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Enbridge Energy, Limited Partnership

Enbridge Line 5 - Straits of Mackinac

Coating Inspections, Findings and Repairs

from Activities Completed in 2017

Anchor Inspection Work Plan:

Interim Report

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LIST OF ACRONYMS

AIWP	Anchor Inspection Work Plan
BIWP	Biota Investigation Work Plan
CIS	Close Interval Survey
CP	Cathodic Protection
CRWP	Coating Repairs Work Plan
CSE	Copper-Copper Sulfate Electrode
Enbridge	Enbridge Energy, Limited Partnership
EPA	Environmental Protection Agency
ILI	Inline Inspection
MDEQ	Michigan Department of Environmental Quality
ROV	Remotely Operated Vehicle (Camera)

DEFINITIONS

Area(s) of Interest

An Area of Interest is a part of the pipeline where, based on visual inspection, (i) the normal (local) Biota is unexpectedly absent or (ii) there is evidence of possible coating damage (e.g. Dislodged Coating and/or potential Holiday). Disturbed Areas (see definition below) are not Areas of Interest as the lack of Biota can be attributed to past maintenance and monitoring activities.

Biota

Animals and plants living around and on the pipelines through the Straits of Mackinac (e.g. mussels, periphyton, algae, microbes, etc.)

Calcareous Deposit

A layer consisting of calcium carbonate and other salts deposited on the surface. When the surface is cathodically polarized by cathodic protection, this layer is the result of the increased pH adjacent to the protected surface. This layer functions as a barrier against the corrosive environment, leading to a decrease in cathodic protection current demand and more persistent chemical polarization of the pipe surface. A calcareous coating is also known as a calcareous deposit.

Disturbed Area

An area on the pipeline where past maintenance and monitoring activities resulted in the removal of Biota but does not represent damage to the pipe coating.

Dislodged Coating

An area on the pipeline where, based on visual inspection, the outer wrap of the coating appears to have been dislodged or removed without exposure of the pipe steel.

Holidays

An area on the pipeline where there is a discontinuity in the coating that exposes the pipe steel to the environment.

Undisturbed Area

An area on the pipeline where there is no evidence of any loss of Biota (or pipe coating).

1.0 Summary

This interim report supplements Enbridge Energy, Limited Partnership ("Enbridge") November 13, 2017 Status Update [1] on the Anchor Inspection Work Plan ("AIWP"). Specifically, this report addresses the results of Enbridge' coating inspections under that Plan during 2017 and describes the remaining work that will be completed in 2018.

As of the completion of inspection work in December 2017, a total of seven (7) locations from the AIWP inspections have as-found bare metal and/or bare metal created by the removal of calcareous deposits as per the AIWP. One of these locations was partially repaired before work ceased in 2017. A summary of the AIWP inspection findings is found in Table 1, while the summary of repairs completed to date relative to the AIWP inspections is set forth in Table 2. Overall, the AIWP inspections that have been completed represent 100 percent of the Remotely Operated Vehicle ("ROV") inspections of the support anchor locations and approximately 37 percent of the diver inspections of the support anchor locations.

In 2018, Enbridge will repair all remaining bare metal spots, both those as-found and created by removal of calcareous deposits during the 2017 inspections. Currently, the remaining AIWP diver inspected locations have a cumulative bare metal area of less than one-third of a square foot. These locations are not an integrity concern as they are being effectively protected by the Cathodic Protection ("CP") system. All inspections and maintenance actions are being conducted in full compliance with Pipeline and Hazardous Materials Safety Administration ("PHMSA") regulations, 49 CFR Part 195, Subpart H – Corrosion Control. The occurrence of small areas of coating damage has not had an impact on the structural fitness of the pipelines. Ongoing integrity monitoring activities will incorporate enhancements to continual evaluation of coating and cathodic protection performance.

2.0 Introduction

2.1 Objective

This report fulfills the request by the Michigan Department of Environmental Quality ("MDEQ"), Michigan Agency for Energy, Michigan Department of Natural Resources and the Michigan Attorney General Office (collectively referred to as the "State") for an interim report within 30 days of completion of the AIWP in 2017. The State requested that Enbridge's interim report include the following information (the corresponding location within this report that fulfills these requirements are shown in brackets):

a. Progress of the Work Plan, including percentage of completion (Section 3.1);
b. Summary of the remainder of the Work Plan to be conducted in 2018 (Section 5.1);
c. Summary of projected or anticipated deviations from the Work Plan as a result of findings from 2017 (Section 5.1);
d. Timeline for re-starting operations in 2018 (Section 5.1).

2.2 Background - Work Activities in the Straits

2.2.1 Anchor Inspection Work Plan

During execution of the Biota Inspection Work Plan undertaken pursuant to the federal Consent Decree (Case 1:16-cv-00914, ECF No. 14 filed 05/23/17, Subsection VII.E), it was established that coating damage at one of the investigated sites with calcareous deposits (Location WAS-1) was caused by maintenance activities related to installation of a support anchor in 2014 (anchor rub). At the request of the State, Enbridge developed the AIWP to address the State's concerns regarding possible pipeline coating damage from the installation methods used for the 128 existing screw anchor (see Appendix A). The AIWP was approved by the State on September 22, 2017, and inspections were suspended on December 17, 2017 due to the winter weather conditions that precluded safe continuance of the work. The inspections will resume once weather permits in 2018.

2.2.2 Biota Investigation Work Plan

As a matter of information, and in order to provide a fuller picture of other Dual Pipelines inspection work that has been conducted, the following briefly discusses the status of the Biota Inspection Work Plan ("BIWP").

In late 2014, an assessment was undertaken regarding mussel attachment on the Dual Pipelines. The assessment is publically-available and consisted of a literature review followed by the collection and analysis of mussels collected from the Dual Pipelines [2]. The assessment focused on identifying the mussel community (i.e., zebra or quagga) and the biomass. Based on the 2014 assessment, it was determined that the mussel communities on the Dual Pipelines were primarily quagga mussels and were attaching to the pipe in single layers (i.e., not in multiple layers). A single coating sample was also analyzed for mussel byssal threads and no penetration into the coating was observed.

In accordance with the federal Consent Decree, an additional biota investigation program has been initiated, as described further here. Subparagraph 69.a of the Consent Decree requires Enbridge to conduct an investigation to assess whether the accumulation of mussels and other Biota have impacted the integrity of the pipelines' coating or the underlying metal. In accordance with this requirement, Enbridge prepared a BIWP, which was approved by the EPA on June 13, 2017. Crews were mobilized in August 2017 to inspect the coating on the Dual Pipelines by using work barges, divers, support teams, and underwater remotely ROV equipped with cameras, which provided live feed and recordings to technicians on-board the support barges. In 2017, a total of 23 coating inspection locations (i.e., 18 Areas of Interest and 5 additional sites) associated with the BIWP were examined by divers to gather information regarding the condition of the Dual Pipelines' coating.

Enbridge continues to implement the EPA-approved BIWP, and submitted an update to Environmental Protection Agency ("EPA") (which was copied to the State) on December 19, 2017. This update included a summary of the number and location of coating bare metal areas and repairs undertaken relative to the BIWP inspections.

As noted in Table 3, bare metal (0.01 $ft.^2$) was found by diver inspection at EAS-1. Bare metal (2.57 $ft.^2$) was also created at EAS-3 and EAS-4 by a communication cable rub during the execution of the 2017 BIWP. EAS-3 and EAS-4 were not included in the original BIWP submitted to the EPA; however, these two locations were added due to the mechanical damage caused to the coating on August 26, 2017, by a communication cable. The bare metal at these two locations (i.e., EAS-3 and EAS-4) comprises 99.6 % of the total bare metal as-found at the BIWP locations.

In addition, calcareous deposits were observed at six (6) of the BIWP locations, as shown in Table 3. Calcareous deposits are known in pipeline and other industries to be a byproduct of the cathodic protection of steel surfaces in marine environments. A representative photograph of the calcareous deposit is shown in Figure 1. As discussed further below, the deposits demonstrate that the cathodic protection current is effectively protecting the steel and, as the deposit builds, it serves as an additional protective layer on the steel. As part of the BIWP study, all calcareous deposits were removed, as summarized in Table 3, to confirm the condition of the pipe beneath them (see Sections 4.1 and 4.2) and gather samples to study the deposit chemistry.

As previously communicated to the State regarding the Biota Study, the coating has also been investigated at all biota investigation sites. From the biota investigation sites, there were eight (8) sites in total where either a small area of bare metal was found or where the pipe was made bare because of intentional removal of calcareous deposit. Of these eight (8), all but one was repaired prior to demobilization at the end of 2017 (Table 4). The one remaining location required State and Army Corps of Engineers permits in order to allow the removal of lake bed soil from around the bottom of the pipe prior to recoating. Those permits were received from the State in December 2017 and the Army Corps in January 2018, thus allowing the repair to proceed as soon as possible when weather allows in 2018. The area of this bare metal is 1.64 ft^2 and will continue to be protected with cathodic protection.

The full findings of the BIWP will be submitted in a final report to the EPA in 2018, and the State will be supplied with a copy of the report.

3.0 AIWP 2017 ROV and Diver Inspection Findings and Repairs

3.1 AIWP ROV and Diver Coating Inspection

In 2017, all 128 installed pipeline support anchor locations were inspected by ROV and a total of 48 locations have been examined by divers to gather further information. Refer to Appendix B for the AIWP ROV and diver inspection forms. The AIWP inspection forms designate the coating features into two categories: (1) "holiday (bare metal)" – holidays that are bare metal areas (as-found); and (2) "deposit" - locations where calcareous deposits have formed a protective barrier. Overall, the AIWP inspections that have been completed represent 100 percent of the ROV inspections of the support anchor locations and approximately 37 percent of the diver inspections of the support anchor locations.

The ROV inspection did not identify any bare metal at any of the 128 anchor locations. In total, 25 of the 128 ROV facilitated anchor inspections identified evidence of calcareous deposits. Divers later identified bare metal at three (3) of the 48 anchor locations and calcareous deposits at 42 out of the 48 anchor locations. The diver inspections are more effective than the ROV in identifying bare metal locations and calcareous deposits because the diver removes the accumulated biota that masks the identification of the bare metal and deposits. No external corrosion metal loss was found at any of the sites. As per Section 5.1.4 of the AIWP, Enbridge is committed in 2018 to repairing any bare metal locations discovered by the AIWP diver inspections and any that were created through removal of deposits.

As noted and shown in Table 1, bare metal was found at three (3) anchor locations: E-10, E-13 and W-3. The total area of anchor location bare metal as-found was 0.83 ft^2. Section 3.2.3 of the AIWP (Appendix A) requires removal of any calcareous deposits to examine the pipe. Calcareous deposits were removed at five (5) anchor locations (i.e. E-1, E-2, E-5, E-7 and E-10) to confirm the condition of the pipe beneath them (see Sections 4.1 and 4.2), gather samples to study the deposit chemistry, and determine the amount of bare metal area underneath the deposits. Thickness measurements of the coating were also collected at these five (5) anchor locations. The measurements show that the coating that is adjacent to the calcareous deposits had average thicknesses (123 mils) indicating intact (non-damaged) coating.

In total, an additional 0.23 ft^2 of bare metal was created by the removal of the calcareous deposits. After October 7, 2017, execution of the AIWP was changed to focus on visual examination of the anchor coating for the remainder of 2017 and to leave calcareous deposits in place due to the fact that removal had the potential to create bare metal areas that could not be repaired in time (due to weather) in 2017.

3.2 Coating Repairs

Enbridge submitted the Coating Repairs Work Plan ("CRWP"), Version 3, to the EPA on September 13, 2017 and to the State on September 18, 2017 (Appendix C). The CRWP was prepared in response to Enbridge identifying bare metal on the exterior surface of the Dual Pipelines during implementation of the BIWP. On September 14, 2017 the EPA approved Version 3 of CRWP, and approval from the State was provided on October 5, 2017.

All coating repairs that were completed used a full-circumferential composite wrap repair, Method 1, as outlined in the CRWP, Version 3.0. In total, there were 15 locations of bare metal identified and the majority of these were created by the divers after removal of the calcareous deposits (AIWP - Table 1, and BIWP - Table 3). In 2017, seven (7) of the 15 locations were repaired in accordance with the CRWP. The remaining locations have a total bare metal area of less than 2 ft^2 and will be re-inspected and repaired in 2018.

4.0 Analysis of Inspection Information

Post the November 13, 2017 Status Update, the steps at this stage involve the collation and organizing of all data gathered from the ROV and diver inspections and first phase analysis of the findings. The process involves in-house and third party experts. The information gathered in this investigation has been and will continue to be integrated alongside all information gathered from core integrity program activities. The evaluation examines the observations regarding any bare metal locations and calcareous deposits and assesses their relationship to operating conditions, existence of mussels, historic maintenance activities, or other factors that are identified. Various analyses have been completed, are underway, or will be added once further data is collated in 2018. Interim findings are described in the following sections.

4.1 Visual Inspection for Corrosion Metal Loss

No external corrosion metal loss was observed by the divers at any of the six (6 as-found bare metal locations (three (3) from the BIWP and three (3) from the AIWP). Moreover, it was confirmed by direct diver inspection that no corrosion metal loss had occurred at any location where the deposits were removed and bare pipe revealed, including the circumferential weld location at EAS-1. The results of the diver's observations are consistent with inline inspection ("ILI") results that have repetitively shown that external corrosion metal loss has not occurred at any location across the entire lengths of both segments. The most recent ILI was conducted in 2017 and additional ILI is scheduled for early 2018. These results provide evidence that corrosion is being effectively managed through the combination of the protective coating, cathodic protection including formation of calcareous deposits, along with regular ILI and associated integrity management activities. Given the low temperatures at pipe depth beneath the water, it is likely that the environment surrounding the pipe is a condition of low corrosivity, and this is an aspect that will be further considered as part of Enbridge's analyses.

4.2 Pipe Wall Thickness

An underwater ultrasonic thickness ("UT") gauge was utilized to measure the pipe wall thicknesses at all coating repair locations. In total, 348 measurements were taken after cleaning the area of any adherent material. After analysis, the average pipe wall thickness measurements at the repair locations were 0.814 ± 0.023 inches (99% confidence level). The minimum wall thickness measurement from all measurements was 0.754 inches, well above

the American Petroleum Institute API 5L Specification for Line Pipe minimum acceptance, which states that the wall thickness tolerances for 0.813 inch (nominal thickness) seamless pipe is from 0.711 to 0.934 inches. The pipe wall thicknesses exceeds both the original version of API 5L used for design and construction, as well as the current (more stringent) version of API 5L. Figure 2 provides a summary of the Line 5 wall thickness variation for the East and West segments and evidences that the wall thickness variation is within the tolerances stated in the API 5L Specification for Line Pipe.

In summary, no external metal loss was observed, and all measurements from direct assessment wall measurement inspection by the diver fall within the API 5L specification for wall thickness tolerance. All values fall within -11% to +10.25%, and therefore within the allowable tolerance of -12.5% to 15% variation of nominal wall thickness. The wall thickness of the Dual Pipelines adds in a substantial safety factor over what would be typically required by pipeline design.

4.3 Cathodic Protection Measurements

CP is an electrochemical method of preventing corrosion of metal structures exposed to aqueous environments. CP is a well-established process that has been used to protect pipelines in soil and water for over 100 years. While it is possible to meet the objective of preventing corrosion using CP or coating systems singly, it is more effective and reliable to use them together. The coating system provides a primary barrier between the steel and the environment and also substantially reduces the amount of metal requiring CP – making the application of cathodic protection simpler and more efficient. It is well understood within corrosion control practice that structures that are coated will experience some coating holidays or coating damage during construction or subsequent events, such as the cable rubs described above. The CP systems are installed to ensure that corrosion is prevented where there are imperfections in the coating system. The Dual Pipelines were designed to be protected using both an external coating system and cathodic protection. The enamel corrosion barrier applied to the dual pipelines was the best available at the time of construction and would be viewed to be an effective corrosion barrier still by today's standards [3].

Enbridge has monitored and maintained the impressed current systems protecting the Dual Pipelines through the Straits in accordance with industry best practice and all applicable regulatory requirements. Routine monitoring activities presently include annual collection and

evaluation of pipe-to-soil potential measurements on each side of the Straits, and continuous remote monitoring of the Enbridge owned impressed current sources affecting the dual pipelines. Over time and as the need arises, the current output of the CP systems are adjusted to maintain protection levels; and the consumable anode beds are upgraded when needed.

Enbridge conducted a close-interval-survey ("CIS") through the Straits in 2003. This survey demonstrated effective protection through the entire survey area, which spanned approximately 3.5 miles through the center of the channel. This survey data is presented in Appendix D and demonstrates the CP system is working as intended.

The execution logistics of the hydrotest conducted in 2017 allowed each of the Dual Pipelines to be electrically isolated from the onshore facilities for the first time since the pipes were constructed. This permitted additional detailed CP testing, including direct measure of the CP current being applied to each pipe, incremental CP current requirement testing, and attenuation analysis. The full report provided by the survey contractor is provided in Appendix E. The report indicated that each pipeline requires roughly 1.5 amperes of current (approximately 0.013 mA/ft^2) for complete cathodic protection. As compared to published CP current density requirements of 2 – 6 mA/ft^2 for bare steel in freshwater [4], this indicates a well-coated pipe with an efficiency in the range of 99.3-99.8%. Direct measurement of applied CP current demonstrates that each line receives more than adequate protective current. These data further support the ILI results that demonstrate effective corrosion control on the Dual Pipelines.

More than 600 pipe-to-water CP measurements were recorded during the BIWP and AIWP. Enbridge employed a criterion of -600mV CSE as an initial indicator of possible bare metal. These measurements are evaluated in consideration of other CP readings in the area when making the determination of metal exposure. The full complement of CP data collected during this investigation is presented in Appendix F. Summary results from each site, including major findings where applicable, are presented in Table 5. A more lengthy discussion of each dives CP readings are detailed in Appendix F.

Cathodic protection potentials recorded during the BIWP and AIWP dive inspections generally exhibited substantial availability of cathodic protection current – as indicated by current applied

'ON' CP readings. The average of all 'ON' readings was -1442 mV CSE, which is approximately 800mV more electronegative than the expected native potential of steel in freshwater. Moderate to high levels of cathodic polarization were also observed in the majority of data – as indicated by the current interrupted 'OFF' CP readings. The average of all 'OFF' readings was -968 mV CSE, which exceeds the requirements of industry best practice [5] and applicable regulations [6].

The prevalence of calcareous deposits impeded the ability of divers to obtain as-found CP potentials; this is due to the high resistance of the calcareous deposits that interfered with the potential measurements. The divers typically had to remove the deposits to obtain CP potential readings – this disturbs the chemical polarization at the pipe surface and reduces the level of cathodic protection as compared to what would have been present with the previously intact deposits. This phenomenon was explored on dive WAS-1; and the data clearly showed that removing the calcareous deposits using a power wire brush diminished the cathodic protection potentials by nearly 100 mV. While the effect is temporary (as the calcareous deposit re-forms), it underscores the positive impact of the intact deposits and highlights the advantage of keeping such deposits intact during future CP surveys. It is also noted that the divers detected no corrosion metal loss at any dives (Sections 4.1 and 4.2); this demonstrates that the cathodic protection being received by the Dual Pipelines has been entirely successful at preventing external corrosion metal loss.

In recognition of the challenges associated with diver based CP measurements, Enbridge is planning an ROV based CIS through the Straits over each pipeline in 2018. CIS is a standard technique for acquiring comprehensive corrosion protection information over the entirety of a structure. Also importantly, using the CIS, the performance of the CP system can be measured accurately without the need to remove the calcareous deposits; this will ensure that the collected data represents the natural CP status of the pipeline – including the beneficial effects of the deposits.

4.4 Calcareous Deposits

Calcareous deposits are a well-known byproduct of CP in scaling water and soil environments. Such deposits form when application of CP drive electrochemical reactions at the pipe surface that increase the alkalinity of the structure-environment interface. The increase of pH is both a

result of the CP current, and the cause of chemical polarization that is observed during structure-to-soil potential surveys [7].

Calcareous deposits have been extensively studied due to the vast amount of offshore infrastructure including ships and barges, docks and piers, oil/gas production platforms and drilling rigs, and subsea pipelines. In order to leverage this industry experience, Enbridge engaged MEARS Group Inc. to perform a literature search and evaluation of the calcareous deposits observed on the Dual pipelines through the Straits. It was noted in the Mears study report that industry practice has been to leave such deposits undisturbed, recognizing the beneficial protective effects of calcareous deposits at coating flaws in conjunction with effective CP. The Mears study also confirmed that experience with calcareous deposits in the seawater setting, which has been more extensively studied, is applicable to the fresh water of the Great Lakes. The Mears study is attached at Appendix G.

