in the Straits of Mackinac.

The U.S. Coast Guard has advised Enbridge that it considers the photographic and video information provided to be proprietary and confidential and that all evidence collected by the Coast Guard in regard to this 46 CFR Part 4 investigation will remain confidential until the final approval of the Report of Investigation by Coast Guard Headquarters, at which time the report will be made public. The U.S. Coast Guard further advised Enbridge that a release of this photographic and video information to the public or other interested parties could pose a detriment to the thorough completion of this investigation. Therefore Enbridge has not yet released the video evidence nor all the still photographs to the public.

As background, on April 1, 2018, Enbridge's pipelines crossing the Straits of Mackinac sustained damage as a result of what is believed to be a vessel anchor strike. At the same time, the American Transmission Company's ("ATC") submarine power transmission cables, sustained damage and were severed by what is believed to be the same vessel anchor.

In response to the incident, Enbridge deployed a high resolution In-Line Inspection (ILI) tool to confirm the pipelines' condition. The ILI indicated the presence of three dents on the pipelines, believed to be caused by the impact of the alleged vessel anchor given that a previous ILI tool run just weeks earlier -- deployed as part of our normal integrity management protocols for the pipelines at the Straits -- had not identified the dents. Specifically, these dents were:

- 3.9% OD dent (depth of 0.779", length of 23.40") on the East pipeline;
- 3.5% OD dent (depth of 0.705", length of 14.14") on the West pipeline; and,
- 2.1% OD dent (depth of 0.411", length of 10.03") on the West pipeline.

("OD" - outside diameter)

An additional magnetic flux leakage ("MFL") ILI tool was deployed to further characterize the damage on East pipeline and West pipeline, respectively. The results of this ILI again confirmed the location of the dents noted above, and confirmed no reportable metal loss anomalies within the tool's reporting thresholds were associated with the three dents. While there was no integrity or safety issues with the pipelines, as a precautionary measure, a pressure limit restriction was implemented to restrict operating pressures on the pipelines.

A Remote Operated Vehicle (ROV) (with a high resolution camera) was also deployed on both the East and West pipelines and conducted an initial visual assessment of the areas identified by the ILI tools. The area covered by the visual assessment included an examination both upstream and downstream of the areas of interest for approximately 20 feet on both pipelines. The ROV findings included:

- The ROV video provided visual confirmation that both pipelines were impacted;
- There was evidence of the three dents with related coating damage - one on the East pipeline and two on the West pipeline, confirming what was reported by ILI inspections.
- There was no evidence of a leak on either pipeline;
- There was a clear view of scraping of the lake bottom leading up to the pipelines; and
- There was no apparent impacting object near the pipelines.

Enbridge next performed diving operations on both the East and West pipelines to conduct the following activities:

- Perform a "hands-on" visual inspections to confirm the dents and locations;
- Remove coating and clean surface to inspect the dents;
- Record measurements of dent shape, remaining wall thickness; and,
- Confirm that there is no cracking present within the areas of deformation.

The divers did observe light scoring in the areas of the dents and successfully completed short-term repairs (i.e. removal of any surficial damage) of the three dent areas. Upon consultation with the Pipeline and Hazardous Materials Safety Administration ("PHMSA"), it was agreed that long-term repairs

involving the installation of a composite wrap on each pipe covering the area of the dents would be completed to reinforce the pipelines in those areas and to ensure there is no long-term loss of strength.

The composite wrap repairs were completed over the areas of the three dents on July 29, 2018. The permanent repairs were delayed for a period of time as U.S. Army Corps of Engineer and State permits we required to allow for necessary and limited disturbance of the bottom lands of the Straits to enable access to the full circumference of the pipes and to complete the repairs.

Enbridge met with PHMSA on July 30, 2018 to review the repair records and received PHMSA approval to return both pipelines of the Line 5 Straits crossings to normal operations.

Request 2:

Could you give us what percentage of material that goes through that pipeline [Line 5] actually stays in Michigan?

Response 2:

Enbridge's Line 5 pipeline transports up to 540,000 barrels per day (bpd) of light crude, synthetic crude and natural gas liquids (NGL) from Superior, Wisconsin to destinations in northern Michigan and the Detroit area before ending in Sarnia, ON, Canada. On an annual basis, Line 5:

- supplies approximately 55 percent of Michigan's statewide propane demand;
- carries up to 14,000 barrels per day of Michigan-produced light crude; and
- delivers approximately 30 percent of its light crude to refineries in the greater Detroit area.

As the products move west to east through Line 5, NGLs are delivered to facilities in Rapid River, Michigan, where propane is extracted and delivered to customers in the Upper Peninsula and northern Michigan. The Dynamic Risk Alternatives Analysis report delivered to the State of Michigan in July 2017 estimates that Rapid River can produce up to 30 million gallons of propane a year, enough to supply the majority of the Upper Peninsula's demand.

Near Lewiston, Michigan, up to 14,000 bpd of Michigan-produced U.S. high sweet light crude oil is injected into Line 5 and transported to regional refineries, including Marathon's Detroit refinery.

Overall, approximately 30 percent of the light crude carried by Line 5 - more than 100,000 bpd - stays in the region to fuel area refineries. The crude leaves Line 5 at Enbridge's Marysville, Michigan pumping station and is delivered by a third-party pipeline to the Marathon refinery in Detroit and PBF Energy refinery in Toledo.

Finally, some of the light crude and NGLs transported on Line 5 are refined in Sarnia, Canada, and returned to Michigan in the form of propane or other by products - providing further benefits to Michigan consumers and industry, as well as the regional economy. According the Michigan Agency for Energy, a significant percentage - as much as 75% - of the propane available in the Lower Peninsula is derived from NGL that is shipped via Line 5 to Sarnia for refining and then returned to Michigan.

Enbridge's Line 5 and Line 78 (which runs along the southern portion of Michigan) are critical conduits for refineries in the region, supplying the PBF Energy (Toledo), BP (Toledo) and Marathon (Detroit) refineries with crude oil. This essential feedstock is turned into gas, diesel, jet fuel, and other refined products.
