



2018 Screw Anchor Work Plan Interim Report Line 5 Dual Pipelines

**United States v. Enbridge Energy et al Case 1:16 –cv-914
(submitted August 31, 2018)**

Consent Decree			
VII. Injunctive Measures, E. Measures To Prevent Spills In The Straits Of Mackinac, Paragraph 68, Span Management Program			
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Introduction

Paragraph 68 of the Consent Decree entered in Case 1:16-cv-00914 (ECF No. 14, 05/23/17) establishes requirements for the installation of screw anchors on the Dual Pipelines that cross the Straits of Mackinac. The deadlines set forth in ¶ 68 were modified by the parties as set forth in ECF No. 15 (filed 06/01/17). Under the modified deadlines, the date for installation of required screw anchors is October 1, 2018.

On May 16, 2018, Enbridge submitted the 2018 Screw Anchor Work Plan (“SA Work Plan”) to the Environmental Protection Agency (EPA) outlining the planned scope and schedule of the work related to screw anchor installation. Enbridge submitted a revised SA Work Plan on May 17, 2018, and on May 22, 2018, the EPA approved the SA Work Plan. The SA Work Plan was developed to be consistent both with the existing provisions of the Consent Decree (as modified) and with the proposed third modification of the Decree filed with the United States District Court, Western District of Michigan on August 8, 2018.

Per Paragraph 68.e. of the Consent Decree, Enbridge is required to submit a final report to the EPA within 60 days of completion of the SA Work Plan. In 2018, to date, Enbridge has installed a total of 19 of the 70 planned screw anchors referenced in the SA Work Plan. The installation of the remaining planned screw anchors has been deferred to 2019 due to delays in Enbridge receiving permitting for that work. As agreed to with the EPA and to satisfy Paragraph 68.e. requirements, Enbridge has prepared this interim report, outlining the screw anchor installation work completed to date, including any deviations from the SA Work Plan. This report will be supplemented with a final report following the completion of the screw anchor installations in 2019.

In 2018, Enbridge installed a total of 19 screw anchors. Two screw anchors were installed more than 5 ft from the initially planned locations with approval from the Independent Third Party (ITP). Coating inspections were performed prior to screw anchor installation to ensure that saddles were not installed directly on calcareous deposits. Enbridge chose to complete coating repairs at two locations prior to the anchor installations due to calcareous deposits being discovered at the desired landing locations. This interim report summarizes the results of the 2018 program in more detail.

Objective

The objective of this interim report is to fulfill the requirement to submit a report to the EPA within 60 days of completion of the SA Work Plan. Enbridge did not receive all permits required to complete installation of the full scope of 70 anchors in the 2018 construction season, and thus EPA and Enbridge agreed that Enbridge would provide an interim report, summarizing the scope of screw anchor installation work completed in 2018.

As outlined in the SA Work Plan, this report includes the following information:

- Summary of activities completed in 2018
- Any deviations from the Work Plan

Screw Anchor Scope of Work and Schedule

The SA Work Plan scope of work includes the installation of 70 screw anchors on both pipelines within the Straits of Mackinac. As of March 22, 2018, Enbridge had obtained permits from the Michigan Department of Environmental Quality (DEQ) to commence installation of 22 anchors. The U.S. Army Corps of Engineers (USACE) initially issued a permit for installation of the same 22 anchors in 2017. During preparation for these installations, it was determined that three (3) locations required excavation to install the anchor saddle and would require additional permitting. On March 15, 2018, Enbridge applied for permits from the Michigan DEQ and the USACE for the additional 48 anchors that would be required under the proposed modification to the Consent Decree. The additional permitting necessary to excavate for the



installation of the aforementioned three anchors from the 22 was added to the work scope for the 48 anchor permit application.

It was anticipated that the March 15 application would be eligible for USACE nationwide permits based on the previous anchor installation approvals. However, on May 17, 2018, the USACE notified Enbridge that these anchor installations are not eligible for authorization under the nationwide permits but would fall under individual permits which generally take 6-9 months to process. Enbridge anticipates receiving a decision from Michigan DEQ and USACE prior to the end of 2018. Due to the typical onset of inclement weather in the Straits commencing around October, Enbridge is planning to install the remaining 51 anchors, once permitted, in 2019 during a time when weather conditions are expected to be more favorable. Enbridge notified the ITP/EPA on May 22, 2018 regarding the delay in obtaining permits and that Enbridge will be unable to install all screw anchors by the October 1, 2018 deadline. On June 1, 2018, Enbridge notified the EPA of this permitting delay as a Force Majeure that prevented the completion of installation of the remaining 51 anchors prior to October 1, 2018.