In soils or waters where there is sufficient calcium and magnesium present, the increased pH causes precipitation of calcium carbonate and magnesium hydroxide. The process of calcareous deposit formation is shown in Appendix G and the abbreviated chemical reactions are simplified below:

$$Ca^{2+}_{(aq)} + CO_3^{2-}{}_{(aq)} \rightarrow CaCO_{3(s)}$$

$$Mg^{2+}_{(aq)} + CO_3^{2-}{}_{(aq)} \rightarrow MgCO_{3(s)}$$

$$Mg^{2+}_{(aq)} + 2OH^{-}_{(aq)} \rightarrow Mg(OH)_{2(s)}$$

The formation and properties of calcareous deposits on metal surfaces are affected by variables such as cathodic protection current densities, time, temperature, pressure, pH, chemistry, water velocity, and substrate surface condition.

Calcareous deposits are considered a form of coating [8,9]. Studies have shown that the CP current density received by a bare steel surface that is maintained at a stable cathodic potential will decrease over time as calcareous deposit is formed [10]. This is attributed to the calcareous deposit acting as a barrier to prevent oxygen access to the steel surface. Similarly, the calcareous barrier preserves chemical polarization (accumulation of alkaline species) at

the steel/electrolyte interface. As a barrier to movement of chemical species, calcareous deposits achieve the same intended purpose as engineered protective coating systems.

Some of the CP readings obtained before and after wire brushing (removal) of calcareous deposit clearly demonstrated an electropositive shift in CP potential after the deposits were disturbed. These data demonstrate that removing the calcareous deposits will decrease the level of CP achieved at that location. While this effect is temporary until the calcareous deposit reforms (or a new barrier coating system is applied), the observation underscores the beneficial effect of the deposits.

The information reviewed and analyzed to date indicates that the presence of calcareous deposits observed at coating flaws on the Dual Pipelines are a beneficial result of an effective external protective coating system and an effective CP system. The formation of calcium carbonate and magnesium carbonate at coating flaws serves to protect the underlying steel from corrosion at the elevated pH values consistent with the formation and adhesion of the deposits. Corrosion rates for carbon steel are significantly reduced at pH values associated with the application of effective CP and the development of calcium and magnesium carbonate at the pipe surface. This is further substantiated through the ILI results and direct diver observations that indicate no external metal loss anomalies in Dual Pipelines.

Enbridge desires a meeting with the State of Michigan to discuss further the calcareous deposits and whether an amendment to the AIWP is warranted for the handling of the calcareous deposit going forward.

5.0 Future Work

5.1 2018 AIWP Scope of Work

Enbridge will commence execution activities in 2018 in accordance with the schedule set forth below. The execution activities outlined below assume that the proposed modifications to the AIWP are approved. The schedule is highly dependent on weather conditions allowing safe access to perform the work.

Other work scope, such as screw anchor installation or other activity in the Straits, may necessitate adjustments to the schedule outlined below.

- May, 2018: Anticipated earliest seasonal access to begin 2018 dive operations.
- May through September, 2018: Finish remaining diver inspections and complete coating repairs as outlined in the criteria listed in the following sections.
- October, 2018: Demobilize and finish 2018 operations.

Based on the findings provided in this interim report, Enbridge will work with the State to determine future work related to the calcareous deposits located on the Dual Pipelines. At this time, Enbridge proposes the following modifications and clarification to the AIWP and looks forward to feedback from the State.

5.1.1 CP Potential Measurements (Section 3.2.2 of the AIWP)

For the 2018 scope of work, Enbridge proposes that the CP measurements should not be taken through any calcareous deposits. Instead, CP status will be established using a CIS, as discussed in Section 5.3 below. Enbridge would like to discuss these issues further with the State.

Justification: Based on 2017 BIWP and AIWP experience, the likelihood of obtaining valid CP readings due to the high contact resistance presented by the calcareous deposit is extremely low. Additionally, data from 2017 indicates that removing the calcareous deposits can significantly degrade the level of cathodic protection being achieved; thus, efforts to remove deposits to facilitate potential measurements may produce data that no longer represents the original CP status of the pipeline. Enbridge intends to conduct a ROV based CIS in 2018 (Section 5.3), which will provide a more comprehensive and accurate view of CP

levels than is possible using divers. Additionally, penetrating through the calcareous deposits will compromise the protective nature of the deposits. CP readings taken from the anchors will be used in conjunction with the CIS to determine if any anchors are electrically shorted to the pipeline.

5.1.2 Deposit Removal (Section 3.2.3 of the AIWP)

The calcareous deposits effectively protect the steel and no external metal loss corrosion has been seen by the diver inspection or from the 2017 ILI measurements. Enbridge proposes to collect additional deposits in 2018 for chemical analysis and to re-affirm the condition of the pipe surface beneath those deposits. For the 2018 scope of work, Enbridge would like to review with the State the benefits of not immediately removing the calcareous deposits as called for in the AIWP, and rather maintaining the calcareous deposits as is through the completion of the inspections.

Justification: Calcareous deposits provide a protective environment, as discussed at Section 4.4 of this Report.

5.1.3 Criteria for Establishing Coating Defects (Section 3.2.4 of AIWP)

For the 2018 scope of work, Enbridge proposes that only as-found bare metal areas should constitute repairable coating defects. A bare metal area is defined as one with coating thickness less than 25 mils, no calcareous deposit, and CP potentials that are more electronegative than -600mV CSE. Repairs would also be conducted at spots where deposits are removed as part of the deposit examinations. Enbridge would like to discuss these issues further with the State.

Justification: The 2017 work scope was intentionally destructive of the calcareous deposits, and was responsible for creating the majority of bare metal now observed and adversely affecting the cathodic protection levels at some sites. The original plan served the needs of the 2017 work – specifically to examine the surface of the pipe for external corrosion metal loss and to take UT thickness readings. However, it is now better understood that calcareous deposits provide a protective environment.

5.1.4 Criteria for Coating Repairs

Enbridge has established a criterion for coating repair that may be required during the 2018: namely, all bare metal areas identified by diver inspection and confirmed with CP measurements will be repaired. The coating repair areas will include the remaining bare metal locations that have been identified in Table 2 and Table 4 and any new anchor locations with bare metal that are identified during the diver inspection.

5.2 2018 ILI Tool Runs

For the State's information, the Dual Pipelines are on an annual re-inspection interval for cracking, corrosion, and geometry technologies. As the previous inspections were completed in April 2017, a circumferential crack inspection, ILI corrosion inspection, and caliper geometry inspection are planned for the first quarter of 2018. Additionally, quarterly leak detection SmartBall® technology will also be conducted on the Dual Pipelines, consistent with the Consent Decree. Corrosion ILI will be completed in first quarter 2018 which will provide another confirmation of the corrosion condition of the pipeline.

5.3 Close Interval Survey

The CP readings obtained during the AIWP and BIWP underscored various issues, including: (i) the difficulty in obtaining good metal contact, (ii) obtaining CP readings using a manually operated voltmeter (the Polatrak CP gun) with a dynamic display, (iii) reference cell calibration drift over multiple dives, (iv) the challenges associated with synchronously interrupting multiple CP current sources, and the adverse consequence of removing calcareous deposits on the normal levels of cathodic protection. In order to better characterize the level of CP across the entire span of the Dual Pipelines, Enbridge is developing plans to conduct a CIS using a remotely operated vehicle and synchronous datalogging. This will permit a more rigorous analysis of pipe-to-water CP waveforms during rectifier interruption, and a much more comprehensive assessment of the cathodic protection levels through the Straits. The survey will include the following elements:

- Complete inspection of the entire ROV navigable pipe span (as opposed to a few discrete dive areas);
- Rigorous rectifier interruption management;
- Reliable electrical connection to the pipeline – to avoid contact resistance issues;

- A more reliable reference cell – to avoid contamination issues;
- Synchronized stationary dataloggers – to ensure the data has not been affected by transient phenomenon, and to permit transient error correction if required.

Enbridge intends to maintain rigorous integration and correlation of CIS data and ILI data so that any evidence of corrosion metal loss can be correlated to leading factors that can be used for future management of corrosion protection systems through the Straits of Mackinac – ensuring a safe long term operation of the dual pipelines.

5.4 Status of the Enamel Coating

While there is no external corrosion metal loss on the Dual Pipelines, Enbridge wants to understand the origins of the bare metal and calcareous deposits to anticipate any future integrity requirements. Accordingly, Enbridge will be contracting with a third party expert to review historical construction and installation practice, inspection records, and findings from the BIWP and AIWP inspections to determine the probable causes of the coating damage.

The findings will be made available to the State and the public upon completion.

5.5 Alternative Coating Repair Methods

The current coating repair technology requires full circumferential access around the pipe to apply the Stricture Banding™. Enbridge has been researching alternative underwater coating repairs methods that would reduce the total dive times associated with a repair and/or not require full circumferential exposure of the pipe (i.e., reduces disturbance of the lake bottom, does not require a permit, and does not require unnecessary repairs over good original pipe coating). If testing of an alternative coating repair method is successful, Enbridge will provide the State and EPA a detailed report of the technology that will include the results and a comparison to currently approved approaches (Method 1 and Method 2). Enbridge will not use any new repair method on the Dual Pipelines unless and until it is approved by the State, and EPA.

6.0 References

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9. K.K. Baek, C.S. Lim, H.I. Lee, S.B. Shin, "Evaluation of Technical Feasibility on Applying Calcareous Deposit Coatings to Ship Ballasts", Paper 327, CORROSION 99, NACE International, Houston TX, (1999).
10. W.H. Hartt, C.H. Culberson, S.W. Smith, "Calcareous Deposits on Metal Surfaces in Seawater – A Critical Review", Paper 59, CORROSION 83, NACE International, Houston TX, (1983).

Tables

Table 1: Diver Inspection Results at Support Anchor Installations (AIWP)

Anchor Label	Area of Bare Metal As-Found (ft^2)	Area of Bare Metal Created by Calcareous Deposit Removal (ft^2)	Area Of Calcareous Deposit Remaining (ft^2)
E-1	-	0.02	-
E-2	-	0.04	-
E-3	-	-	0.04
E-4	-	-	0.06
E-5	-	0.01	-
E-6	-	-	0.08
E-7	-	0.05	-
E-8	-	-	0.39
E-9	-	-	0.44
E-10	0.63	0.11	0.37
E-11	-	-	0.14
E-12	-	-	1.07
E-13	0.17	-	3.58
E-14	-	-	-
E-15	-	-	Less than 0.01
E-16	-	-	0.05
E-17	-	-	0.01
E-18	-	-	0.63
E-19	-	-	0.63
E-20	-	-	0.06
E-21	-	-	0.07
E-23	-	-	0.39
E-24	-	-	Less than 0.01
E-25	-	-	-
E-26	-	-	-
E-27	-	-	0.70
E-28	-	-	-
E-29	-	-	0.06
E-30	-	-	0.03
E-67	-	-	1.02
W-1	-	-	-
W-2	-	-	0.19
W-3	0.03	-	0.21
W-4	-	-	-
W-5	-	-	0.04
W-6	-	-	Less than 0.01

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Table 1: Diver Inspection Results at Support Anchor Installations (AIWP) cont'd

Anchor Label	Area of Bare Metal As-Found (ft^2)	Area of Bare Metal Created by Calcareous Deposit Removal (ft^2)	Area Of Calcareous Deposit Remaining (ft^2)
W-7	-	-	Less than 0.01
W-8	-	-	0.03
W-9	-	-	0.40
W-10	-	-	1.24
W-11	-	-	2.64
W-12	-	-	0.17
W-13	-	-	0.04
W-57	-	-	0.20
W-58	-	-	0.09
W-59	-	-	0.36
W-60	-	-	0.22
W-61	-	-	0.26

Table 2: Summary of AIWP Coating Repairs at Bare Metal Locations

Location	Coating Repairs Completed	Area Of Bare Metal Remaining (ft^2)
E-1	Spring 2018	0.02
E-2	Spring 2018	0.04
E-5	Spring 2018	0.01
E-7	Spring 2018	0.05
E-10	Partially	Less than 0.01[†]
E-13	Spring 2018	0.17
W-3	Spring 2018	0.03
	Total	0.33

[†]Small area of bare metal located near anchor. Repair will resume in Spring 2018.

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Table 3: Diver Inspection Results at BIWP Locations

Location	Area of Bare Metal As-Found (ft^2)	Area of Bare Metal Created by Calcareous Deposit Removal (ft^2)	Area of Calcareous Deposit remaining (ft^2)
EAOI-1	-	0.03	-
EAOI-2	-	-	-
EAOI-3	-	-	-
EAOI-4	-	-	-
EAOI-5	-	0.01	-
EAOI-6	-	-	-
EAOI-7	-	6.18	-
EAOI-8	-	-	-
EAOI-9	-	-	-
EAOI-10	-	-	-
EAOI-11	-	-	-
EAS-1	0.01	0.88	-
EAS-2	-	0.14	-
EAS-3	0.93	-	-
EAS-4	1.64	-	-
WAOI-1	-	-	-
WAOI-2	-	-	-
WAOI-3	-	-	-
WAOI-4	-	-	-
WAOI-5	-	-	-
WAOI-6	-	-	-
WAOI-7	-	-	-
WAS-1	-	0.40	-

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Table 4: Summary of BIWP Coating Repairs at Bare Metal Locations

Location	Coating Repairs Completed	Area Of Bare Metal Remaining (ft^2)
EAOI-1	Yes	0
EAOI-5	Yes	0
EAOI-7	Yes	0
EAS-1	Yes	0
EAS-2	Yes	0
EAS-3	Yes	0
EAS-4	2018	1.64
WAS-1	Yes	0
	Total	1.64

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Table 5: Summary of CP Measurements from BIWP and AIWP

Location	CP Measurement (-mV vs. CSE)			Date (DD/MM/YY)	Comments
	ON_{avg}	OFF_{avg}	OFF_{min}		
WAS-1	1358	885	836	9/22/2017	'ON' readings indicate available CP current, average 'OFF' reading indicates full protection.
EAS-1	1535	1019	945	10/06/2017	Full protection observed
EAS-2	-	-	-	-	No valid CP readings were obtained
EAS-3	841	806	783	8/29/2017	'ON' readings indicate available CP current, all readings believed to contain unknown source of error (calibration, procedure, transients).
EAS-4	961	865	844	8/30/2017	'ON' readings indicate available CP current, average 'OFF' reading indicates full protection. Readings possibly contain unknown source of error (calibration, procedure, transients)
EAOI-1	-	-	-	-	No valid CP readings were obtained
EAOI-5	-	-	-	-	No valid CP readings were obtained
EAOI-7	1365	1082	903	10/12/2017 10/13/2017	'ON' readings indicate available CP current, 'OFF' reading indicates full protection.
E-1	1646	907	907	9/30/2017	'ON' readings indicate available CP current, 'OFF' reading indicates full protection.
E-2	1509	-	-	10/1/2017	'ON' readings indicate available CP current.
E-5	1632	-	-	10/26/2017	'ON' readings indicate available CP current.
E-7	1554	-	-	10/2/2017	'ON' readings indicate available CP current.
E-10	1601	1042	912	11/2/2017	'ON' readings indicate available CP current, 'OFF' reading indicates full protection.
E-13	1486	-	-	10/6/2017 10/9/2017	'ON' readings indicate available CP current.
W-3	1606	-	-	10/9/2017 10/13/2017	'ON' readings indicate available CP current.
W-57	-	-	-	-	No valid CP readings were obtained

Figures



Figure 1: Photograph showing a calcareous deposit at EAS-2

Note: The average thickness of the calcareous deposit and adjacent enamel coating was 0.12 and 0.13 inches, respectively.

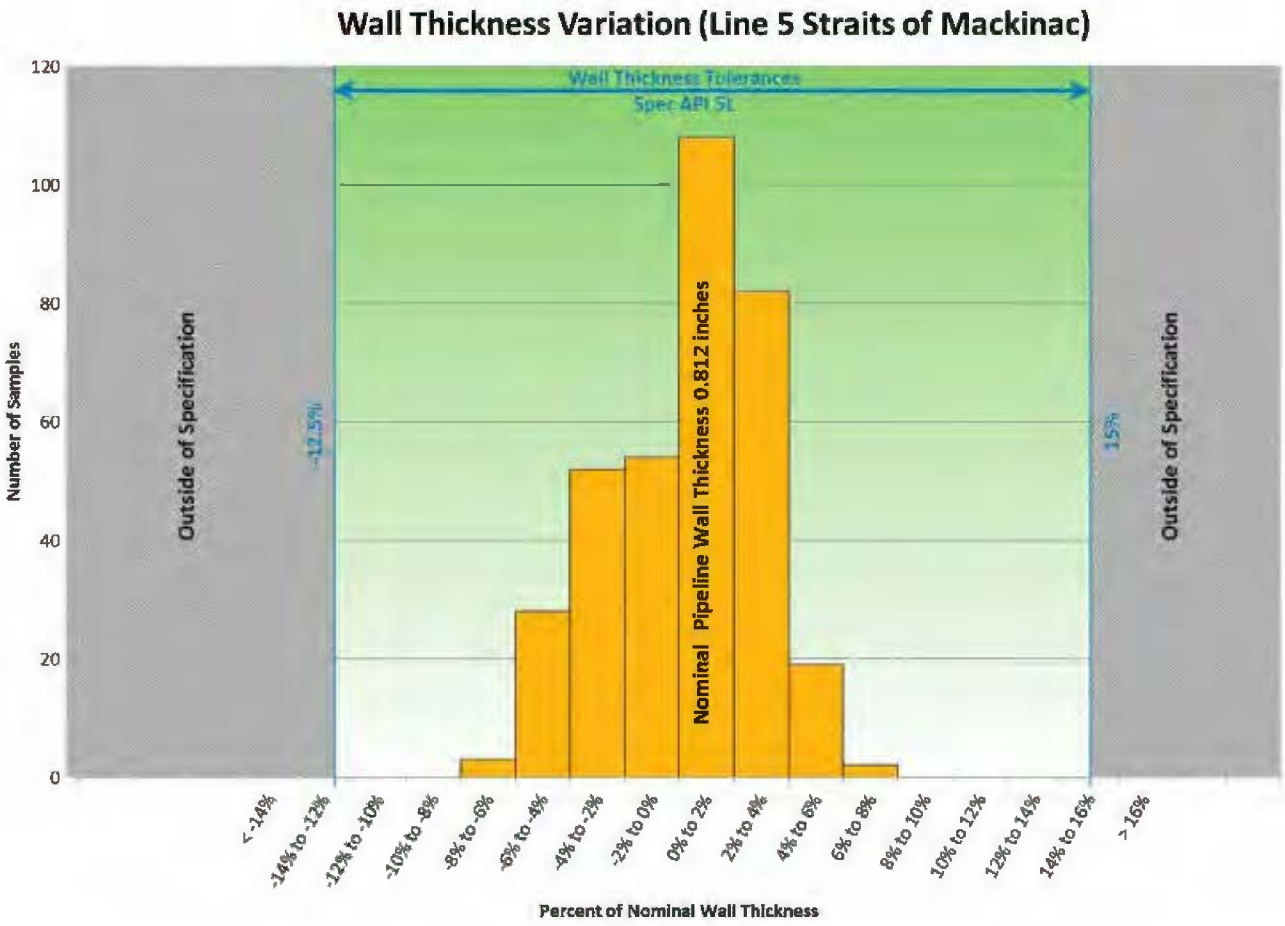


Figure 2: Pipe wall thickness distribution at coating repair locations.

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Appendix A – Anchor Inspection Work Plan

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Re: Line 5 Dual Pipelines at the Straits of Mackinac and Enbridge Response to Request Letter dated September 1, 2017 – Requested Action 2

Dear Attorney General Schuette, Director Grether and Director Creagh:

This letter responds to Requested Action 2 that is specified in your letter dated September 1, 2017. Please find enclosed for the State's review and approval, a copy of Enbridge's "Coating Inspection in the Vicinity of Installed Pipeline Anchors Work Plan," including appendices. The Work Plan sets forth, in accordance with your September 1 letter, procedures to inspect each area on the Line 5 Dual Pipelines crossing of the Straits where a pipeline anchor has been installed to determine whether and to what extent the external coating has been damaged, including a schedule for implementation.

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Enbridge has the personnel and resources available to begin the coating inspections immediately and plans are in place to commence the work in light of the lateness of the work season in the Straits. We look forward to the State's approval of the Work Plan.

Please notify us if you have any comments or questions regarding the Work Plan.

Sincerely,

ENBRIDGE ENERGY, LIMITED PARTNERSHIP
By Enbridge Pipelines (Lakehead) L.L.C.
Its General Partner

Bradley F. Shamla
Vice President, U.S. Operations

cc: Valerie Brader, Executive Director, Michigan Agency for Energy

Enclosure

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Enbridge Line 5

Straits of Mackinac, MI

Coating Inspection in the Vicinity of Installed Pipeline Anchors Work Plan

Enbridge Energy, Limited Partnership

Submitted: September 15, 2017

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Table 1: Anchor Locations (Inspection Project Scope)

APPENDICES

Appendix A. Video Inspection Report Form

Appendix B. Diver Inspection Report Form

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LIST OF ACRONYMS

CP	Cathodic Protection
CPDM	Cathodic Protection Data Management
CSE	Copper Sulphate Electrode
DFT	Dry Film Thickness
Enbridge	Enbridge Energy, Limited Partnership
mV	Millivolt
ROV	Remote Controlled Vehicle
USEPA	United States Environmental Protection Agency

DEFINTIONS

Area(s) of Interest

An Area of Interest is a part of the pipeline where, based on visual inspection, (i) the normal (local) Biota is unexpectedly absent or (ii) there is evidence of possible coating damage (e.g., Dislodged Coating and/or potential Holiday). Disturbed Areas (see definition below) are not Areas of Interest as the lack of Biota can be attributed to past maintenance and monitoring activities.

Biota

Animals and plants living around and on the pipelines through the Straits (e.g. mussels, periphyton, algae, microbes).

Dislodged Coating

An area on the pipeline where, based on visual inspection, the outer wrap of the coating appears to have been dislodged or removed without exposure of the pipe steel.

Disturbed Area

An area on the pipeline where past maintenance and monitoring activities resulted in the removal of Biota but does not represent damage to the pipe coating.

Holidays

An area on the pipeline where there is a discontinuity in the coating that exposes the pipe steel to the environment.

Undisturbed Area

An area on the pipeline where there is no evidence of any loss of Biota (or pipe coating).

1.0 Introduction

Pursuant to the September 1, 2017 letter from the State of Michigan ("September 1 Letter"), Enbridge has prepared this "Coating Inspection in the Vicinity of Pipeline Anchors - Work Plan". Enbridge anticipates the information obtained from this investigation will complement the information gathered during integrity monitoring activities already being undertaken by Enbridge.

The federal consent decree (Case 1:16-cv-00914, ECF No. 14 entered May 23, 2017),) entered between Enbridge Energy, Limited Partnership (Enbridge) and the United States requires that Enbridge initiate a detailed investigation into the potential for marine organisms to impact the integrity of the two 20-inch diameter pipelines ("Dual Pipelines") that span the Straits of Mackinac ("Straits") and form part of Enbridge's' Lakehead System Line 5 pipeline ("Line 5"). That investigation is detailed in Enbridge's Biota Investigation Work Plan (BI Work Plan), which was prepared for and, in June 2017, approved by the United States Environmental Protection Agency ("USEPA").

The BI Work Plan identified eighteen (18) Areas of Interest for investigation, as well as three additional sites for coating damage investigation. As Enbridge previously advised the State, one of these additional sites (WAS-1 in Span W-68A) was coincident with an area of the west pipeline where a pipe support anchor was installed in 2014. Dive inspection at this site confirmed four small areas of coating loss (with a total area of 0.38 square feet). Electrical measurements indicated high levels of cathodic protection, and no external metal loss was observed.

In the September 1 Letter, the State makes note of the fact that at least one of the investigated sites with a coating gap was adjacent to an area where a screw anchor had been installed. The State expresses concern as to whether the methods used for installation of such anchors might have resulted in damage to the coating of the pipeline. The State has thus requested that Enbridge submit a plan, subject to approval by the State, for an investigation of anchor sites. This Work Plan is intended to fulfill that requirement.

2.0 Michigan AG Requested Actions

The September 1 Letter requests that Enbridge undertake the following Requested Actions:

1. Within 7 days from the date of this letter, provide the State with an interim report describing each location where damage to the external coating has been observed, the extent and nature of the damage, and any available documentation, including, without limitation, photographs and videos.

2. Within 14 days from the date of this letter, provide the State with a plan to inspect each area on the pipeline where a pipeline anchor was installed to determine whether and to what extent the external coating has been damaged. The plan should include an implementation schedule and is subject to approval by the State.

3. Within 21 days from the date of this letter, provide the State with a plan detailing the materials, methods and procedures Enbridge will used to repair all areas where damage to the external coating is identified. The plan should include an implementation schedule and is subject to approval by the state. We expect that the Schedule would provide for completion of repairs in the identified areas as soon as possible, and in any event within the same construction season during which they are identified."

Enbridge responded to Requested Action no. 1 in a letter to the State dated September 8, 2017. This Work Plan is submitted in response to Requested Action no. 2. Enbridge intends to separately respond to Requested Action no. 3.

3.0 Details of Inspection Plan

Since 2002, Enbridge has installed 128 pipe support anchors on the Dual Pipelines. Table 1 provides a listing, GPS coordinates, and the depth of all anchors that have been installed, which will be inspected as part of this Inspection Plan.

3.1 ROV Examination

A ROV will be deployed to record detailed video on both sides of each of the Dual Pipelines for a span of 20 feet on each side of the target anchor. The video log will be documented to show the direction of the ROV (North or South). The first pass will be conducted on the east or west side of each pipeline based on existing water currents at the time of the inspection – the first pass will be completed in a manner that minimizes interference by suspended sediment that may be stirred up by the ROV's propulsion systems.

A second pass with the ROV will be completed on the opposite side of each pipeline.

The swimming velocity of the ROV will be maintained at a sufficiently low rate to enable detailed inspection by the operator; and the visual image of the pipe should be maintained at approximately 30% of the video field of view unless close-up imaging is required.

In the event that areas of interest, holidays or deposits are found, the ROV and camera system will be carefully navigated to record the nature of the feature. The ROV operator will document these inspections on the ROV Inspection Form for L5 Straits of Mackinac ("ROV Inspection Form"), which is enclosed as Appendix A.

In the event that water currents or general turbidity in the water preclude good quality inspection, the same shall be noted on the ROV Inspection Form. In these cases, a more extensive dive examination will be conducted, in accordance with the diver examination measures described below in Section 3.2.

3.2 Diver Examination

Following the completion and analysis of the video inspections recorded by the ROV, a diver will be deployed to each anchor to conduct a detailed manual examination of the pipe support anchor and adjacent pipe coating. This inspection will span approximately six (6) feet axially

on both sides of the pipe support anchor, for a total inspection of approximately 12 feet. In cases where the previous ROV examination produced insufficiently good quality images for video analysis, the diver examination will include an additional 14 axial feet of inspection on each side of the anchor (extending the full 20 feet of the ROV inspection scope)[1].

The diver will first manually remove biota from the pipe (+/- 6 feet of the anchor location only) and will communicate observations to the dive-supervisor onboard the support boat/barge. The general and detailed observations will be recorded on the Diver Inspection Form for L5 Straits of Mackinac ("Diver Inspection Form", which is enclosed as Appendix B).

The Diver Inspection Form will include detailed documentation of locations that are found to be disturbed areas, dislodged areas, coating holidays, or contain deposits. Location data shall include the feature classification (e.g., dislodged coating, coating holiday, deposits, if any), the circumferential orientation of the feature (o'clock position), size of the feature, and approximate distance of the feature from the pipe support anchor. Feature classification and location data shall be recorded for all features observed within the span of the diver inspection.

3.2.1 Coating Thickness Measurements

In the absence of any features in the coating at a pipe support anchor location, the diver shall record at least two representative coating thickness readings within six (6) feet on each side of the anchor (a total of four (4) readings).

In the presence of: (i) disturbed areas, (ii) dislodged areas, (iii) coating holidays, and/or (iv) deposits, coating thickness measurements will be obtained from at least one (1) representative location within each feature area. Larger features may have two (2) to three (3) readings obtained depending on feature size. For comparison to intact coating, adjacent coating thickness measurements will also be obtained from four (4) locations surrounding the feature within two (2) inches of the feature, and a second set of adjacent four (4) coating thickness measurements will be obtained approximately 12 inches outside the feature of interest.

[1] This additional diver inspection does not require removal of biota unless missing coating is observed.

3.2.2 CP Potential Measurements

The Polatrak Cathodic Protection (CP) gun will be employed to record CP potentials. The resulting data will be used to establish the existence of bare metal on the pipelines. CP measurements will be obtained from areas of obvious bare metal, suspected holidays (with Dry Film Thickness (DFT) thickness less than the minimum resolvable measurement of the DFT gauge), as well as through any deposits that have formed on the pipe wall regardless of indicated DFT measurement. Because the CP gun's angled probe is designed to penetrate thin film coatings, firm continuous pressure is to be applied at bare metal, suspected holidays, and deposits by the diver. Sharp impact or excessive pressure shall not be applied by the diver, as this would damage intact pipe coating.

3.2.3 Deposit Removal

Where white calcareous deposits are encountered, the diver will use a non-metallic scraper to remove the deposit to expose the pipe surface underneath.

The surface of the pipe will be cleaned and any exposed steel shall be visually assessed to determine the amount of bare steel expressed as a percentage of the original white deposit covered area. In the divers/ROV operators opinion, the percentage of exposed area will be evaluated and recorded with maximum precision of 10% area (i.e., 0, 10, 20, ...90, 100).

If bare metal is visually confirmed, then the Polatrack CP gun shall be used to re-record cathodic protection measurements (per section 3.2.2) from the same approximate locations as originally recorded.

3.2.4 Criteria for Establishing Coating Defects

Enbridge's Dual Pipelines through the Straights were designed with: (i) a corrosion preventing enamel coating system, which is intended to isolate the pipeline from the lake water; and (ii) a fibre reinforced outer wrap, which is intended to prevent damage to the protective enamel coating during pipeline installation. Areas of damaged or missing outer wrap that have been confirmed by residual thickness measurements greater than 40 mils do not constitute a repairable coating defect.

A coating holiday (area of exposed metal) can only be established by clear visual evidence of bare metal (alone), or coating thickness measurements less than 25 mils in conjunction with CP potentials that are more electronegative than -600mV CSE.

The divers that will be used on this project must be Operator Qualified (OQ) certified for CP readings. Data collected during this investigation will be evaluated by one of Enbridge's NACE Accredited CP Specialists prior to incorporation into Enbridge's Cathodic Protection Data Management (CPDM) system.

4.0 Quality Assurance/Quality Control

Quality assurance/quality control measures will be implemented to ensure the integrity of samples and measurements that are generated as a result of actions required under this Work Plan. Such measures shall include, but not be limited to:

- Project organization: the Project Manager, subcontractors, and all parties taking part in this effort will be identified and their roles will be articulated prior to commencing efforts. Planning and coordination calls and/or meetings will take place with divers, members of the integrity team, biologists, etc., to ensure the proper execution of sampling and data collection protocol.
- All instruments will be calibrated prior to and throughout their use according to manufacturer recommendations.
- Video photography and audio communication (between divers and personnel on boats) will be utilized to ensure proper documentation of conditions and sampling requirements.
- Documentation and records: field notes, laboratory reports, etc., will be compiled and saved at secure locations in hard copy and/or electronic format.
- Data validation: Data generated through the course of these efforts will be routinely evaluated for accuracy, precision, representativeness, and completeness.
- Reporting: Reports and project deliverables will be edited, reviewed, and finalized prior to submittal. A final report detailing the findings will be provided to the State after completion of the anchor coating inspections and assessment of the data.

5.0 Implementation Schedule

Enbridge will implement this Work Plan in accordance with the schedule set forth below. This Plan is also highly dependent on weather conditions allowing safe access to perform the work. Logistical requirements and seasonal limitations may necessitate completing some of the anchor inspection efforts in 2018.

- September 14, 2017: Commence ROV inspections
- October 1, 2017: Commence Diver inspections
- November 30, 2017: Anticipated end of safe seasonal access
- May, 2018: Anticipated earliest seasonal access if dive inspections cannot be fully completed in 2017.

TABLES

Table 1: Anchor Locations

Line 5 Straits Pipeline - East			
Anchor Indentification	Water Depth (ft)	Latitude	Longitude
E-1	73	REDACTED	[redacted]
E-2	74		
E-3	73		
E-4	74		
E-5	75		
E-6	83		
E-7	88		
E-8	88		
E-9	87		
E-10	86		
E-11	86		
E-12	80		
E-13	78		
E-14	82		
E-15	81		
E-16	91		
E-17	95		
E-18	97		
E-19	99		
E-20	101		
E-21	107		
E-22	107		
E-23	107		
E-24	106		
E-25	103		
E-26	105		
E-27	104		
E-28	114		
E-29	116		
E-30	117		
E-31	124		
E-32	127		
E-33	131		
E-34	136		
E-35	139		
E-36	142		
E-37	143		
E-38	148		
E-39	148		
E-40	151		
E-41	150		
E-42	145		
E-43	133		
E-44	139		
E-45	143		
E-46	147		
E-47	195		
E-48	219		
E-49	227		
E-50	230		
E-51	233		
E-52	231		
E-53	229		
E-54	228		
E-55	224		
E-56	220		
E-57	221		
E-58	221		
E-59	220		
E-60	220		
E-61	215		
E-62	209		
E-63	188		
E-64	179		
E-65	169		
E-66	160		
E-67	69		

Line 5 Straits Pipeline - West			
Anchor Indentification	Water Depth (ft)	Latitude	Longitude
W-1	78	REDACTED	[redacted]
W-2	78		
W-3	76		
W-4	75		
W-5	73		
W-6	91		
W-7	93		
W-8	109		
W-9	116		
W-10	120		
W-11	123		
W-12	126		
W-13	127		
W-14	136		
W-15	138		
W-16	137		
W-17	137		
W-18	138		
W-19	137		
W-20	136		
W-21	133		
W-22	130		
W-23	128		
W-24	124		
W-25	125		
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W-43	245		
W-44	249		
W-45	235		
W-46	233		
W-47	224		
W-48	224		
W-49	222		
W-50	222		
W-51	215		
W-52	210		
W-53	193		
W-54	163		
W-55	158		
W-56	135		
W-57	81		
W-58	77		
W-59	76		
W-60	76		
W-61	75		

APPENDICES

Appendix A – Video Inspection Report Form

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:		Contractor:	
AFE / W.O.#:		ROV Operator:	
Pipe Support Anchor:		Water Depth (ft):	
Longitude:		Latitude:	

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	Video Log (start/end)	Video Reference (hh:mm:ss)

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
		☐ Area of Interest ☐ Holiday (bare metal) ☐ Deposit ☐ Other	
		☐ Area of Interest ☐ Holiday (bare metal) ☐ Deposit ☐ Other	
		☐ Area of Interest ☐ Holiday (bare metal) ☐ Deposit ☐ Other	
		☐ Area of Interest ☐ Holiday (bare metal) ☐ Deposit ☐ Other	
		☐ Area of Interest ☐ Holiday (bare metal) ☐ Deposit ☐ Other	
		☐ Area of Interest ☐ Holiday (bare metal) ☐ Deposit ☐ Other	
		☐ Area of Interest ☐ Holiday (bare metal) ☐ Deposit ☐ Other	
		☐ Area of Interest ☐ Holiday (bare metal) ☐ Deposit ☐ Other	
		☐ Area of Interest ☐ Holiday (bare metal) ☐ Deposit ☐ Other	
		☐ Area of Interest ☐ Holiday (bare metal) ☐ Deposit ☐ Other	
		☐ Area of Interest ☐ Holiday (bare metal) ☐ Deposit ☐ Other	
		☐ Area of Interest ☐ Holiday (bare metal) ☐ Deposit ☐ Other	
		☐ Area of Interest ☐ Holiday (bare metal) ☐ Deposit ☐ Other	
		☐ Area of Interest ☐ Holiday (bare metal) ☐ Deposit ☐ Other	
Dislodged coating observed on the lake floor: ☐YES ☐NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion	
Contractor Signature	Date

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

South End of Affected and Non-Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
Date:		Frame(HH:MM:SS)		Date:		Frame(HH:MM:SS)	
Comments:							

Overall South Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
Date:		Frame(HH:MM:SS)		Date:		Frame(HH:MM:SS)	
Comments:							

Anchor

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.

Date:		Frame(HH:MM:SS)		Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.

Date:		Frame(HH:MM:SS)		Date:		Frame(HH:MM:SS)	

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Date:		Frame(HH:MM:SS)		Date:		Frame(HH:MM:SS)	
Comments:							

North End of Affected and Non-Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.

Date:		Frame(HH:MM:SS)		Date:		Frame(HH:MM:SS)	
Comments:							

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Date:		Frame(HH:MM:SS)		Date:		Frame(HH:MM:SS)	

Feature #2							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
Date:		Frame(HH:MM:SS)		Date:		Frame(HH:MM:SS)	

Feature #3
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Date:		Frame(HH:MM:SS)		Date:		Frame(HH:MM:SS)	

Feature #4							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
Date:		Frame(HH:MM:SS)		Date:		Frame(HH:MM:SS)	

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Appendix B – Diver Coating Inspection Report Form

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

General Information			
Date:		Diver:	
AFE / W.O.#:		Company Rep / Inspector:	
Pipe Support Anchor:		Water Depth (ft):	
Longitude:		Latitude:	

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)			**Biota present:**	☐YES ☐ NO	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☐NO	Lake floor location wrt pipe:	

Comments/Issues/Discussion		
	Contractor Signature	Enbridge Representative/ Inspector Signature

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	Product:	211 Coating Thickness Gauge
Last Calibrated:	08/09/2017	Next Calibration Due:	08/09/2018
Gauge verified prior to use:	☒YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	Coating Thickness (mil)	Distance from Anchor (ft)	Location on Pipe (o'clock)
North of Anchor #1			
North of Anchor #2			
South of Anchor #1			
South of Anchor #2			
Average Thickness			

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # __)[1]					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)		**DFT Adjacent to Feature (mil)** (~2" away from edge)		**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	
Provide 1 to 2 photos of feature, below: *Included the date and time stamps associated with video surveillance.*					
Date:		Frame(HH:MM:SS)		Date:	Frame(HH:MM:SS)

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

[1] Copy this page for each feature identified in the preceding page table.

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Appendix B – AIWP ROV and Diver Inspection Forms

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-14-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-1 (E-74A / E-74B South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Traveling S/N	**4:41**	**13:03:26**
	Inspect East, Top, and West of Pipe	**23:11**	**13:22:00**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	12:00 on Pipe, Below Anchor	☐ Area of Interest ☐Holiday (bare metal) ☒ Deposit ☐Other	Time: 1:07:48pm Video: 8:51
2	12:00 on Pipe, 10' North of anchor	☐ Area of Interest ☐Holiday (bare metal) ☒ Deposit ☐Other	Time: 1:18::35pm Video: 19:38
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully suspended

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Feature 1: Potential deposit located at 12:00 on pipe, directly below anchor installation. Feature 2: Potential deposit located at 12:00 on pipe, approx. 10' North of Anchor

	12/12/2017
Contractor Signature	**Date**

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-14-17	Frame(HH:MM:SS)	1:03:59	Date:		Frame(HH:MM:SS)	

South End of Affected and Non-Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-14-17	Frame(HH:MM:SS)	13:03:55	Date:		Frame(HH:MM:SS)	

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ROV Inspection Form for L5 Straits of Mackinac

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-14-17	Frame(HH:MM:SS)	13:12:00	Date:	9-14-17	Frame(HH:MM:SS)	13:13:30

Feature #2

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-14-17	Frame(HH:MM:SS)	13:18:35	Date:	9-14-17	Frame(HH:MM:SS)	13:18:45

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-14-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-2 (E-74B South/E-74B North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Traveling South/North	**24:16**	**13:23:13**
		36:46	**13:35:34**
	Video accidentally stopped then started new video	**0:00**	**13:35:35**
		5:27	**13:41:13**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	11:00 position on pipe, approx. 10' North of Anchor	☐ Area of Interest ☐Holiday (bare metal) ☒ Deposit ☐Other	13:35:26 Video: 36:28
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Partially Buried

Comments/Issues/Discussion

Feature 1: Potential deposit located at approximately 11:00 position on pipe and 10' North of Anchor.

	12/12/2017
Contractor Signature	**Date**

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

[redacted]

Overall South Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-14-17	Frame(HH:MM:SS)	13:23:13	Date:		Frame(HH:MM:SS)	
Comments:							

Overall North Affected Area
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac



Date:	9-14-17	Frame(HH:MM:SS)	13:38:58	Date:		Frame(HH:MM:SS)	

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:		Frame(HH:MM:SS)		Date:		Frame(HH:MM:SS)	

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-14-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-3 (E-74B North / E-74C)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	ROV inspecting South to North	**6:22**	**13:42:09**
		20:00	**13:55:48**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully Suspended

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
No Holidays, Areas of Interest, or any other unusual conditions observed around this anchor.