Anchor installation for the 2018 program began May 22, with a target program completion date of October 1, 2018. This schedule was established based on the assumption that all required permitting for 70 anchors would be received by July 15. In preparation for the program to begin, the SA Work Plan was provided to the contractor on May 18 and reviewed on May 22 with all contractors and sub-contractors engaged to complete any portion of the scope of work listed in the Work Plan.

The specific locations of the anchors to be installed in 2018 were provided to both the marine contractor, Ballard Marine Construction (“Ballard”), as well as the ITP prior to commencement of work. To support verification processes, Enbridge and the ITP developed a table reflecting GPS coordinates that correspond to chainage values.

The 19 anchors that were fully permitted were installed by July 2.

Screw anchor installation work was performed safely with the exception of a minor hand injury sustained by one of the divers. Corrective actions were implemented to prevent this type of incident from reoccurring. The screw anchors were installed safely and in accordance with Enbridge’s screw anchor installation procedures and in compliance with applicable federal, state, and local regulations, including provisions of the 1953 Easement executed by the State of Michigan.

Screw Anchor Procedures

Ballard Marine executed the work in accordance with the Procedures that were incorporated into the Work Plan, and are outlined below.

Summary of “Screw Anchor Installation Procedure,” Ballard Marine Construction – this procedure is utilized to ensure both a safe and quality install of each screw anchor.

Enbridge “Line 5 Coating Inspection During Screw Anchor Installation” Work Instruction – detailed work instruction to ensure sufficient pre and post-inspection of the pipe coating occurs to identify any coating damage, or bare metal caused by anchor installation.

Enbridge “Application of Underwater Repair Coatings for Line 5 Straits” – this procedure outlines required installation instructions to ensure the coating is repaired in accordance with the coating manufacturer’s and Enbridge’s specifications.



Diver Training and Qualification

Ballard Marine was the primary contractor performing the screw anchor installations, coating inspections and any required coating repairs. In order to support the successful implementation of the screw anchor installation, the divers were Operator Qualified (OQ) for the work to be completed. To meet 49 CFR 195.559 requirements for Operator Qualifications, any contractor that is performing an OQ task is required to complete training modules and hands-on training to demonstrate they are qualified. This training process is designed to deliver the basic skills required for each task. Since OQ training doesn't expire for a three year period, the OQ training for the crew from the 2017 scope of work met all requirements. The results of the OQ training have been uploaded to ISNET world, Enbridge's contractor credential management tool. To supplement the OQ certification process, Enbridge had a representative of the coating manufacturer, Belzona, perform specific training on June 4th for divers concerning the materials and coating applications that were to be used for any underwater coating repairs.

Monitoring of Screw Anchor Locations and Compliance Verification

The ITP was given access to verify the anchor installation location in real-time through reviewing the GPS position of the remotely operated vehicle (ROV) at the time of installation, as well as the GPS position of any reference anchors. Compliance verification was documented during execution and is summarized in Table 1 below.

In addition, Enbridge's marine contractor utilized an ROV with an Ultra Short Baseline (USBL) sonar positioning system that provides GPS coordinates of the remotely operated vehicle. This system allows the marine contractor to verify the GPS coordinates of both existing anchors as well as a new anchor installation location. The ROV visual inspection was completed on July 24, 2018 to satisfy Paragraph 68.f. of the Consent Decree. Due to the requirement to safeguard critical infrastructure information, the GPS coordinates are not included within this report, however, chainage values have been reported herein. As chainage values are based on inline inspection pipe coordinates vs. USBL ROV GPS coordinates, additional calculation is required to compare chainage distances to one another. The results of these calculations are summarized in Table 1 and have been previously reviewed by the ITP prior to inclusion in this report.

Screw Anchor Work Plan Deviations

Enbridge followed the deviation procedures described on the SA Work Plan to ensure the appropriate approvals were received.

SCREW ANCHOR LOCATION DEVIATIONS

As outlined on the SA Work Plan, "if Enbridge determines that it is impracticable to complete installation of any screw anchor at the location specified, then Enbridge may modify the location after consulting with the ITP. The decision that a location is impracticable to complete the installation will be made by the Project Manager in consultation with the ITP, third party marine contractor, and Enbridge's Pipeline Integrity department. The alternative location will be selected to ensure that the spans do not exceed 75 feet. Any deviation needs to be documented on the Screw Anchor Installation Inspection - L5 Straits of Mackinac Compliance Verification Checklist."

Table 1 below summarizes location information for the screw anchors installed in 2018, including two anchor installation locations which had to be moved by approximately 5.1 ft and 8.3 ft, based on the GPS data, due to the presence of calcareous deposits at the initially planned locations. Enbridge modified the location of those two anchors after consulting with the ITP. None of the modified anchor locations caused spans in excess of 75 ft.