	12/12/2017
Contractor Signature	**Date**

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-14-17	Frame(HH:MM:SS)	13:46:27	Date:		Frame(HH:MM:SS)	

Anchor							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-14-17	Frame(HH:MM:SS)	13:42:12	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-14-17	Frame(HH:MM:SS)	13:52:25	Date:		Frame(HH:MM:SS)	

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09-14-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-4 (E-71 / E71B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted] N

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect from South to North	**24:57**	**14:00:43**
		40:46	**14:16:33**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or other unusual characteristics observed around this anchor

	12/12/17
Contractor Signature	**Date**

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-14-17	Frame(HH:MM:SS)	14:04:08	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-14-17	Frame(HH:MM:SS)	14:01:56	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-14-17	Frame(HH:MM:SS)	14:11:29	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-14-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-5 (E-71B / E72)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	Video Log (start/end)	Video Reference (hh:mm:ss)
	Inspect from South to North	**41:20**	**14:17:06**
		59:45	**14:35:32**

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
1	12:00 on Pipe, approx. 5' south of anchor	☐ Area of Interest ☐Holiday (bare metal) ☒ Deposit ☐Other	
2	9:00 on pipe, approx.. 5' North of anchor	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
3	9:00 on pipe, approx. 10' north of anchor	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☒YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully Suspended

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Feature 1: Potential deposit lies at the 12:00 position on pipe, approx. 5' south of anchor. Feature 2: Possible dislodged coating at the 9:00 position on pipe, approx. 5' north of anchor. Feature 3: Possible dislodged coating at the 9:00 position on pipe, approx. 10' north of anchor.

	12/12/2017
Contractor Signature	**Date**

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-14-17	Frame(HH:MM:SS)	14:20:44	Date:		Frame(HH:MM:SS)	
Comments:							

Anchor							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-14-17	Frame(HH:MM:SS)	14:21:47	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-14-17	Frame(HH:MM:SS)	14:28:26	Date:		Frame(HH:MM:SS)	

Comments:

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-14-17	Frame(HH:MM:SS)	14:22:40	Date:	9-14-17	Frame(HH:MM:SS)	14:22:16

Feature #2

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-14-17	Frame(HH:MM:SS)	14:31:17	Date:	9-14-17	Frame(HH:MM:SS)	14:30:46

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ROV Inspection Form for L5 Straits of Mackinac

Feature #3

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.





Date:	9-14-17	Frame(HH:MM:SS)	14:33:11	Date:	9-14-17	Frame(HH:MM:SS)	14:30:07

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-18-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-6 (E-25A / E-25B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 1 – 0:09:30**	**9:19:02**
		Video 1 – 0:34:43	**9:44:15**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, area's of interest, or any other unusual characteristics observed around this anchor.

	12/12/2017
Contractor Signature	**Date**

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

[redacted]

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-18-17	Frame(HH:MM:SS)	9:23:42	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-18-17	Frame(HH:MM:SS)	9:25:21	Date:		Frame(HH:MM:SS)	

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Comments:

Overall North Affected Area
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-18-17	Frame(HH:MM:SS)	9:39:09	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-18-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-7 (E-23A South / E-23A North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 2 – 0:06:02**	**9:52:45**
		Video 2 – 0:39:36	**10:25:09**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	5' South, Top of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	9:58:04
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully suspended

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Feature 1 – Potential Deposit. 5' south of anchor, top of pipe. Approx. 2-3" in size. Video Reference: Video 2 – 00:11:21 Time: 9:58:04

	12/12/2017
Contractor Signature	**Date**

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ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-18-17	Frame(HH:MM:SS)	9:53:22	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:		Frame(HH:MM:SS)		Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.





Date:	9-18-17	Frame(HH:MM:SS)	10:07:23	Date:	9-18-17	Frame(HH:MM:SS)	10:25:06

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-18-17	Frame(HH:MM:SS)	9:58:48	Date:	9-18-17	Frame(HH:MM:SS)	9:59:26

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-18-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-8 (E-23A North – E23B South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 2 – 0:40:56**	**10:26:30**
		Video 2 – 1:01:59	**10:47:32**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully suspended

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
There were no holidays, area's of interest, or other unusual characteristics observed at this anchor.

	12/12/2017
Contractor Signature	**Date**

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ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-18-17	Frame(HH:MM:SS)	10:27:49	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-18-17	Frame(HH:MM:SS)	10:27:24	Date:		Frame(HH:MM:SS)	

Comments:

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Overall North Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-18-17	Frame(HH:MM:SS)	10:39:14	Date:		Frame(HH:MM:SS)	
Comments:							

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-18-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-9 (E-23B South / E-23B North	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 2 – 1:05:04**	**10:50:37**
		Video 2 – 1:29:52	**11:15:25**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully suspended

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
There were no holidays, areas of interest, or unusual characteristics observed at this anchor.

	12/12/2017
Contractor Signature	**Date**

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ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	10:51:44	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-18-17	Frame(HH:MM:SS)	10:51:26	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-18-17	Frame(HH:MM:SS)	11:14:44	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-18-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-10 (E-28A South – E28A North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 3 – 0:03:56**	**11:39:41**
		Video 3 – 0:34:35	**12:10:20**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	0-10'south, top half of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	11:44:16
2	0-10' north, top half of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	11:53:59
3	1' North, top of pipe	☐ Area of Interest ☐Holiday (bare metal) ☒ Deposit ☐Other	11:59:32
4	10' North, top of pipe	☐ Area of Interest ☐Holiday (bare metal) ☒ Deposit ☐Other	12:01:30
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully Suspended

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion

Feature 1: Possible dislodged coating on South side of anchor. 0-10' south of anchor from 9 to 3o'clock position on pipe(top of pipe)
Video Reference: Video 3 – 0:08:31 Time: 11:44:16

Feature 2: Possible dislodged coating on North side of anchor. 0-10' North of anchor from 9 to 4o'clock position on pipe (top and east side of pipe)
Video Reference: Video 3 – 0:18:11 Time: 11:53:59

Feature 3: Potential deposit. 1' North of Anchor, at 12 o'clock position. 2 or 3 spots, each approx. 1"-2" diameter.
Video Reference: Video 3 – 0:23:47 Time: 11:59:32

Feature 4: Potential deposit. 10' North of anchor, at 12 o'clock position. Approx. 1-2" in diameter.
Video Reference: Video 3 – 0:25:44 Time: 12:01:30

	12/12/2017
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-18-17	Frame(HH:MM:SS)	11:40:44	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-18-17	Frame(HH:MM:SS)	11:43:25	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-18-17	Frame(HH:MM:SS)	12:11:01	Date:	9-18-17	Frame(HH:MM:SS)	12:09:59

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Feature #1							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-18-17	Frame(HH:MM:SS)	11:44:16	Date:		Frame(HH:MM:SS)	

Feature #2							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-18-17	Frame(HH:MM:SS)	11:59:27	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Feature #3

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-18-17	Frame(HH:MM:SS)	11:59:46	Date:	9-18-17	Frame(HH:MM:SS)	12:00:01

Feature #4

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-18-17	Frame(HH:MM:SS)	12:03:41	Date:	9-18-17	Frame(HH:MM:SS)	12:01:22

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-18-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-11 (E-28A North / E28B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 3 – 0:36:52**	**12:12:38**
		Video 3 – 0:57:58	**12:33:43**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully Suspended

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/12/2017
Contractor Signature	**Date**

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-18-17	Frame(HH:MM:SS)	12:14:04	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-18-17	Frame(HH:MM:SS)	12:13:36	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-18-17	Frame(HH:MM:SS)	12:24:18	Date:	9-18-17	Frame(HH:MM:SS)	12:27:41

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-18-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-12 (E-30A / E-30B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 3 – 1:07:01**	**12:42:47**
		Video 3 – 1:29:34	**13:05:20**

ROV Visual Inspection Results

Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	25' South, top and east side	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	12:44:02
2	20' South, top and west	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	12:53:04
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully Suspended

Comments/Issues/Discussion

Feature 1: Possible dislodged coating. Approx. 25' south of anchor at east and top of pipe.
Video Reference: Video 3 – 1:08:10 Time: 12:44:02

Fature 2: Possible dislodged coating. Approx. 20' south of anchor at top and west of pipe.
Video Reference: Video 3 – 1:17:18 Time: 12:53:04

	12/12/2017
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-18-17	Frame(HH:MM:SS)	12:46:43	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-18-17	Frame(HH:MM:SS)	12:51:03	Date:	9-18-17	Frame(HH:MM:SS)	13:04:59

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

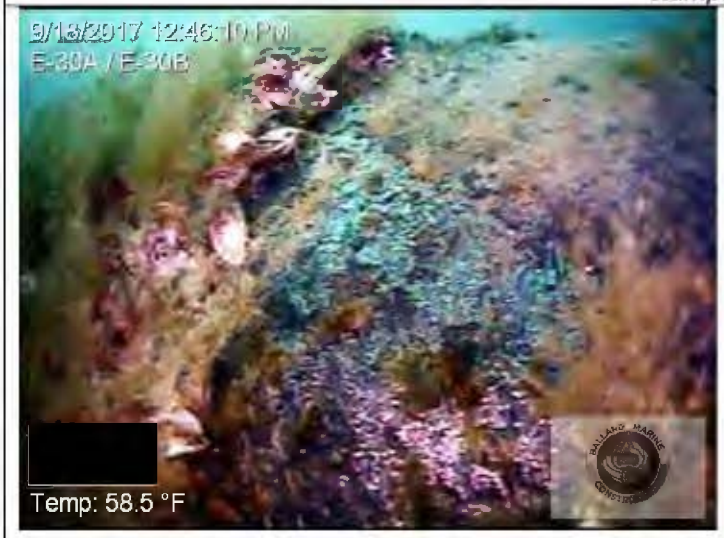
Overall North Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-18-17	Frame(HH:MM:SS)	12:56:54	Date:		Frame(HH:MM:SS)	
Comments:							

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-18-17	Frame(HH:MM:SS)	12:46:10	Date:	9-18-17	Frame(HH:MM:SS)	12:46:16

Feature #2

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-18-17	Frame(HH:MM:SS)	12:53:15	Date:		Frame(HH:MM:SS)	

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ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-18-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-13 (E-35A / E35B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 4 – 0:02:51**	**13:15:15**
		Video 4 – 0:28:50	**13:41:15**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	10-15' South, Top half of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	13:17:15
2	15' south, top of pipe	☐ Area of Interest ☐Holiday (bare metal) ☒ Deposit ☐Other	13:23:52
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully Suspended

Comments/Issues/Discussion

Feature 1: Possible dislodged coating. South side of anchor, starting approx 10' and continuing to 20' south. Various spots on top half of pipe.
Video Reference: Video 4 – 0:04:51 Time: 13:17:15

Feature 2: Potential deposit 15' south of anchor on top of pipe. Approx. 2"x2" in size.
Video Reference: Video 4 – 0:11:28 Time: 13:23:52

	12/12/2017
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-18-17	Frame(HH:MM:SS)	13:26:06	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-18-17	Frame(HH:MM:SS)	13:41:04	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-18-17	Frame(HH:MM:SS)	13:41:14	Date:	9-18-17	Frame(HH:MM:SS)	13:33:19

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Feature #1							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-18-17	Frame(HH:MM:SS)	13:17:13	Date:		Frame(HH:MM:SS)	

Feature #2							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-18-17	Frame(HH:MM:SS)	13:24:12	Date:	9-18-17	Frame(HH:MM:SS)	13:26:40

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/18/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-14 (E-34A / E-34B South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 5 – 0:02:04**	**15:08:03**
		Video 5 – 0:24:46	**15:30:45**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	10' south, east side	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	15:12:16
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully Suspended

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Feature 1: Possible dislodged coating, 10' south of anchor, east side, approx. 4:00 position Video Reference: Video 5 – 0:06:08 Time: 15:12:16

	12/12/2017
Contractor Signature	**Date**

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	15:15:01	Frame(HH:MM:SS)		Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-18-17	Frame(HH:MM:SS)	15:14:44	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-18-17	Frame(HH:MM:SS)	15:30:04	Date:	9-18-17	Frame(HH:MM:SS)	15:30:09

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Feature #1

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.





Date:	9-18-17	Frame(HH:MM:SS)	15:13:38	Date:	9-18-17	Frame(HH:MM:SS)	15:13:39

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/18/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-15 (E-34B South / E-34B North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 5 – 0:30:03**	**15:36:02**
		Video 5 – 0:53:01	**15:59:00**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	12" off botom

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
There were no holidays, areas of interest, or unusual charcteristics observed at this anchor.

	12/12/2017
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-18-17	Frame(HH:MM:SS)	15:36:54	Date:		Frame(HH:MM:SS)	

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-18-17	Frame(HH:MM:SS)	15:58:12	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/18/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-16 (E-32A-A / E-32A South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 5 – 0:58:23**	**16:04:21**
		Video 5 – 1:15:21	**16:21:20**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Partially Buried

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/12/2017
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-18-17	Frame(HH:MM:SS)	16:09:02	Date:	9-18-17	Frame(HH:MM:SS)	16:09:05

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-18-17	Frame(HH:MM:SS)	16:07:18	Date:		Frame(HH:MM:SS)	

Comments:

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.





Date:	9-18-17	Frame(HH:MM:SS)	16:14:51	Date:	9-18-17	Frame(HH:MM:SS)	16:15:00

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/18/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-17 (E-32A South / E32-A North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 5-1:15:59**	**16:22:11**
		Video 5-1:35:50	**16:41:51**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	10' south at east of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	16:26:46
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully Suspended

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Feature 1: Possible dislodged coating, no biota, 3" x 5", 10' south of anchor, East side of pipe

	12/12/2017
Contractor Signature	**Date**

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-18-17	Frame(HH:MM:SS)	16:24:15	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-18-17	Frame(HH:MM:SS)	16:27:49	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-18-17	Frame(HH:MM:SS)	16:34:43	Date:	9-18-17	Frame(HH:MM:SS)	16:37:19
Comments:							

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ROV Inspection Form for L5 Straits of Mackinac

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-18-17	Frame(HH:MM:SS)	16:26:04	Date:		Frame(HH:MM:SS)	

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/18/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-18 (E-32A North / E-32B South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 5 – 1:38:02**	**16:44:00**
		Video 5 – 1:53:31	**16:59:30**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully Suspended

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/12/2017
Contractor Signature	**Date**

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-18-17	Frame(HH:MM:SS)	16:47:40	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-18-17	Frame(HH:MM:SS)	16:58:55	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-18-17	Frame(HH:MM:SS)	16:53:34	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09-18-2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-19 (E-32B South / E-32B North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 5 - 1:56:04**	**17:02:03**
		Video 5 - 2:11:53	**17:17:51**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	6' south on west of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	17:06:00
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully Buried

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Feature 1: Area of Interest - 4" x 4" possible diagonal stripe marks on coating, no biota Video Reference: Video 5 – 2:00:01 Time: 17:06:00

	12/12/2017
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-18-17	Frame(HH:MM:SS)	17:03:27	Date:	9-18-17	Frame(HH:MM:SS)	17:03:37

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-18-17	Frame(HH:MM:SS)	17:10:51	Date:	9-18-17	Frame(HH:MM:SS)	17:10:54

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-18-17	Frame(HH:MM:SS)	17:17:14	Date:		Frame(HH:MM:SS)	
Comments:							

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ROV Inspection Form for L5 Straits of Mackinac

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-18-17	Frame(HH:MM:SS)	17:07:05	Date:	9-18-17	Frame(HH:MM:SS)	17:07:06

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/18/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-20 (E-39A / E-39B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 5 – 2:16:03**	**17:22:01**
		Video 5 – 2:33:36	**17:39:35**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	20' south, west side of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	17:28:00
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully Suspended

Comments/Issues/Discussion

Feature 1: Possible dislodged coating, 4"x4", 20' south of anchor on west side of pipe

	12/12/2017
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-18-17	Frame(HH:MM:SS)	17:24:27	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-18-17	Frame(HH:MM:SS)	17:33:09	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-18-17	Frame(HH:MM:SS)	17:34:27	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-18-17	Frame(HH:MM:SS)	17:28:02	Date:		Frame(HH:MM:SS)	

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-19-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-21 (E-40A / E-40B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 1 – 0:06:41**	**9:17:48**
		Video 1 – 0:25:27	**9:36:35**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully Suspended

Comments/Issues/Discussion

There were no holidays, areas on interest, or unusual characteristics observed around this anchor.

	12/12/2017
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-19-17	Frame(HH:MM:SS)	9:19:44	Date:	9-19-17	Frame(HH:MM:SS)	9:26:30

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	9:30:53	Date:		Frame(HH:MM:SS)	

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Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	9:36:15	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-19-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-22 (E-46 / E-45A)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	Video Log (start/end)	Video Reference (hh:mm:ss)
	Inspect South to North	**Video 1 – 0:34:53**	**9:46:00**
		Video 1 – 0:50:03	**10:01:10**

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully Suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/12/2017
Contractor Signature	**Date**

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	9:50:24	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-19-17	Frame(HH:MM:SS)	9:55:00	Date:	9-19-17	Frame(HH:MM:SS)	10:00:41

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	10:01:06	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-19-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-23 (E-45A / E-45B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 1 – 0:51:39**	**10:02:46**
		Video 1 – 1:09:46	**10:20:54**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	5' North, east top west sides	☒ Area of Interest ☐ Holiday (bare metal) ☐ Deposit ☐ Other	10:12:20
		☐ Area of Interest ☐ Holiday (bare metal) ☐ Deposit ☐ Other	
		☐ Area of Interest ☐ Holiday (bare metal) ☐ Deposit ☐ Other	
		☐ Area of Interest ☐ Holiday (bare metal) ☐ Deposit ☐ Other	
		☐ Area of Interest ☐ Holiday (bare metal) ☐ Deposit ☐ Other	
		☐ Area of Interest ☐ Holiday (bare metal) ☐ Deposit ☐ Other	
		☐ Area of Interest ☐ Holiday (bare metal) ☐ Deposit ☐ Other	
		☐ Area of Interest ☐ Holiday (bare metal) ☐ Deposit ☐ Other	
		☐ Area of Interest ☐ Holiday (bare metal) ☐ Deposit ☐ Other	
		☐ Area of Interest ☐ Holiday (bare metal) ☐ Deposit ☐ Other	
		☐ Area of Interest ☐ Holiday (bare metal) ☐ Deposit ☐ Other	
		☐ Area of Interest ☐ Holiday (bare metal) ☐ Deposit ☐ Other	
		☐ Area of Interest ☐ Holiday (bare metal) ☐ Deposit ☐ Other	
		☐ Area of Interest ☐ Holiday (bare metal) ☐ Deposit ☐ Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully Suspended

Comments/Issues/Discussion

Feature 1: Possible dislodged coating. 5' North of anchor on east, top, and west side
Video Reference: Video 1 – 1:01:14 Time: 10:12:21

	12/12/2017
Contractor Signature	**Date**

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-19-17	Frame(HH:MM:SS)	10:11:24	Date:		Frame(HH:MM:SS)	
Comments:							

Anchor							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-19-17	Frame(HH:MM:SS)	10:11:11	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	10:15:04	Date:		Frame(HH:MM:SS)	

Comments:

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-19-17	Frame(HH:MM:SS)	10:13:01	Date:	9-19-17	Frame(HH:MM:SS)	10:18:05

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-19-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-24 (E-42 South / E-42 North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 1 – 1:16:12**	**10:27:19**
		Video 1 – 1:41:27	**10:52:35**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully Suspended

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/12/2017
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	10:51:03	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	10:52:17	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	10:52:18	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-19-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-25 (E-47A / E-47B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 2 – 0:09:00**	**11:02:30**
		Video 2 – 0:22:20	**11:15:50**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully Suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/121/2017
Contractor Signature	**Date**

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	11:10:07	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-19-17	Frame(HH:MM:SS)	11:10:21	Date:	9-19-17	Frame(HH:MM:SS)	11:15:45

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	11:14:16	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-19-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-26 (E-48A / E-48B South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	Video Log (start/end)	Video Reference (hh:mm:ss)
	Inspect south to north	**Video 2 – 0:27:21**	**11:20:51**
		Video 2 – 0:39:54	**11:33:25**

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully Suspended

Comments/Issues/Discussion

**NOTE – Video was labeled incorrectly as E-48A / E-47B South. This was noted after completion of the inspection.

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/13/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	11:21:29	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-19-17	Frame(HH:MM:SS)	11:33:09	Date:	9-19-17	Frame(HH:MM:SS)	11:22:02

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	11:33:20	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-19-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-27 (E-48B South / E-48B North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 2 – 0:48:37**	**11:37:07**
		Video 2 – 0:59:36	**11:53:06**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fuly Suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/13/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	11:43:00	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	11:46:25	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	11:48:43	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-19-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-28 (E-66A South / E-66A North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect south to north	**Video 3 – 0:07:20**	**12:08:14**
		Video 3 – 0:20:34	**12:21:28**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully Suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/13/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

South End of Affected and Non-Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	12:12:04	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	12:18:06	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	12:18:02	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-19-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-29 (E-66A North / E-66B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 3 – 0:23:10**	**12:24:03**
		Video 3 – 0:36:26	**12:37:20**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully Suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/13/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	12:24:55	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-19-17	Frame(HH:MM:SS)	12:24:16	Date:	9-19-17	Frame(HH:MM:SS)	12:32:04

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	12:34:25	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-19-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-30 (E-56A / E-56B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	Video Log (start/end)	Video Reference (hh:mm:ss)
	Inspect South to north	**Video 3 – 0:44:48**	**12:45:42**
		Video 3 – 0:57:57	**12:58:50**

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully Suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/13/17
Contractor Signature	**Date**

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ROV Inspection Form for L5 Straits of Mackinac

South End of Affected and Non-Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	12:49:29	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-19-17	Frame(HH:MM:SS)	12:58:43	Date:	9-19-17	Frame(HH:MM:SS)	12:58:29

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-19-17	Frame(HH:MM:SS)	12:54:17	Date:		Frame(HH:MM:SS)	
Comments:							

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-19-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-31 (E-54A / E-54B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 3 – 1:03:25**	**13:04:18**
		Video 3 – 1:12:16	**13:13:10**

ROV Visual Inspection Results

Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully Suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/13/2017
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	13:08:14	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	13:13:10	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	13:16:37	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-19-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-32 (E-53A / E-53B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 4 – 0:01:46**	**13:58:33**
		Video 4 – 0:14:54	**14:11:41**

ROV Visual Inspection Results

Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully Suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/13/2017
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	14:02:20	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	14:08:18	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	14:08:24	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-19-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-33 (E-52A / E-52B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 4 – 0:23:11**	**14:20:00**
		Video 4 – 0:33:32	**14:30:20**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully Suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/13/17
Contractor Signature	**Date**

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	14:22:59	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	14:26:03	Date:		Frame(HH:MM:SS)	

Comments:

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-19-17	Frame(HH:MM:SS)	14:29:26	Date:		Frame(HH:MM:SS)	
Comments:							

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ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-19-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-34 (E-49C / E-49B South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 4 – 0:37:15**	**14:34:02**
		Video 4 – 0:49:13	**14:45:00**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

		metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully Suspended

Comments/Issues/Discussion

There were no holidays, areas of interests, or unusual characteristics observed around this anchor.

	12/13/17
Contractor Signature	**Date**

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

[redacted]

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	14:37:01	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	14:34:38	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	14:42:01	Date:		Frame(HH:MM:SS)	

Comments:

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ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-19-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-35 (E-49B South / E-49B North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect south to north	**Video 4 - 0:53:32**	**14:50:19**
		Video 4 – 1:11:13	**15:08:00**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully Suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor

	12/13/2017
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	14:53:53	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	14:59:29	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	15:04:01	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-19-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-36 (E-49B North / E-49A South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect south to north	**Video 4 – 1:12:48**	**15:09:35**
		Video 4 – 1:24:50	**15:21:37**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully Suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/13/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	15:12:48	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	15:16:04	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-19-17	Frame(HH:MM:SS)	15:18:31	Date:		Frame(HH:MM:SS)	
Comments:							

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-19-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-37 (E-49A South / E-49A North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 4 – 1:26:48**	**15:23:35**
		Video 4 – 1:41:04	**15:37:51**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully Suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed at this anchor.

	12/13/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-19-17	Frame(HH:MM:SS)	15:28:45	Date:	9-19-17	Frame(HH:MM:SS)	15:26:24

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	15:30:32	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-19-17	Frame(HH:MM:SS)	15:31:07	Date:		Frame(HH:MM:SS)	
Comments:							

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-19-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-38 (E-61A-A / E-61A)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 4 – 1:50:46**	**15:47:33**
		Video 4 – 2:08:24	**16:05:11**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully Suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

*Note: Hydrophone Location

	12/13/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	15:50:51	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	15:55:01	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-19-17	Frame(HH:MM:SS)	15:57:26	Date:	9-19-17	Frame(HH:MM:SS)	15:55:17
Comments:							

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-19-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-39 (E-61A / E-61B South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	Video Log (start/end)	Video Reference (hh:mm:ss)
	Inspect South to North	**Video 4 – 2:10:28**	**16:07:15**
		Video 4 – 2:23:18	**16:20:06**

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully Suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/13/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	16:13:54	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	16:09:54	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	16:16:54	Date:		Frame(HH:MM:SS)	

Comments:

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ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-19-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-40 (E-61B South / E-61B North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 4 – 2:25:41**	**16:22:28**
		Video 4 – 2:39:43	**16:36:30**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully Suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/13/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-19-17	Frame(HH:MM:SS)	16:24:58	Date:		Frame(HH:MM:SS)	
Comments:							

Anchor							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-19-17	Frame(HH:MM:SS)	16:25:02	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	16:32:02	Date:		Frame(HH:MM:SS)	

Comments:

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ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-19-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-41 (E-61B North / E-61C South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect south to north	**Video 4 – 2:42:14**	**16:39:01**
		Video 4 – 2:49:40	**16:49:40**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully Suspended

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/13/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	16:41:11	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	16:46:38	Date:		Frame(HH:MM:SS)	

Comments:

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-19-17	Frame(HH:MM:SS)	16:41:30	Date:		Frame(HH:MM:SS)	
Comments:							

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	9-19-17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-42 (E-61C South / E-61C North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 4 – 2:54:18**	**16:51:06**
		Video 5 – 0:03:18	**17:03:40**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully Suspended

Comments/Issues/Discussion

Note: Video 4 was accidentally stopped, however, Video 5 picks up immediately where Video 4 left off to finish inspection around this anchor.

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/13/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	16:53:48	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	16:53:58	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-19-17	Frame(HH:MM:SS)	17:00:45	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/20/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-43 (E-22A / E-22B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 1 – 00:08:20**	**08:57:55**
		Video 1 – 00:27:55	**09:17:30**

ROV Visual Inspection Results

Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	South of anchor, Top of pipe	☐ Area of Interest ☒Holiday (bare metal) ☐ Deposit ☐Other	09:02:16
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ROV Inspection Form for L5 Straits of Mackinac

		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully Suspended

Comments/Issues/Discussion

Feature 1: Bare metal. This location is identified as EAS-3 in the US-EPA's Biota Investigation Work Plan and was associated with 2017 commication cable rub. This area was repaired on October 1, 2017. Located 3" south of anchor at top of pipe; 11 to 1 o'clock position. Approx size 18"x 2'

Video Reference: Video 1 – 00:12:40 Time: 9:02:16

	12/14/17
Contractor Signature	**Date**

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	9:09:34	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	9:08:45	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	9:13:56	Date:		Frame(HH:MM:SS)	

Comments:

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





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ROV Inspection Form for L5 Straits of Mackinac

Date:	9-20-17	Frame(HH:MM:SS)	9:02:33	Date:	9-20-17	Frame(HH:MM:SS)	9:09:00

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/20/2017 09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-44 (E-19A South / E-19A North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 1 – 0:33:03**	**09:22:39 9/20/17**
		Video 1 – 0:40:00	**09:29:35 9/20/17**
		Video 1 – 0:00:06	**08:47:40 09/21/17**
		Video 1 – 0:08:04	**08:55:40 09/21/17**

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully Suspended

Comments/Issues/Discussion

Inspection was completed over two days.

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/13/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	9:26:59	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	8:55:33	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-21-17	Frame(HH:MM:SS)	8:52:05	Date:		Frame(HH:MM:SS)	
Comments:							

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-45 (E-19A North / E-19B South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 1 – 0:09:44**	**08:57:20**
		Video 1 – 0:23:35	**09:11:10**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully Suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/13/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	9:04:09	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	9:10:51	Date:		Frame(HH:MM:SS)	

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ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	9:07:54	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-46 (E -19B South / E-19B North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 1 – 0:25:35**	**09:13:11**
		Video 1 – 0:39:04	**09:26:40**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully Suspended

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
There were no holidays, areas of interest, or unusual characteristics observed at this anchor.

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	9:15:58	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	9:13:46	Date:		Frame(HH:MM:SS)	

Comments:

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-21-17	Frame(HH:MM:SS)	9:26:12	Date:		Frame(HH:MM:SS)	
Comments:							

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-47 (E-15A / E-15B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 1 – 0:46:30**	**09:34:06**
		Video 1 – 1:01:54	**09:49:30**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	8' south top of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	09:38:10
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully Suspended

Comments/Issues/Discussion

Feature 1: Potential dislodged coating. 8 to 10' south of anchor at top of pipe; approximately 11 o'clock to 3 o'clock x 2' wide
Video Reference: Video 1 - 0:50:34 Time: 9:38:10

Hydrophone Location

	12/13/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	9:36:39	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-21-17	Frame(HH:MM:SS)	9:53:29	Date:	9-21-17	Frame(HH:MM:SS)	9:46:44

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-21-17	Frame(HH:MM:SS)	9:46:34	Date:	9-21-17	Frame(HH:MM:SS)	9:46:40

Comments:

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-21-17	Frame(HH:MM:SS)	9:37:53	Date:	9-21-17	Frame(HH:MM:SS)	9:42:43

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-48 (E-08A / E-8B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 1 – 1:08:02**	**09:55:38**
		Video 1 – 1:22:04	**10:09:40**

ROV Visual Inspection Results

Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully Suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/13/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	9:56:48	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	9:58:48	Date:		Frame(HH:MM:SS)	

Comments:

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	9:58:52	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-49 (E-8B / E-08C/D South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 1 – 1:26:03**	**10:13:39**
		Video 1 – 1:36:47	**10:24:20**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully Suspended

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
There were no holidays, areas of interest, or other characteristics observed around this anchor.

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	10:18:47	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.





Date:	9-21-17	Frame(HH:MM:SS)	10:17:09	Date:	9-21-17	Frame(HH:MM:SS)	10:21:13

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.





Date:	9-21-17	Frame(HH:MM:SS)	10:24:14	Date:	9-21-17	Frame(HH:MM:SS)	10:21:11

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-50 (E-08C/D South / E-08C/D North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 1 – 1:38:29**	**10:26:05**
		Video 2 – 0:05:15	**10:38:38**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully Suspended

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
There were no Holidays, areas of interest, or other unusual characteristics observed at this anchor.

	12/13/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	10:29:08	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	10:31:55	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	10:38:32	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-51 (E-13A / E-13B South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 2 – 0:13:37**	**10:47:00**
		Video 2– 0:24:26	**10:57:50**

ROV Visual Inspection Results

Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed at this anchor.

	12/13/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

South End of Affected and Non-Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	10:49:41	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	10:52:58	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	10:55:02	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-52 (E-13B South / E-13B North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	Video Log (start/end)	Video Reference (hh:mm:ss)
	Inspect South to North	**Video 2 – 0:29:13**	**11:02:36**
		Video 2 – 0:39:07	**11:12:30**

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/13/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-21-17	Frame(HH:MM:SS)	11:05:14	Date:	9-21-17	Frame(HH:MM:SS)	11:08:14

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	11:12:15	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-21-17	Frame(HH:MM:SS)	11:12:28	Date:	9-21-17	Frame(HH:MM:SS)	11:10:07

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-53 (E-13B North / E-13C South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 2 – 0:40:59**	**11:14:22**
		Video 2 – 0:50:51	**11:24:15**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/13/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	11:16:46	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-21-17	Frame(HH:MM:SS)	11:16:41	Date:	9-21-17	Frame(HH:MM:SS)	11:23:41

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-21-17	Frame(HH:MM:SS)	11:21:50	Date:		Frame(HH:MM:SS)	
Comments:							

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-54 (E-13C South / E-13C North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 2 – 0:52:17**	**11:25:40**
		Video 2 – 1:03:15	**11:36:38**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/13/17
Contractor Signature	**Date**

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-21-17	Frame(HH:MM:SS)	11:28:01	Date:		Frame(HH:MM:SS)	
Comments:							

Anchor							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-21-17	Frame(HH:MM:SS)	11:28:04	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	11:34:03	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-55 (E-3A / E-3B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 2 – 1:08:01**	**11:41:24**
		Video 2 – 1:18:41	**11:52:05**

ROV Visual Inspection Results

Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed at this anchor.

	12/13/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	11:43:44	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-21-17	Frame(HH:MM:SS)	11:46:42	Date:	9-21-17	Frame(HH:MM:SS)	11:51:58

Comments:

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ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	11:48:31	Date:		Frame(HH:MM:SS)	

Comments:

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ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-56 (E-76A / E-76B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 2 – 1:22:11**	**11:54:35**
		Video 2 – 1:34:43	**12:08:06**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed at this anchor.

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	11:59:24	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	12:08:00	Date:		Frame(HH:MM:SS)	

Comments:

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	12:04:36	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-57 (E-02A South / E-02A North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 2 – 1:39:41**	**12:13:04**
		Video 2 – 1:54:31	**12:27:55**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	10' north on east of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	12:21:15
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

Feature 1 – Potential Deposit. 10' north of anchor, east side of pipe, 3 to 4 o'clock position. Size approximately 1''x 4".
Video Reference: Video 2 – 1:47:52 Time: 12:21:15

	12/14/17
Contractor Signature	**Date**

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	12:17:24	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-21-17	Frame(HH:MM:SS)	12:20:16	Date:	9-21-17	Frame(HH:MM:SS)	12:27:45

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	12:28:02	Date:		Frame(HH:MM:SS)	

Comments:

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-21-17	Frame(HH:MM:SS)	12:21:45	Date:	9-21-17	Frame(HH:MM:SS)	12:22:38

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ROV Inspection Form for L5 Straits of Mackinac

[redacted]

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-58 (E-02A North / E-02B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	Video Log (start/end)	Video Reference (hh:mm:ss)
	Inspect South to North	**Video 2 – 1:55:50**	**12:29:13**
		Video 2 – 2:08:37	**12:42:00**

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed at this anchor.

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	12:33:09	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	12:41:47	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	12:39:46	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-59 (E-01A South / E-01A North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	Video Log (start/end)	Video Reference (hh:mm:ss)
	Inspect South to North	**Video 2 – 2:10:13**	**12:43:36**
		Video 2 – 2:23:36	**12:57:00**

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed at this anchor.

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	12:46:42	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-21-17	Frame(HH:MM:SS)	12:56:52	Date:	9-21-17	Frame(HH:MM:SS)	12:56:53

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	12:53:45	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-60 (E-01A North / E-01B-A South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 2 – 2:26:21**	**12:59:44**
		Video 2 – 2:36:46	**13:10:10**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully suspended

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
There were no holidays, areas of interest, or unusual characteristics observed at this anchor.

[redacted]	12/14/17
Contractor Signature	**Date**

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ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	13:01:54	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	13:05:33	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	13:07:01	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-61 (E-01B-A South / E-01B-A North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	Video Log (start/end)	Video Reference (hh:mm:ss)
	Inspect South to North	**Video 2 – 2:38:47**	**13:12:10**
		Video 2 – 2:49:51	**13:23:15**

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics around this anchor.

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-21-17	Frame(HH:MM:SS)	13:15:48	Date:	9-21-17	Frame(HH:MM:SS)	13:21:14

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	13:21:12	Date:		Frame(HH:MM:SS)	

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ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	13:21:34	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-62 (E-01B-A North / E-01B-B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 2 – 2:51:01**	**13:24:24**
		Video 2 – 3:03:47	**13:37:10**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	5' north on west of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	13:33:52
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully suspended

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Feature 1 – Possible dislodged coating. Patches in various spots on west side of pipe, approx. 5' north of anchor. Video Reference: Video 2 – 3:00:28 Time: 13:33:52

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	13:26:40	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	13:26:42	Date:		Frame(HH:MM:SS)	

Comments:

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	13:32:22	Date:		Frame(HH:MM:SS)	

Comments:

Feature #1

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.





Date:	9-21-17	Frame(HH:MM:SS)	13:34:36	Date:	9-21-17	Frame(HH:MM:SS)	13:34:42

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-63 (E-04A South / E-04A North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 3 – 00:00:30**	**14:42:50**
		Video 4 – 00:11:21	**15:00:07**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	15' South, top of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	14:45:40
2	10' South, top of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	14:47:50
3	Just north, top of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	14:56:08
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully suspended

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Video 3 was ended by accident but Video 4 picks up immediately where 3 left off. Feature 1 – Possible White Spot. 15' south of anchor on top of pipe. Approx. 3"x 3" area Video Reference: Video 3 – 00:03:24 Time: 14:45:40 Feature 2 – Possible White Spot. 10' south of anchor on top of pipe. Approx. 4"x4" Video Reference: Video 3 – 00:05:30 Time: 14:47:50 Feature 3 – Possible white spot. 0"- 4"north of anchor at the top of pipe. Size approx. 2" x 4" Video Reference: Video 4 – 00:07:22 Time: 14:56:08

	12/14/17
Contractor Signature	**Date**

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	14:45:25	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	14:42:40	Date:		Frame(HH:MM:SS)	

Comments:

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	14:55:36	Date:		Frame(HH:MM:SS)	

Comments:

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-21-17	Frame(HH:MM:SS)	14:45:50	Date:	9-21-17	Frame(HH:MM:SS)	14:46:52

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ROV Inspection Form for L5 Straits of Mackinac

Feature #2

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-21-17	Frame(HH:MM:SS)	14:48:07	Date:	9-21-17	Frame(HH:MM:SS)	14:49:33

Feature #3

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-21-17	Frame(HH:MM:SS)	14:57:39	Date:	9-21-17	Frame(HH:MM:SS)	14:56:58

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-64 (E-04A North / E-04B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 4 – 0:12:39**	**15:01:25**
		Video 4 – 0:25:19	**15:14:05**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully suspended

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

[redacted]	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	15:08:36	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	15:03:57	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	15:11:06	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-65 (E-05A South / E-05A North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 4 – 0:27:31**	**15:16:18**
		Video 4 – 0:41:49	**15:30:35**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	10' - 15' south at top of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	15:20:00
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully suspended

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Feature 1 – Potential dislodged coating. Patches visible 10' to 15' south of anchor at top of pipe Video Reference: Video 4 – 0:31:21 Time: 15:20:00

[redacted]	12/14/17
Contractor Signature	**Date**

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ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	15:19:29	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	15:24:30	Date:		Frame(HH:MM:SS)	

Comments:

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-21-17	Frame(HH:MM:SS)	15:27:49	Date:		Frame(HH:MM:SS)	
Comments:							

Feature #1							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-21-17	Frame(HH:MM:SS)	15:20:08	Date:		Frame(HH:MM:SS)	

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-66 (E-05A North / E-05B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 4 – 0:43:12**	**15:31:58**
		Video 4 – 0:56:29	**15:45:15**

ROV Visual Inspection Results

Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/14/17
Contractor Signature	**Date**

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ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	15:35:16	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	15:38:14	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	15:44:55	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	E-67 (E-65A / E-65B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 4 – 1:07:46**	**15:56:33**
		Video 4 – 1:21:29	**16:10:15**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	5' – 15' south, top of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	15:59:51
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

Feature 1 – Possible dislodged coating. 5' south and up to 15' south of anchor, at top of pipe – various areas
Video Reference: Video 4 – 1:11:05 Time: 15:59:51

	12/14/17
Contractor Signature	**Date**

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ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	15:59:41	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	16:08:00	Date:		Frame(HH:MM:SS)	

Comments:

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-21-17	Frame(HH:MM:SS)	16:07:53	Date:		Frame(HH:MM:SS)	
Comments:							

Feature #1							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-21-17	Frame(HH:MM:SS)	16:00:06	Date:		Frame(HH:MM:SS)	

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/20/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-1 (W-01A / W-01B South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 2 – 0:06:37**	**10:00:19**
		Video 2 – 0:28:52	**10:22:34**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	3' and 5' south top of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	10:01:30
2	5' south at west of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	10:05:20
3	1 - 10' north, east, west& top of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	10:12:25
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully suspended

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Feature 1 - possible patches of dislodged coating. Between 3 and 5' south of anchor at top of pipe. Video Reference: Video 2 – 0:07:46 Time: 10:01:30 Feature 2 - possible dislodged coating 3"x 3", 5' south at west of pipe Video Reference: Video 2 – 0:11:38 Time: 10:05:20 Feature 3 - possible dislodged coating, patches between 1 to 10' north at top, east, and west side of pipe Video Reference: Video 2 – 0:18:43 Time: 10:12:25

	12/14/17
Contractor Signature	**Date**

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	10:17:13	Date:		Frame(HH:MM:SS)	

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	10:15:01	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.