Table 1: Line 5 Straits 2018 Anchor Installation Location Confirmation Summary

Proposed Screw Anchors	Actual Location within 5 ft of the Target Location? (Y/N)	Location Deviation >5 ft Approved by the ITP? (Y/N)	Proposed Location of the Anchor (Chainage)	Specific Location of the Anchor with Location Deviation (Chainage)	Actual Location Deviation (ft)	Any Span Exceeding 75 feet Post Deviation (Y/N)	Comments
EP-17-1	Y				2.5	N	
EP-17-2	N	Y			8.3	N	Final anchor location reviewed and approved by the ITP representative on June 18, 2018.
EP-17-3	Y				3.7	N	
EP-17-4	Y				3.4	N	
EP-17-5	Y				1.7	N	
WP-17-1	Y				3.3	N	
WP-17-2	Y				4.2	N	
WP-17-3	Y				1.7	N	
WP-17-4	Y				1.8	N	
WP-17-5	Y				3.5	N	
WP-17-6	Y				1.9	N	
WP-17-7	Y				5.0	N	
WP-17-8	N	Y			5.1	N	Final anchor location reviewed and approved by the ITP representative on July 2, 2018.
WP-17-9	Y				2.2	N	
WP-17-10	Y				2.1	N	
WP-17-11	Y				0.4	N	
WP-17-12	Y				3.3	N	
WP-17-15	Y				1.6	N	
WP-17-16	Y				3.1	N	



COATING REPAIRS

As outlined in the SA Work Plan, Enbridge will repair the coating at any discovered areas of (i) bare metal or (ii) coating damage caused by screw anchor installation. No bare metal was discovered during pre-installation inspections of the coating and post-installation inspections of the coating confirmed that no coating damage was caused by the screw anchor installation.

Calcareous deposits were identified at the majority of the 2018 screw anchor installation locations during pre-installation inspections. As per Table 2 below, 17 of the 19 anchors were installed without requiring any removal of calcareous deposits. At both WP-17-15 and WP-17-16, the removal of calcareous deposits and subsequent coating repairs were required prior to installation of the anchors as required by the SA Work Plan. During the required preparatory work at WP-17-15, the calcareous deposit removal extended into an area over which the pipe was partially buried. To continue with coating repairs near WP-17-15, Enbridge requires an additional excavation permit to access the partially buried pipe. Given the current length of time it is taking to obtain necessary permits from the USACE for work at the Straits of Mackinac, Enbridge concluded that it would not be able to obtain this additional permit in time to complete the coating repair in 2018. As a result, an area 4.15 square feet in size was left bare near WP-17-15 as excavation would be required to complete a full circumference coating repair. This area will be repaired in 2019 and required permitting will be sought upon completion of the 2018 field work on the Straits of Mackinac.



Table 2: Coating Inspection Results and Repairs at the 2018 Screw Anchor Installation Locations

Anchor Location	Repair Necessary	Date Repair Completed (MM/DD/YY)	Coating Repair Method	Pre-Installation Inspection		Post-Installation Inspection
				Bare Metal	Calcareous Deposits (sq. ft.)	Coating Damage
EP-17-1	No	-	-	No	< 0.01	No
EP-17-2	No	-	-	No	0.56	No
EP-17-3	No	-	-	No	0.01	No
EP-17-4	No	-	-	No	0.34	No
EP-17-5	No	-	-	No	0	No
WP-17-1	No	-	-	No	0.41	No
WP-17-2	No	-	-	No	6.70	No
WP-17-3	No	-	-	No	3.20	No
WP-17-4	No	-	-	No	1.52	No
WP-17-5	No	-	-	No	0.02	No
WP-17-6	No	-	-	No	< 0.01	No
WP-17-7	No	-	-	No	< 0.01	No
WP-17-8	No	-	-	No	0.28	No
WP-17-9	No	-	-	No	0.15	No
WP-17-10	No	-	-	No	0.11	No
WP-17-11	No	-	-	No	0.65	No
WP-17-12	No	-	-	No	0.40	No
WP-17-15	Yes	07/02/18	Method 3	No	18.34	No**
WP-17-16	Yes	06/06/18	Method 3	No	4.66	No

** 4.15 sq. ft. of pipe was left bare for repair in 2019 due to excavation requirements.

Reporting

Per Paragraph 68.e. of the current Consent Decree, Enbridge is required to submit a final report to the EPA within 60 days of completion of the SA Work Plan. This document serves as an interim report covering the installation of 19 of the planned 70 screw anchors. Another report will be completed within 60 days of completion of the 2019 scope of work for the remaining 51 screw anchors.

Appendix A: 2018 Screw Anchor Work Plan – Interim Report - Coating Repair Forms for L5 Straits of Mackinac