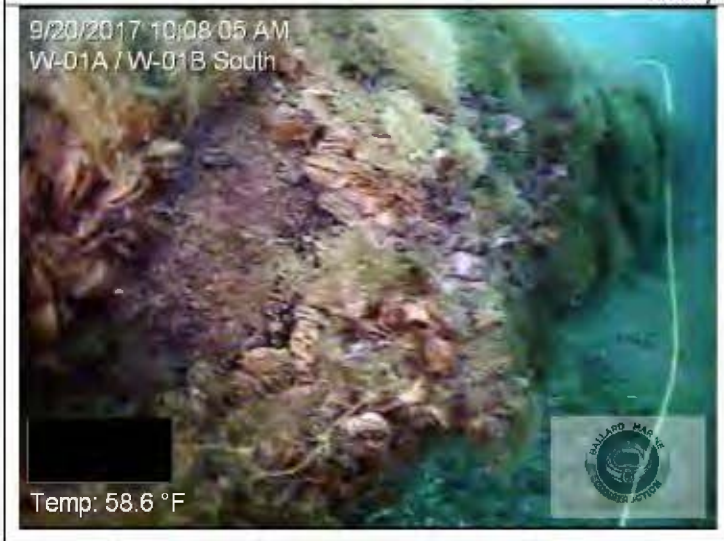




Date:	9-20-17	Frame(HH:MM:SS)	10:02:43	Date:	9-20-17	Frame(HH:MM:SS)	10:03:01

Feature #2

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	10:08:05	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Feature #3							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-20-17	Frame(HH:MM:SS)	10:18:28	Date:	9-20-17	Frame(HH:MM:SS)	10:18:57

Feature #3 (Cont.)							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							

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ROV Inspection Form for L5 Straits of Mackinac

Date:	9-20-17	Frame(HH:MM:SS)	10:18:09	Date:	9-20-17	Frame(HH:MM:SS)	10:16:22

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/20/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-2 (W-01B South / W-01B North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 2 – 0:33:20**	**10:27:02**
		Video 2 – 0:48:43	**10:42:25**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	10' south east of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	10:29:00
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully suspended

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Feature 1 – Possible dislodged coating. From 1-10' South of anchor, various patches on east, west, and top of pipe. Video Reference: Video 2 – 0:35:18 Time: 10:29:00

	12/14/17
Contractor Signature	**Date**

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	10:30:32	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	10:37:05	Date:		Frame(HH:MM:SS)	

Comments:

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	10:39:22	Date:		Frame(HH:MM:SS)	

Comments:

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-20-17	Frame(HH:MM:SS)	10:32:00	Date:	9-20-17	Frame(HH:MM:SS)	10:32:19

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/20/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-3 (W-5A / W-5B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect North to South	**Video 2 – 0:56:48**	**10:50:30**
		Video 2 – 1:13:48	**11:07:30**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	10' north at top of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	11:02:30
2	0 to 10' north	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	11:02:30
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

Feature 1 - Two potential deposits approx. 1”x1” and 1”x1” in size and about 10’ north of anchor at top of pipe

Video Reference: Video 2 – 1:08:47 Time: 11:02:30

Feature 2 - Possible patches of dislodged coating from 0 to 10’ north at various locations along top and west side of pipe

Video Reference: Video 2 – 1:08:47 Time: 11:02:30

	12/14/17
Contractor Signature	**Date**

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	10:56:08	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	11:02:16	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	11:02:14	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-20-17	Frame(HH:MM:SS)	11:04:16	Date:	9-20-17	Frame(HH:MM:SS)	11:04:18

Feature #2

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	11:04:07	Date:		Frame(HH:MM:SS)	

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/20/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H
Pipe Support Anchor:	W-4 (W-2A / W-2B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	Video Log (start/end)	Video Reference (hh:mm:ss)
	Inspect South to North	**Video 2 – 1:17:51**	**11:11:34**
		Video 2 – 1:34:14	**11:27:56**

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
1	10' north at top of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	11:23:00
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully suspended

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Feature 1- possible patches of dislodged coating, 10' north of anchor Video Reference: Video 2 – 1:28:31 Time: 11:22:13

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	11:14:55	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	11:14:52	Date:		Frame(HH:MM:SS)	

Comments:

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-20-17	Frame(HH:MM:SS)	11:23:46	Date:		Frame(HH:MM:SS)	
Comments:							

Feature #1							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-20-17	Frame(HH:MM:SS)	11:23:25	Date:	9-20-17	Frame(HH:MM:SS)	11:23:26

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/20/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-5 (W-6A / W-6B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 2 – 1:35:33**	**11:29:15**
		Video 2 – 1:48:47	**11:42:30**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	1:33:12	Date:		Frame(HH:MM:SS)	

Comments:

Anchor
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	11:42:23	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	11:39:45	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/20/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-6 (W-12A / W-12B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 2 – 1:58:56**	**11:52:38**
		Video 2 – 2:15:28	**12:09:10**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	0 to15' north at top of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	12:01:37
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully suspended

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Feature 1 - possible patches of dislodged coating on north side of anchor, from anchor to 15' on top, east, and west sides of pipe Video Reference: Video 2 - 2:07:55 Time: 12:01:37

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	12:01:48	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	12:03:39	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	12:06:36	Date:		Frame(HH:MM:SS)	

Comments:

Feature #1

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.





Date:	9-20-17	Frame(HH:MM:SS)	12:04:23	Date:	9-20-17	Frame(HH:MM:SS)	12:03:13

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/20/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-7 (W-13A / W-13B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 2 – 2:18:44**	**12:12:27**
		Video 2 – 2:34:19	**12:28:01**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	1 - 7'north, top east and west	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	12:22:00
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

Feature 1 - possible dislodged coating. From 1 -10' North of anchor, on top and west sides of pipe.
Video Reference: Video 2 - 2:27:27 Time: 12:21:09

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	12:15:54	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-20-17	Frame(HH:MM:SS)	12:19:44	Date:	9-20-17	Frame(HH:MM:SS)	12:27:50

Comments:

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	12:21:16	Date:		Frame(HH:MM:SS)	

Comments:

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-20-17	Frame(HH:MM:SS)	12:27:44	Date:	9-20-17	Frame(HH:MM:SS)	12:26:08

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/20/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-8 (W-18A-A / W-18A South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 3 – 0:01:19**	**14:00:16**
		Video 3 – 0:12:28	**14:11:25**

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

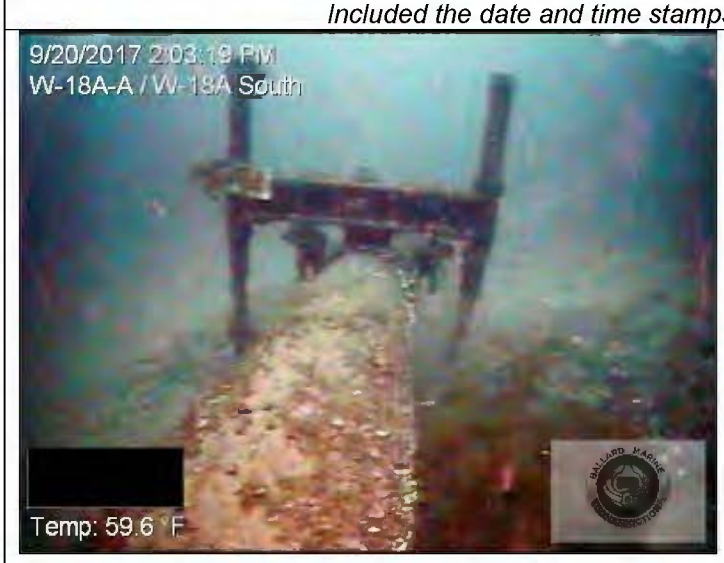
	12/14/17
Contractor Signature	**Date**

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

[redacted]

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	14:03:19	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	14:06:27	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-20-17	Frame(HH:MM:SS)	14:08:32	Date:		Frame(HH:MM:SS)	
Comments:							

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/20/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-9 (W-18A South / W-18A North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	Video Log (start/end)	Video Reference (hh:mm:ss)
	Inspect South to North	**Video 3 – 0:14:43**	**14:13:40**
		Video 3 – 0:28:24	**14:27:20**

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	14:16:55	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	14:20:55	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	14:24:07	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/20/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-10 (W-18A North / W-18B South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 3 – 0:29:55**	**14:28:52**
		Video 3 – 0:44:44	**14:43:41**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully suspended

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
There were no holidays, area of interest, or unusual characteristics observed around this anchor.

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	14:33:03	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	14:37:00	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	14:40:19	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/20/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-11 (W-18B South / W-18B North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 3 – 0:46:36**	**14:45:33**
		Video 4 – 0:05:02	**15:04:00**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	8' south on top of pipe	☐ Area of Interest ☐Holiday (bare metal) ☒ Deposit ☐Other	14:51:00
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

Feature 1 – Potential deposit. 8' south of anchor on top of pipe in an area approx. 1'x 6"
Video Reference: Video 3 – 0:52:03 Time: 14:51:00

Note: Video 3 was ended accidentally while inspecting anchor. Video 4 picks up immediately after Video 3.

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	14:53:58	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	15:00:56	Date:		Frame(HH:MM:SS)	

Comments:

Feature #1

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.





Date:	9-20-17	Frame(HH:MM:SS)	14:52:28	Date:	9-20-17	Frame(HH:MM:SS)	14:52:59

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/20/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-12 (W-24A / W-24B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 4 – 0:07:38**	**15:06:36**
		Video 4 – 0:24:29	**15:23:28**

ROV Visual Inspection Results

Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/14/17

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Contractor Signature	Date
[redacted]	

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	15:20:02	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	15:13:00	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-20-17	Frame(HH:MM:SS)	15:23:05	Date:		Frame(HH:MM:SS)	
Comments:							

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/20/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-13 (W-23A / W-23B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 4 – 0:27:17**	**15:26:16**
		Video 4 – 0:41:27	**15:40:26**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	10' south, top of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	15:30:30
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

Feature 1 - possible dislodged coating. 10' south from anchor at 11-12 o'clock
Video Reference: Video 4 – 0:31:32 Time: 15:30:30

	12/14/17

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Contractor Signature	Date
[redacted]	

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	15:30:20	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	15:40:15	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	15:37:51	Date:		Frame(HH:MM:SS)	

Comments:

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.

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ROV Inspection Form for L5 Straits of Mackinac





Date:	9-20-17	Frame(HH:MM:SS)	15:31:27	Date:	9-20-17	Frame(HH:MM:SS)	15:35:42

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/20/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-14 (W-28A South / W-28A North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 4 – 0:57:02**	**15:56:00**
		Video 4 – 1:15:02	**16:14:00**

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
1	8' south at top of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	16:01:40
2	east side of pipe, just north of anchor	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	16:10:20
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

Feature 1 – Potential Deposit, Approx. 3" x 3" in size. Located top of pipe, 8' south of anchor.
Video Reference: Video 4 – 1:02:42 Time: 16:01:40

Feature 2 - Possible dislodged coating. Immediately north of anchor on east side of pipe; Approx. 4o'clock Position.
Video Reference: Video 4 – 1:11:22 Time: 16:10:20

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-20-17	Frame(HH:MM:SS)	16:01:24	Date:	9-20-17	Frame(HH:MM:SS)	16:06:02

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:		Frame(HH:MM:SS)		Date:		Frame(HH:MM:SS)	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	16:13:34	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-20-17	Frame(HH:MM:SS)	16:01:46	Date:	9-20-17	Frame(HH:MM:SS)	16:02:00

Feature #2

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-20-17	Frame(HH:MM:SS)	16:10:54	Date:	9-20-17	Frame(HH:MM:SS)	16:11:06

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/20/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-15 (W-28A North/ W-28B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 4 – 1:20:20**	**16:19:18**
		Video 4 – 1:40:56	**16:39:55**

ROV Visual Inspection Results

Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	0-10' south at top of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	16:30:00
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

Feature 1 – Possible dislodged coating. 0 - 10' south of anchor at top of pipe
Video Reference: Video 4 – 1:31:02 Time: 16:30:00

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	16:28:35	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	16:39:51	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	16:36:51	Date:		Frame(HH:MM:SS)	

Comments:

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	16:30:31	Date:		Frame(HH:MM:SS)	

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/20/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-16 (W-31A South / W-31A North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 4 – 1:50:51**	**16:49:51**
		Video 4 – 2:01:47	**17:00:45**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	16:51:52	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	16:56:39	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	16:57:41	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/20/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-17 (W-31A North / W-31B South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 4 – 2:03:01**	**17:02:00**
		Video 4 – 2:14:41	**17:13:40**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	17:05:53	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	17:05:54	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	17:10:47	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/20/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-18 (W-31B South / W-31B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 4 – 2:18:10**	**17:17:08**
		Video 4 – 2:29:33	**17:28:30**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	10' south at top of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	17:20:30
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully suspended

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Feature 1 – Potential Deposit. Approx 2"x 2" in size. 10' south of anchor at the top of pipe Video Reference: Video 4 – 2:21:32 Time: 17:20:30

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-20-17	Frame(HH:MM:SS)	17:19:18	Date:		Frame(HH:MM:SS)	
Comments:							

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	17:25:07	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	17:23:13	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Feature #1

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-20-17	Frame(HH:MM:SS)	17:21:20



Date:	9-20-17	Frame(HH:MM:SS)	17:21:10

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-19 (W-34A / W-34B South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	Video Log (start/end)	Video Reference (hh:mm:ss)
	Inspect South to North	**Video 5 – 0:00:07**	**16:28:24**
		Video 5 – 0:13:23	**16:41:40**

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
1	4' south at west of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	16:34:00
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

Feature 1 – Possible dislodged coating. 4' south of anchor on west side of pipe. Size is approx. 6"x 6"

	12/14/17
Contractor Signature	**Date**

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ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	16:33:17	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-21-17	Frame(HH:MM:SS)	16:30:21	Date:	9-21-17	Frame(HH:MM:SS)	16:28:36

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	16:38:42	Date:		Frame(HH:MM:SS)	

Comments:

Feature #1

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	16:35:25	Date:		Frame(HH:MM:SS)	

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-20 (W-34B South / W-34B North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 5 – 0:14:31**	**16:42:48**
		Video 5 – 0:24:28	**16:52:45**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/14/17
Contractor Signature	**Date**

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ROV Inspection Form for L5 Straits of Mackinac

South End of Affected and Non-Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-21-17	Frame(HH:MM:SS)	16:45:00	Date:		Frame(HH:MM:SS)	
Comments:							

Anchor							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-21-17	Frame(HH:MM:SS)	16:52:31	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	16:50:08	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-21 (W-37A / W-37B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	Video Log (start/end)	Video Reference (hh:mm:ss)
	Inspect South to North	**Video 5 – 0:26:35**	**16:54:52**
		Video 5 – 0:46:25	**17:14:42**

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
1	10' south at top of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	16:58:30
2	West of pipe 2' north	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	17:05:39
3	2' north on east of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	17:11:22
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare	

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		metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

Feature 1 – Potential Deposit. 10' south of anchor at top of pipe, approx. size 3" x 3"
Video Reference: Video 5 – 00:30:13 Time: 16:58:30

Feature 2 – Potential Deposit. 2' north of anchor on west side of pipe, about 10 o'clock position. Approx. size 2" x 2".
Video Reference: Video 5 - 00:37:22 Time: 17:05:39

Feature 3 – Potential Deposit. 2' north of anchor on east of pipe about 3 o'clock position. Approx. size 2" x 3".
Video Reference: Video 5 – 00:43:05 Time: 17:11:22

	12/14/17
Contractor Signature	**Date**

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

[redacted]

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	16:58:47	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	16:58:47	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-21-17	Frame(HH:MM:SS)	17:10:11	Date:	9-21-17	Frame(HH:MM:SS)	17:14:37

Comments:

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.

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ROV Inspection Form for L5 Straits of Mackinac





Date:	9-21-17	Frame(HH:MM:SS)	17:01:22	Date:	9-21-17	Frame(HH:MM:SS)	17:02:52

Feature #2

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.





Date:	9-21-17	Frame(HH:MM:SS)	17:06:17	Date:	9-21-17	Frame(HH:MM:SS)	17:07:10

Feature #3

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.

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ROV Inspection Form for L5 Straits of Mackinac



Date:	9-21-17	Frame(HH:MM:SS)	17:11:39



Date:	9-21-17	Frame(HH:MM:SS)	17:12:21

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-22 (W-36A / W-36B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	Video Log (start/end)	Video Reference (hh:mm:ss)
	Inspect South to North	**Video 5 – 0:48:10**	**17:16:27**
		Video 5 – 1:00:10	**17:28:27**

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
1	3' north, east top west of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	17:21:38
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

Feature 1 – Possible dislodged coating. 3 to 10' north of anchor from east to west of pipe (over top of pipe) about 9 to 3 o'clock possible
Video Reference: Video 5 – 0:53:22 Time: 17:21:38

	12/14/17

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Contractor Signature	Date
[redacted]	

South End of Affected and Non-Affected Area

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	17:18:53	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	17:22:48	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	17:22:46	Date:		Frame(HH:MM:SS)	

Comments:

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





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ROV Inspection Form for L5 Straits of Mackinac

Date:	9-21-17	Frame(HH:MM:SS)	17:23:58	Date:	9-21-17	Frame(HH:MM:SS)	17:24:11

[redacted]

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-23 (W-35A / W-35B South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 5 – 1:04:02**	**17:32:19**
		Video 5 – 1:14:28	**17:42:45**

ROV Visual Inspection Results

Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	17:33:50	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	17:42:28	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	17:39:09	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-24 (W-35B South / W-35B North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 5 – 1:15:58**	**17:44:15**
		Video 5 – 1:26:04	**17:54:21**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	17:45:56	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	17:54:08	Date:		Frame(HH:MM:SS)	

Comments:

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-21-17	Frame(HH:MM:SS)	17:50:29	Date:		Frame(HH:MM:SS)	
Comments:							

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-25 (W-39 / W-40)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 5 – 1:31:07**	**17:59:23**
		Video 5 – 1:42:03	**18:10:20**

ROV Visual Inspection Results

Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	18:01:37	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	18:05:09	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	18:09:55	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-26 (W-41A South / W-41A North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	Video Log (start/end)	Video Reference (hh:mm:ss)
	Inspect South to North	**Video 5 – 1:45:28**	**18:13:45**
		Video 5 – 1:55:34	**18:23:51**

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	18:15:50	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	18:21:20	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	18:21:18	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-27 (W-41A North / W-41B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	Video Log (start/end)	Video Reference (hh:mm:ss)
	Inspect South to North	**Video 5 – 1:56:56**	**18:25:13**
		Video 5 – 2:08:28	**18:36:45**

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
1	10' south to anchor Top of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	18:28:30
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

Feature 1 – Possible dislodged coating. Starting at anchor to 10' south of anchor; various points from 10 to 1 o'clock
Video Reference: Video 5 – 2:00:12 Time: 18:28:30

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	18:28:13	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	18:29:53	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-21-17	Frame(HH:MM:SS)	18:31:22	Date:	9-21-17	Frame(HH:MM:SS)	18:34:04

Comments:

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





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ROV Inspection Form for L5 Straits of Mackinac

Date:	9-21-17	Frame(HH:MM:SS)	18:29:34	Date:	9-21-17	Frame(HH:MM:SS)	18:28:34

[redacted]

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/21/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-28 (W-43A / W-43B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	Video Log (start/end)	Video Reference (hh:mm:ss)
	Inspect south to north	**Video 5 – 2:11:43**	**18:40:00**
		Video 5 – 2:20:01	**18:48:17**

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed around this anchor.

	12/14/17

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Contractor Signature	Date
[redacted]	

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	18:41:54	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-21-17	Frame(HH:MM:SS)	18:48:09	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-21-17	Frame(HH:MM:SS)	18:46:09	Date:		Frame(HH:MM:SS)	
Comments:							

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ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/22/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-29 (W-42A / W-42B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 1 – 0:02:56**	**08:47:06**
		Video 1 – 0:14:16	**08:58:25**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, area's of interest, or other unusual characteristics observed at this anchor.

	12/14/17

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Contractor Signature	Date
[redacted]	

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	8:49:21	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



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ROV Inspection Form for L5 Straits of Mackinac

Date:	9-22-17	Frame(HH:MM:SS)	8:58:13	Date:		Frame(HH:MM:SS)	
Comments:							

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	8:54:44	Date:		Frame(HH:MM:SS)	
Comments:							

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/22/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-30 (W-51A / W-51B South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 1 – 0:22:30**	**09:06:39**
		Video 1 – 0:35:21	**09:19:30**

ROV Visual Inspection Results

Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, area's of interest, or other unusual characteristics observed at this anchor.

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	9:09:47	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	9:12:47	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-22-17	Frame(HH:MM:SS)	9:15:03	Date:		Frame(HH:MM:SS)	
Comments:							

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/22/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-31 (W-51B South / W-51B North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 1 - 0:37:07**	**09:21:16**
		Video 1 – 0:48:00	**09:32:10**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, area's of interest, or other unusual characteristics observed around this anchor.

	12/14/17
Contractor Signature	**Date**

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-22-17	Frame(HH:MM:SS)	9:23:50	Date:		Frame(HH:MM:SS)	
Comments:							

Anchor							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							

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ROV Inspection Form for L5 Straits of Mackinac

Date:	9-22-17	Frame(HH:MM:SS)	9:31:51	Date:		Frame(HH:MM:SS)	
Comments:							

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	9:29:17	Date:		Frame(HH:MM:SS)	
Comments:							

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/22/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-32 (W-48A / W-48B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	Video Log (start/end)	Video Reference (hh:mm:ss)
	Inspect South to North	**0:52:42**	**09:36:51**
		1:05:20	**09:49:30**

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
1	From anchor to 8' south at top of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	09:40:53
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

Feature 1: Possible dislodge coating. From anchor to 8' south at top of pipe about 10 o'clock to 2 o'clock.

Video Reference: Video 1 - 0:56:43 Time: 9:40:53

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	9:40:33	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.





Date:	9-22-17	Frame(HH:MM:SS)	9:44:35	Date:	9-22-17	Frame(HH:MM:SS)	9:49:52

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	9:47:03	Date:		Frame(HH:MM:SS)	

Comments:

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-22-17	Frame(HH:MM:SS)	9:42:28	Date:	9-22-17	Frame(HH:MM:SS)	9:42:30

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/22/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-33 (W-53A South / W-53A North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inpsect South to North	**Video 1 – 1:11:17**	**09:53:20**
		Video 1 – 1:26:16	**10:10:25**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	At anchor to 15' south on top of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	10:02:12
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

NOTE: Video was labeled incorrectly (backwards) as W-53A North / W-53A South.

Feature 1: from anchor to 15' south at top of pipe possible multiple patches of dislodged coating
Video Reference: Video 1 – 1:18:02 Time: 10:02:12

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	9:59:41	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	10:10:09	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	10:08:09	Date:		Frame(HH:MM:SS)	

Comments:

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





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ROV Inspection Form for L5 Straits of Mackinac

Date:	9-22-17	Frame(HH:MM:SS)	10:03:50	Date:	9-22-17	Frame(HH:MM:SS)	10:02:37

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/22/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-34 (W-53A North / W-53B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 1 – 1:28:19**	**10:12:29**
		Video 1 – 1:41:51	**10:25:00**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, area's of interest, or other unusual characteristics observed around this anchor.

	12/14/17
Contractor Signature	**Date**

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ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	10:15:53	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	10:16:06	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	10:21:07	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/22/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-35 (W-70A / W-70B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 1 – 1:43:35**	**10:27:45**
		Video 1 – 1:54:41	**10:38:50**

ROV Visual Inspection Results

Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, area's of interest, or other unusual characteristics observed at this anchor.

	12/14/17

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Contractor Signature	Date
[redacted]	

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	10:30:51	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	10:38:38	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	10:35:28	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/22/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-36 (W-69A / W-69B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 1 – 1:56:00**	**10:40:09**
		Video 1 – 2:06:30	**10:50:40**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	12' south, top of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	10:42:18
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

Feature 1 – Potential Deposit. 12' south of anchor at top of pipe. Approx. 2"x2"
Video Reference: Video 1 – 1:58:08 Time: 10:42:18

	12/14/17

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Contractor Signature	Date
[redacted]	

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	10:42:03	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	10:50:07	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	10:50:05	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Feature #1

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.





Date:	9-22-17	Frame(HH:MM:SS)	10:42:24	Date:	9-22-17	Frame(HH:MM:SS)	10:46:35

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/22/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-37 (W-68A South / W-68A North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 2 – 0:00:25**	**11:26:02**
		Video 2 – 0:10:42	**11:36:18**

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
1	7' north east to topof pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	11:31:42
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

Feature 1– Possible dislodged coating. 7' north of anchor on east, top, & west of pipe
Video Reference: Video 2 – 0:06:06 Time: 11:31:42

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	11:30:34	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	11:36:08	Date:		Frame(HH:MM:SS)	

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ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	11:34:57	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-22-17	Frame(HH:MM:SS)	11:31:44	Date:	9-22-17	Frame(HH:MM:SS)	11:32:07

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/22/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-38 (W-68A North / W-68B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 2 – 0:13:42**	**11:39:19**
		Video 2 – 0:23:54	**11:49:30**

ROV Visual Inspection Results

Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, area's of interest, or other unusual characteristics observed at this anchor.

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	11:41:16	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	11:41:16	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	11:47:35	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/22/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-39 (W-71A / W-71B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	Video Log (start/end)	Video Reference (hh:mm:ss)
	Inspect South to North	**Video 2 – 0:31:54**	**11:57:30**
		Video 2 – 0:44:59	**12:10:35**

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, area's of interest, or other unusual characteristics around this anchor.

	12/14/17

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Contractor Signature	Date
[redacted]	

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.





Date:	9-22-17	Frame(HH:MM:SS)	12:03:11	Date:	9-22-17	Frame(HH:MM:SS)	12:08:19

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

Comments:

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	12:08:21	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/22/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-40 (W-71B / W-72A South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 2 – 0:56:28**	**12:22:04**
		Video 2 – 1:05:44	**12:31:20**

ROV Visual Inspection Results

Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	fully suspended

Comments/Issues/Discussion

There were no holidays, area's of interest, or other unusual characteristics observed around this anchor.

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	12:23:51	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-22-17	Frame(HH:MM:SS)	12:23:51	Date:	9-22-17	Frame(HH:MM:SS)	12:26:59

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	12:31:13	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/22/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-41 (W-72A South / W-72A North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 2 – 1:10:06**	**12:35:43**
		Video 2 – 1:19:48	**12:45:25**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, area's of interest, or unusual characteristics observed around this anchor.

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	12:37:03	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	12:40:17	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	12:45:07	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/22/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-42 (W-72A North / W-72B South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 2 – 1:22:06**	**12:47:43**
		Video 2 – 1:33:59	**12:59:35**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	5' North, top of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	12:53:56
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

Feature 1 – Potential Deposit. 5' North of anchor at top of pipe. Approx. 3" x 3"
Video Reference: Video 2 – 1:28:20 Time: 12:53:56

	12/14/17
Contractor Signature	**Date**

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-22-17	Frame(HH:MM:SS)	12:50:13	Date:		Frame(HH:MM:SS)	
Comments:							

Anchor							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-22-17`	Frame(HH:MM:SS)	12:50:12	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	12:53:29	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-22-17	Frame(HH:MM:SS)	12:54:24	Date:	9-22-17	Frame(HH:MM:SS)	12:55:09

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/22/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-43 (W-72B South / W-72B North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 2 – 1:35:31**	**13:01:08**
		Video 2 – 1:44:23	**13:10:01**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or unusual characteristics observed at this anchor.

	12/14/17
Contractor Signature	**Date**

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	13:03:29	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	13:03:28	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	13:07:43	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/22/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-44 (W-72B North / W-72C)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 2 – 1:43:43**	**13:12:19**
		Video 2 – 1:55:59	**13:21:35**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, area's of interest, or unusual characteristics observed at this anchor.

	12/14/17
Contractor Signature	**Date**

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-22-17	Frame(HH:MM:SS)	13:14:12	Date:		Frame(HH:MM:SS)	
Comments:							

Anchor							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-22-17	Frame(HH:MM:SS)	13:19:44	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	13:21:22	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/22/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-45 (W-54A / W-54B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 2 – 2:04:53**	**13:30:30**
		Video 2 – 2:26:38	**13:55:15**

ROV Visual Inspection Results

Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or other unusual characteristics observed around this anchor.

	12/14/17

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Contractor Signature	Date
[redacted]	

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	13:35:07	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	13:43:22	Date:		Frame(HH:MM:SS)	

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Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-22-17	Frame(HH:MM:SS)	13:46:18	Date:	9-22-17	Frame(HH:MM:SS)	13:45:00

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/22/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-46 (W-57A / W-57B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 3 - 3:59**	**14:28:11**
		Video 3 – 35:10	**14:59:22**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	8' North, East Side,1"x5"	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	14:52:02
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

Feature 1 – Potential Deposit on North Side of anchor and top/east side of pipe approx. 8' North. Roughly 1:00 to 3:00 position on pipe. Deposit measures approx. 1" x 5" in size.
Video Reference: Video 3 – 27:51 Time: 14:52:02

	12/14/17

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Contractor Signature	Date
[redacted]	

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	14:46:02	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-22-17	Frame(HH:MM:SS)	14:34:40	Date:	9-22-17	Frame(HH:MM:SS)	2:59:14

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ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-22-17	Frame(HH:MM:SS)	14:58:55	Date:	9-22-17	Frame(HH:MM:SS)	14:52:54

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Feature #1

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.





Date:		Frame(HH:MM:SS)		Date:		Frame(HH:MM:SS)	

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/22/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-47 (W-59A-A / W-59A South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 3 – 0:42:05**	**15:06:16**
		Video 3 – 0:53:38	**15:17:50**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	15' south at top of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	15:09:00
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

Feature 1 – Possible dislodged coating. 15' south of anchor at top of pipe
Video Reference: Video 3 – 0:45:48 Time: 15:09:00

	12/14/17
Contractor Signature	**Date**

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ROV Inspection Form for L5 Straits of Mackinac

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	15:24:37	Date:		Frame(HH:MM:SS)	

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	15:13:17	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Feature #1							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-22-17	Frame(HH:MM:SS)	15:09:17	Date:		Frame(HH:MM:SS)	

[redacted]

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/22/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-48 (W-59A South / W-59A North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	Video Log (start/end)	Video Reference (hh:mm:ss)
	Inspect South to North	**Video 3 – 0:57:48**	**15:22:00**
		Video 3 – 1:08:23	**15:32:35**

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
		☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, area's of interest, or other unusual characteristics observed at this anchor.

	12/14/17
Contractor Signature	**Date**

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-22-17	Frame(HH:MM:SS)	15:26:26	Date:		Frame(HH:MM:SS)	
Comments:							

Anchor							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-22-17	Frame(HH:MM:SS)	15:24:37	Date:		Frame(HH:MM:SS)	
Comments:							

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-22-17	Frame(HH:MM:SS)	15:29:07	Date:		Frame(HH:MM:SS)	
Comments:							

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/22/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-49 (W-59A North / W-59B South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	Video Log (start/end)	Video Reference (hh:mm:ss)
	Inspect South to North	**Video 3 – 1:10:25**	**15:34:37**
		Video 3 – 1:25:18	**15:49:30**

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
1	15' south, top of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	15:37:00
2	2' south, top of pipe 3" X 12"	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	15:40:55
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

Feature 1 – Potential Deposit: 15' south of anchor, top of pipe 11 to 12 o'clock position, approx. 1"x 3"
Video Reference: Video 3 – 1:12:48 Time: 15:37:00

Feature 2 – Potential Deposit: 2' south of pipe, top of pipe 12 o'clock position, approx. 3"x12"
Video Reference: Video 3 – 1:16:43 Time: 15:40:55

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	15:36:51	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



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ROV Inspection Form for L5 Straits of Mackinac

Date:	9-22-17	Frame(HH:MM:SS)	15:45:32	Date:		Frame(HH:MM:SS)	
Comments:							

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	15:49:22	Date:		Frame(HH:MM:SS)	
Comments:							

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ROV Inspection Form for L5 Straits of Mackinac

Feature #1

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.





Date:	9-22-17	Frame(HH:MM:SS)	15:40:13	Date:	9-22-17	Frame(HH:MM:SS)	15:38:54

Feature #2

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.





Date:	9-22-17	Frame(HH:MM:SS)	15:43:04	Date:	9-22-17	Frame(HH:MM:SS)	15:42:50

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/22/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-50 (W-59B South / W-59B North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 3 – 1:27:16**	**15:51:28**
		Video 3 – 1:38:12	**16:02:20**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

NOTE: Video and pictures are **mislabeled as "W-59B South / W-58A South"

There were no holidays, area's of interest, or other unusual characteristics observed at this anchor.

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	15:55:04	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	15:52:50	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	15:59:04	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/22/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-51 (W-59B North / W-58A South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**Video 3 – 1:43:23**	**16:07:35**
		Video 3 – 1:58:04	**16:22:16**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	South side, at anchor, East side of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	16:08:23
2	South side, from anchor to 15' south	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	16:11:47
3	North side, from 5-10' from anchor	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	16:18:56
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

Feature 1– Potential Deposit. East side of pipe, 3-5 o'clock position, directly below anchor 4" wide by 8" wide

Video Reference: Video 3 – 1:44:08 Time: 16:08:19

Feature 2 - Possible dislodged coating. Various spots starting from anchor to 15' south, mostly top of pipe.

Video Reference: Video 3 – 1:47:35 Time: 16:11:47

Feature 3 - Possible dislodged coating. Starting 5' north of anchor to 10' North of anchor, ranging from east to top to west sides of pipe.

Video Reference: Video 3 – 1:54:44 Time: 16:18:56

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	16:11:49	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:		Frame(HH:MM:SS)		Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-22-17	Frame(HH:MM:SS)	16:09:49	Date:	9-22-17	Frame(HH:MM:SS)	16:09:04

Feature #2

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	16:12:27	Date:		Frame(HH:MM:SS)	

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ROV Inspection Form for L5 Straits of Mackinac

Feature #3
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	16:19:02	Date:		Frame(HH:MM:SS)	

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/22/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-52 (W-58A South / W58A North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	Video Log (start/end)	Video Reference (hh:mm:ss)
	Inspect South to North	**Video 3 – 1:59:19**	**16:23:31**
		Video 3 – 2:11:54	**16:36:05**

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
1	Anchor to 15' South. All around pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	16:27:00
2	1' South, West Side	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	16:28:25
3	1' North, West Side	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	16:34:47
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	fully suspended

Comments/Issues/Discussion

Feature 1 - Possible dislodged coating in various areas from anchor to 15' south. 10 o'clock to 2' oclock position on Pipe
Video Reference: Video 3 – 2:02:43 Time: 16:27:00

Feature 2 – Potential Deposit,1' south of anchor at 10 o'clock position on west Side. Approx. 2" diameter
Video Reference: Video 3 – 2:04:13 Time: 16:28:25

Feature 3 – Potential Deposit, 1' north of anchor at 9 o'clock position on west side. Approx. 4" diameter
Video Reference: Video 3 – 2:10:35 Time: 16:34:47

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	16:26:48	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-22-17	Frame(HH:MM:SS)	16:35:55	Date:	9-22-17	Frame(HH:MM:SS)	16:30:37

Comments:

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-22-17	Frame(HH:MM:SS)	16:33:09	Date:		Frame(HH:MM:SS)	
Comments:							

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ROV Inspection Form for L5 Straits of Mackinac

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-22-17	Frame(HH:MM:SS)	16:27:15	Date:		Frame(HH:MM:SS)	

Feature #2

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-22-17	Frame(HH:MM:SS)	16:28:35	Date:	9-22-17	Frame(HH:MM:SS)	16:30:04

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ROV Inspection Form for L5 Straits of Mackinac

Feature #3

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-22-17	Frame(HH:MM:SS)	16:35:12	Date:	9-22-17	Frame(HH:MM:SS)	16:35:29

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/23/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-53 (W-58A North / W-58B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect from South to North	**00:00:14**	**08:54:57**
		00:10:53	**09:05:35**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	1 to 15' south, east top west of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	08:57:00
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

Feature 1 – 1 to 15' south of anchor from about 9 o'clock to 3o'clock, possible dislodged coating in various spots

Video Reference: 00:02:17 Time: 8:57:00

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-23-17	Frame(HH:MM:SS)	9:00:16	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-23-17	Frame(HH:MM:SS)	8:56:44	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-23-17	Frame(HH:MM:SS)	9:02:36	Date:		Frame(HH:MM:SS)	

Comments:

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-23-17	Frame(HH:MM:SS)	8:56:42	Date:		Frame(HH:MM:SS)	

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ROV Inspection Form for L5 Straits of Mackinac

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/23/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-54 (W-60A / W-60B South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**0:17:34**	**09:12:16**
		0:27:42	**09:22:25**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully suspended

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
There were no holidays, area's of interest, or other unusual characteristics observed at this anchor.

[redacted]	12/14/17
Contractor Signature	**Date**

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-23-17	Frame(HH:MM:SS)	9:14:48	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-23-17	Frame(HH:MM:SS)	9:12:30	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-23-17	Frame(HH:MM:SS)	9:19:57	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/23/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-55 (W-60B South / W-60B North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log			
	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**28:40**	**09:23:20**
		39:45	**09:34:25**

ROV Visual Inspection Results			
Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
1	15' north at top of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	09:29:00
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

Feature 1 - Potential Deposit. 15' north of anchor at top of pipe approx. 4" x 5"
Time: 9:29:00 Video Time: 34:42

	12/14/17
Contractor Signature	**Date**

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ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-23-17	Frame(HH:MM:SS)	9:25:10	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-23-17	Frame(HH:MM:SS)	9:25:13	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-23-17	Frame(HH:MM:SS)	9:29:25	Date:		Frame(HH:MM:SS)	

Comments:

Feature #1

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.





Date:	9-23-17	Frame(HH:MM:SS)	9:29:55	Date:	9-23-17	Frame(HH:MM:SS)	9:30:08

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/23/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-56 (W-61A / W-61B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	Video Log (start/end)	Video Reference (hh:mm:ss)
	Inspect South to North	**45:42**	**09:40:08**
		57:20	**09:52:05**

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
1	1' south on east of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	09:41:00
2	5' south on east to top of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	09:43:00
3	From anchor to 10' north	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	09:49:00
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

Feature 1 – Potential Deposit 1' south of anchor on east side of pipe about 3 o'clock. Size approx. 4"x5"

Feature 2 – Potential Deposit 5' south of anchor at about 3 o'clock to 12 o'clock. Size approx. 1" x 18"

Feature 3 – Possible dislodged coating from anchor to 10' north all the way around the pipe.

	12/14/17
Contractor Signature	**Date**

ENBRIDGE

ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-23-17	Frame(HH:MM:SS)	9:45:52	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-23-17	Frame(HH:MM:SS)	9:44:36	Date:		Frame(HH:MM:SS)	

Comments:

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-23-17	Frame(HH:MM:SS)		Date:		Frame(HH:MM:SS)	
Comments:							

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ROV Inspection Form for L5 Straits of Mackinac

Feature #1

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.





Date:	9-23-17	Frame(HH:MM:SS)	9:41:51	Date:	9-23-17	Frame(HH:MM:SS)	9:41:21

Feature #2

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.





Date:	9-23-17	Frame(HH:MM:SS)	9:43:13	Date:	9-23-17	Frame(HH:MM:SS)	9:44:10

Feature 2 Notes: 1st Picture shows view on the east side of pipe, approx. 3:00 position. 2nd Picture shows continuation of possible white spot from above with it terminating at approx. 12:00 position.

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ROV Inspection Form for L5 Straits of Mackinac

Feature #3
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-23-17	Frame(HH:MM:SS)	9:49:01	Date:		Frame(HH:MM:SS)	

Feature 3 Notes: Picture shows possible dislodged coating beginning at anchor and continuing to the north.

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/23/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-57 (W-63A / W-63B)	**Water Depth (ft.):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	**Video Log** (start/end)	**Video Reference** (hh:mm:ss)
	Inspect South to North	**1:11:45**	**10:06:27**
		1:22:52	**10:17:35**

ROV Visual Inspection Results

Feature Number	**Location of Feature** (w.r.t. pipe support)	**Visual Classification of Feature**	**Video Reference** (hh:mm:ss)
		☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

There were no holidays, areas of interest, or other unusual characteristics observed at this anchor.

	12/14/17

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Contractor Signature	Date

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-23-17	Frame(HH:MM:SS)	10:10:18	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

Comments:

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-23-17	Frame(HH:MM:SS)	10:14:33	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/23/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-58 (W-65A / W-65B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	Video Log (start/end)	Video Reference (hh:mm:ss)
	Inspect South to North	**1:28:06**	**10:22:49**
		1:51:55	**10:36:38**

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
1	5' south - east side of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	10:24:00
2	5' south – west side of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	10:28:00
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully suspended

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ROV Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Feature 1– Potential Deposit, 5' south of anchor on east side of pipe about 5 o'clock. Size approx. 2" x 2" Video Reference: 1:29:17 Time: 10:24:00 Feature 2 – Possible dislodged coating 5' south of anchor on top and west side of pipe, about 9:00 to 12:00. Video Reference: 1:31:58 Time: 10:26:40

	12/14/17
Contractor Signature	**Date**

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ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-23-17	Frame(HH:MM:SS)	10:30:51	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.



Date:	9-23-17	Frame(HH:MM:SS)	10:30:55	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-23-17	Frame(HH:MM:SS)	10:35:25	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-23-17	Frame(HH:MM:SS)	10:24:15	Date:	9-23-17	Frame(HH:MM:SS)	10:25:41

Feature #2

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-23-17	Frame(HH:MM:SS)	10:28:14	Date:	9-23-17	Frame(HH:MM:SS)	10:29:47

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/23/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-59 (W-64A / W-64B South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	Video Log (start/end)	Video Reference (hh:mm:ss)
	Inspect south to North	**1:43:31**	**10:38:13**
		1:56:04	**10:50:46**

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
1	10' south top of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	10:40:00
2	10' north on east and top of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	10:45:00
3	At north side of anchor	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	10:44:00
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

Feature 1 – Potential Deposit 10' south of anchor on top of pipe, size approx. 2" x 2"
Video Reference: 1:45:53 Time: 10:40:36am

Feature 2 – Potential Deposit 10' north of anchor on east and top of pipe, about 10 to 12 o'clock
Video Reference: 1:50:17 Time: 10:45:00am

Feature 3 – Possible dislodged coating just north of anchor.
Video Reference: 1:49:46 Time: 10:44:00am

	12/14/17
Contractor Signature	**Date**

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-23-17	Frame(HH:MM:SS)	10:40:05	Date:		Frame(HH:MM:SS)	
Comments:							

Anchor							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-23-17	Frame(HH:MM:SS)	10:41:34	Date:		Frame(HH:MM:SS)	

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Comments:

Overall North Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:		Frame(HH:MM:SS)		Date:		Frame(HH:MM:SS)	
Comments:							

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ROV Inspection Form for L5 Straits of Mackinac

Feature #1

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.





Date:	9-23-17	Frame(HH:MM:SS)	10:40:36	Date:	9-23-17	Frame(HH:MM:SS)	10:40:54

Feature #2

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.





Date:	9-23-17	Frame(HH:MM:SS)	10:45:13	Date:	9-23-17	Frame(HH:MM:SS)	10:47:12

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ROV Inspection Form for L5 Straits of Mackinac

Feature #3							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-23-17	Frame(HH:MM:SS)	10:44:29	Date:		Frame(HH:MM:SS)	

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/23/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W60 (W-64B South / W-64B North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	Video Log (start/end)	Video Reference (hh:mm:ss)
	Inspect South to North	**1:56:56**	**10:51:39**
		2:07:17	**11:01:56**

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
1	Just south of anchor	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	10:52:00
2	Just north of anchor on top of pipe	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	10:59:00
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ROV Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Pipe Location w.r.t. Lake Floor: (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

Feature 1 – Possible dislodged coating. Starting at anchor and continuing south approx. 10', on top and east side of pipe
Video Reference: 1:57:35 Time: 10:52:17

Feature 2 – Potential Deposit just north of anchor at top of pipe. Size approx. 2" x 3"
Video Reference: 2:04:31 Time: 10:59:14

	12/14/17
Contractor Signature	**Date**

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ROV Inspection Form for L5 Straits of Mackinac

Overall South Affected Area							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-23-17	Frame(HH:MM:SS)	10:53:33	Date:		Frame(HH:MM:SS)	
Comments:							

Anchor							
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	9-23-17	Frame(HH:MM:SS)	10:57:23	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-23-17	Frame(HH:MM:SS)	10:58:45	Date:		Frame(HH:MM:SS)	

Comments:

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ROV Inspection Form for L5 Straits of Mackinac

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-23-17	Frame(HH:MM:SS)	10:52:17	Date:	9-23-17	Frame(HH:MM:SS)	11:00:04

Feature #2

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-23-17	Frame(HH:MM:SS)	10:59:23	Date:	9-23-17	Frame(HH:MM:SS)	11:00:04

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ROV Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/23/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**ROV Operator:**	Brian H.
Pipe Support Anchor:	W-61 (W-67A / W-67B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

ROV Visual Inspection Log

	ROV Transit Description (E/W of pipe, travelling N/S)	Video Log (start/end)	Video Reference (hh:mm:ss)
	Inspect South to North	**2:09:11**	**11:03:54**
		2:18:18	**11:13:00**

ROV Visual Inspection Results

Feature Number	Location of Feature (w.r.t. pipe support)	Visual Classification of Feature	Video Reference (hh:mm:ss)
1	Just north of anchor,east side	☒ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	11:08:00
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	

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ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

		☐ Area of Interest ☐Holiday (bare metal) ☐ Deposit ☐Other	
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Pipe Location w.r.t. Lake Floor:** (ie. partially buried, fully suspended)	Fully suspended

Comments/Issues/Discussion

Feature 1 - Potential Deposits just north of anchor on east of pipe about 4:00 position. One spot is approx. 2”x2”, the other is approx. 6” x 6”
Video Reference: 2:13:28 Time: 11:08:10

	12/14/17

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Contractor Signature	Date
[redacted]	

Overall South Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-23-17	Frame(HH:MM:SS)	11:05:35	Date:		Frame(HH:MM:SS)	

Comments:

Anchor

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-23-17	Frame(HH:MM:SS)	11:10:59	Date:		Frame(HH:MM:SS)	

ENBRIDGE	ROV Inspection Form for L5 Straits of Mackinac

Comments:

Overall North Affected Area

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.



Date:	9-23-17	Frame(HH:MM:SS)	11:13:00	Date:		Frame(HH:MM:SS)	

Comments:

Feature #1

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	9-23-17	Frame(HH:MM:SS)	11"10"07	Date:	9-23-17	Frame(HH:MM:SS)	11:08:57

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ROV Inspection Form for L5 Straits of Mackinac

[redacted]

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Diver Inspection Form for L5 Straits of Mackinac

General Information

Date:	09/30/17	**Diver:**	Troy Baskett, Maurice Unger, Chad Cantrell, George Palmer
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	E-1 (E-74A/E-74B South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	5' South	12:00	0.003 (1" X ½")	☐ Dislodged Area ☒ Deposit	☐Holiday (bare metal) ☐Disturbed Area
2	4' South	3:00 – 6:00	0.17 (24" X 1")	☒ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
3	Adjacent to saddle South	12:00	0.02 (2" X 1½")	☐ Dislodged Area ☒ Deposit	☐Holiday (bare metal) ☐Disturbed Area
4	2' 6" North	12:00	0.03 (3" X 1¼")	☐ Dislodged Area ☒ Deposit	☐Holiday (bare metal) ☐Disturbed Area
5	14' North	3:00	0.002 (¼" X 1")	☐ Dislodged Area ☒ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)			**Biota present:**	☒YES ☐ NO	
Dislodged coating observed on the lake floor: ☐YES ☒NO			**Lake floor location wrt pipe:**	In span 5" off lake floor	

Comments/Issues/Discussion

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Biota Coating Repair EAS-2 is 9' North of Anchor

Feature 1, Possible dislodged area of adjacent coating due to movement when touched, 0% of the area showed bare metal after deposit removal

Feature 3, 0% of the area showed bare metal after deposit removal

Feature 4, Approximately 75% of the area showed bare metal after deposit removal

Feature 5, 100% of the area showed bare metal after deposit removal

Contractor Signature	Enbridge Representative/ Inspector Signature

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	09/15/2017	**Next Calibration Due:**	09/15/2018
Gauge verified prior to use:	☒YES ☐NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	185	4	10:00
North of Anchor #2	130	4	2:00
South of Anchor #1	160	4	10:00
South of Anchor #2	132	4	2:00
Average Thickness	151		

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	-289 -283	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	110	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	N/R	**DFT Adjacent to Feature (mil)** (~2" away from edge)	100 110 118 125	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	110 112 125 145
Provide 1 to 2 photos of feature, below: *Included the date and time stamps associated with video surveillance.*					



Date:	09/30/17	Frame(HH:MM:SS)	05:15:11	Date:		Frame(HH:MM:SS)	

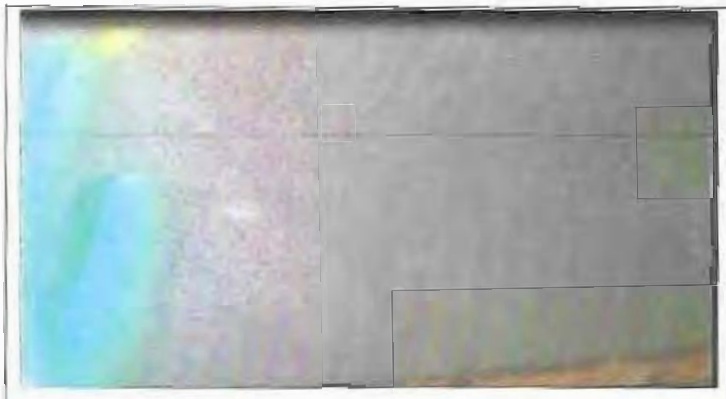
Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	118	**DFT #2 (mil)** (center of feature)	112	**DFT #3 (mil)** (south end of feature)	110
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	N/R	**DFT Adjacent to Feature (mil)** (~2" away from edge)	150 130 130 115	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	138 125 150 120
Provide 1 to 2 photos of feature, below: *Included the date and time stamps associated with video surveillance.*					

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Diver Inspection Form for L5 Straits of Mackinac



Date:	09/30/17	Frame(HH:MM:SS)	N/R	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	-1775 -1651	**CP Reading #2 (mV)** (center of feature)		**CP Reading #3 (mV)** (south end of feature)	-1640 -1633
DFT #1 (mil) (north end of feature)	< 25	**DFT #2 (mil)** (center of feature)		**DFT #3 (mil)** (south end of feature)	< 25
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	N/R	**DFT Adjacent to Feature (mil)** (~2" away from edge)	115 115 125 115	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	135 115 120 105

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	09/30/17	Frame(HH:MM:SS)	01:23:06	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

Note: CP reading #1 indicates a 124mV difference. It is due to possible CP reading fluctuation.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	**-1335** **-907**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**-1640** **-1638**
DFT #1 (mil) (north end of feature)	**< 25**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**< 25**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**N/R**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**142** **82** **130** **83**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**125** **125** **100** **100**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	09/30/17	Frame(HH:MM:SS)	03:52:47	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

Note: CP reading #1 indicates a 428mV difference. It is due to possible CP reading fluctuation.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 5)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	-1819 -1681	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	< 25	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	N/R	**DFT Adjacent to Feature (mil)** (~2" away from edge)	138 135 94 102	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	140 145 135 130

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	09/30/17	Frame(HH:MM:SS)	N/R	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

Note: CP reading #2 indicates a 138mV difference. It is due to possible CP reading fluctuation.

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Diver Inspection Form for L5 Straits of Mackinac

General Information			
Date:	10/01/17	**Diver:**	Scott Woodward, Troy Baskett, Maurice Unger, Chad Cantrell
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	E-2 (E-74B South/E-74B North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

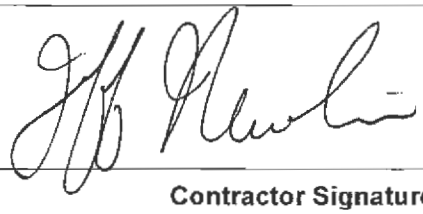
Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	8' 4" North	12:00	0.05 (3¼" X 2")	☐ Dislodged Area ☒ Deposit	☐Holiday (bare metal) ☐Disturbed Area
2	8' 4" North	3:00 – 11:00	0.38 (11" X 5")	☐ Dislodged Area ☒ Deposit	☐Holiday (bare metal) ☐Disturbed Area
3	8' 4" North	2:00 – 3:00	0.03 (5" X 1")	☐ Dislodged Area ☒ Deposit	☐Holiday (bare metal) ☐Disturbed Area
4	8' 4" North	3:00 – 5:00	0.10 (7" X 2")	☐ Dislodged Area ☒ Deposit	☐Holiday (bare metal) ☐Disturbed Area
5	6' North	7:00	0.29 (14" X 3")	☐ Dislodged Area ☒ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)			**Biota present:**	☒YES ☐ NO	
Dislodged coating observed on the lake floor: ☐YES ☒NO			**Lake floor location wrt pipe:**	West side to 6:00 on lake floor, East side buried to 5:00	

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Diver Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Feature 1, Approximately 10% of the area showed bare metal after deposit removal, coating is brittle in this location, deposit is in between coating layers, Diver described a "field joint" near deposit, believed to be spiral wrap of coating (on an angle) Feature 2, Approximately 10% of the area showed bare metal after deposit removal Feature 3, 0% of the area showed bare metal after deposit removal Feature 4, 0% of the area showed bare metal after deposit removal at the 5:00 location where pipe burial begins on East side of pipe Diver described the feature as continuing into the lake bed beyond measurement. Feature 5, 0% of the area showed bare metal after deposit removal

Contractor Signature	Enbridge Representative/ Inspector Signature
	[redacted]

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	09/15/2017	**Next Calibration Due:**	09/15/2018
Gauge verified prior to use:	☒YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	240	5	10:00
North of Anchor #2	200	5	2:00
South of Anchor #1	180	5	10:00
South of Anchor #2	170	5	2:00

ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Average Thickness	197	

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	**-1522** **-1438**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**-1465** **-1400**
DFT #1 (mil) (north end of feature)	**< 25**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**< 25**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**N/R**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**100**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**82**
			135		**195**
			95		**100**
			200		**120**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.





Date:	10/1/17	Frame(HH:MM:SS)	01:11:33	Date:	10/1/17	Frame(HH:MM:SS)	01:11:44

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

Note: CP reading #1 indicates a 84mV difference. It is due to possible CP reading fluctuation.

Note: CP reading #3 indicates a 65mV difference. It is due to possible CP reading fluctuation.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**-1500** **-1496**	**CP Reading #2 (mV)** (center of feature)	**-1519** **-1515**	**CP Reading #3 (mV)** (south end of feature)	**-1540** **-1535**
DFT #1 (mil) (north end of feature)	**27**	**DFT #2 (mil)** (center of feature)	**< 25**	**DFT #3 (mil)** (south end of feature)	**< 25**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**N/R**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**100** **175** **170** **80**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**100** **105** **170** **80**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.





Date:	10/1/17	Frame(HH:MM:SS)	01:10:59	Date:	10/1/17	Frame(HH:MM:SS)	01:11:16

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	**-261** **-265**	**CP Reading #2 (mV)** (center of feature)	**NR**	**CP Reading #3 (mV)** (south end of feature)	**-275** **-267**
DFT #1 (mil) (north end of feature)	**125**	**DFT #2 (mil)** (center of feature)	**NR**	**DFT #3 (mil)** (south end of feature)	**130**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**N/R**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**110** **150** **100** **90**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**90** **170** **105** **120**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.





Date:	10/1/17	Frame(HH:MM:SS)	01:09:29	Date:	10/1/17	Frame(HH:MM:SS)	02:08:06

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	**-253** **-248**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**-334** **-327**
DFT #1 (mil) (north end of feature)	**135**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**135**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**N/R**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**105** **220** **115** **87**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**115** **225** **230** **120**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.





Date:	10/1/17	Frame(HH:MM:SS)	01:10:01	Date:	10/1/17	Frame(HH:MM:SS)	02:08:04

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 5)					
CP Reading #1 (mV) (north end of feature)	**-400** **-381**	**CP Reading #2 (mV)** (center of feature)	**-1598** **-1577**	**CP Reading #3 (mV)** (south end of feature)	**-255** **-247**
DFT #1 (mil) (north end of feature)	**200**	**DFT #2 (mil)** (center of feature)	**< 25**	**DFT #3 (mil)** (south end of feature)	**110**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**N/R**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**125** **140** **200** **225**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**100** **190** **180** **190**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.





Date:	10/1/17	Frame(HH:MM:SS)	3:22:09	Date:	10/1/17	Frame(HH:MM:SS)	3:22:37

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

Note: CP reading #1 indicates a 19mV difference and reading #2 indicates a 21mV difference. It is due to possible CP reading fluctuation.

Note: CP reading #2 indicates CP probe contact with pipe metal. Because no bare metal was observed, we believe the CP gun probe tip penetrated the residue coating for this reading.

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Diver Inspection Form for L5 Straits of Mackinac

General Information			
Date:	10/26/17	**Diver:**	Brad Joanis
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	E-3 (E-74B South / E-74C)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	3' 8" South	12:00	0.01 (1" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	2' South	2:00	0.002 (½" X ½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	4' 5" North	12:00	0.03 (2" X 2")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)			**Biota present:**	☒ YES ☐ NO	
Dislodged coating observed on the lake floor: ☐ YES ☒ NO			**Lake floor location wrt pipe:**	In span 12" off lake floor	

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Diver Inspection Form for L5 Straits of Mackinac

	Comments/Issues/Discussion

	Contractor Signature	Enbridge Representative/ Inspector Signature

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	Product:	211 Coating Thickness Gauge
Last Calibrated:	N/R	Next Calibration Due:	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	Coating Thickness (mil)	Distance from Anchor (ft)	Location on Pipe (o'clock)
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	58°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R
			N/R		N/R
			N/R		N/R
			N/R		N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/26/17	Frame(HH:MM:SS)	00:14:35



Date:	10/26/17	Frame(HH:MM:SS)	00:21:24

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	58°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R
			N/R		N/R
			N/R		N/R
			N/R		N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/26/17	Frame(HH:MM:SS)	00:16:34	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	58°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/26/17	Frame(HH:MM:SS)	00:18:49



Date:	10/26/17	Frame(HH:MM:SS)	00:19:54

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Diver Inspection Form for L5 Straits of Mackinac

General Information			
Date:	10/26/17	**Diver:**	Kevin Lewis
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	E-4 (E-71A / E-71B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	5' 11" South	11:00	0.02 (1" X 2½")	☐ Dislodged Area ☒ Deposit	☐Holiday (bare metal) ☐Disturbed Area
2	5' 11" South	1:00	0.01 (1" X 1½")	☐ Dislodged Area ☒ Deposit	☐Holiday (bare metal) ☐Disturbed Area
3	5' 4" South	7:00	1.50 (12" X 18")	☒ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
4	3' 6" South	3:00	0.03 (3" X 1¼")	☐ Dislodged Area ☒ Deposit	☐Holiday (bare metal) ☐Disturbed Area
5	Anchor to 6' South	360°	9.43 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
6	Anchor to 6' North	360°	1.57 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)			**Biota present:**	☒YES ☐ NO	
Dislodged coating observed on the lake floor: ☐YES ☒NO			**Lake floor location wrt pipe:**	In span 6" off lake floor	

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Diver Inspection Form for L5 Straits of Mackinac

	Comments/Issues/Discussion
	Feature 3, Dislodged area is 12" X 18" area that is lifting Feature 5, Dislodged area is approximately 30% of area from anchor to 6' South that has outer wrap missing Feature 6, Dislodged area is approximately 5% of area from anchor to 6' North that has outer wrap missing

Contractor Signature	Enbridge Representative/ Inspector Signature
[signature]	[redacted]

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	Product:	211 Coating Thickness Gauge
Last Calibrated:	N/R	Next Calibration Due:	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	Coating Thickness (mil)	Distance from Anchor (ft)	Location on Pipe (o'clock)
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	58°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R
			N/R		N/R
			N/R		N/R
			N/R		N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/26/17	Frame(HH:MM:SS)	00:13:58	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	58°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R
			N/R		N/R
			N/R		N/R
			N/R		N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/26/17	Frame(HH:MM:SS)	00:14:45	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long, record #1, #2 and #3 for features >8" long)					
Temperature (°F)	58°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R
			N/R		N/R
			N/R		N/R
			N/R		N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/26/17	Frame(HH:MM:SS)	00:16:32	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



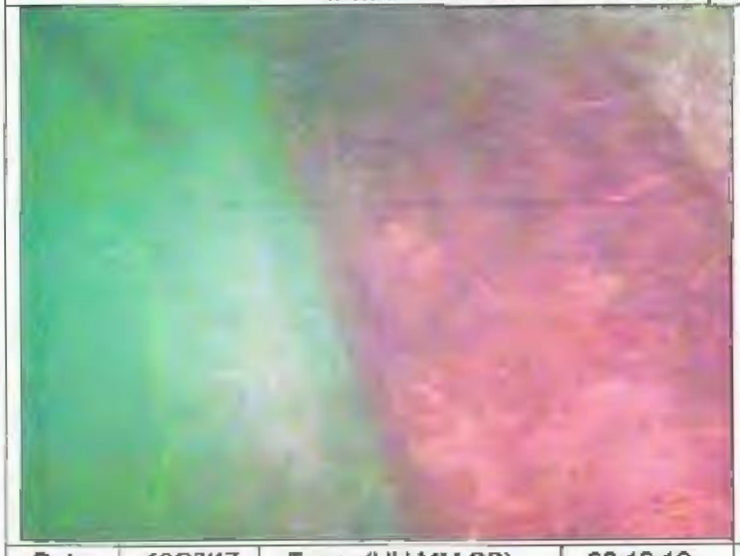
Date:	10/26/17	Frame(HH:MM:SS)	00:18:01	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 5)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/26/17	Frame(HH:MM:SS)	00:19:16	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 6)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/26/17	Frame(HH:MM:SS)	00:22:25	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

General Information

Date:	10/01/17	**Diver:**	George Palmer
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	E-5 (E-718 /E-72)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	4' South	9:00	0.08 (4" X 3")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	3' South	12:00	0.04 (3" X 1 ¾")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	3' 3" North	12:00	0.01 (1½" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)			**Biota present:**	☒ YES ☐ NO	
Dislodged coating observed on the lake floor: ☐ YES ☒ NO			**Lake floor location wrt pipe:**	In span 8" off lake floor	

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Diver Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Feature 2, Approximately 25% of the area showed bare metal after deposit removal Feature 3, 0% of the area showed bare metal after deposit removal

Contractor Signature	[redacted]
	Enbridge Representative/ Inspector Signature

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	Product:	211 Coating Thickness Gauge
Last Calibrated:	09/15/2017	Next Calibration Due:	09/15/2018
Gauge verified prior to use:	☒YES ☐NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	Coating Thickness (mil)	Distance from Anchor (ft)	Location on Pipe (o'clock)
North of Anchor #1	200	5	10:00
North of Anchor #2	130	5	2:00
South of Anchor #1	180	5	10:00
South of Anchor #2	190	5	2:00
Average Thickness	175		

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Diver Inspection Form for L5 Straits of Mackinac

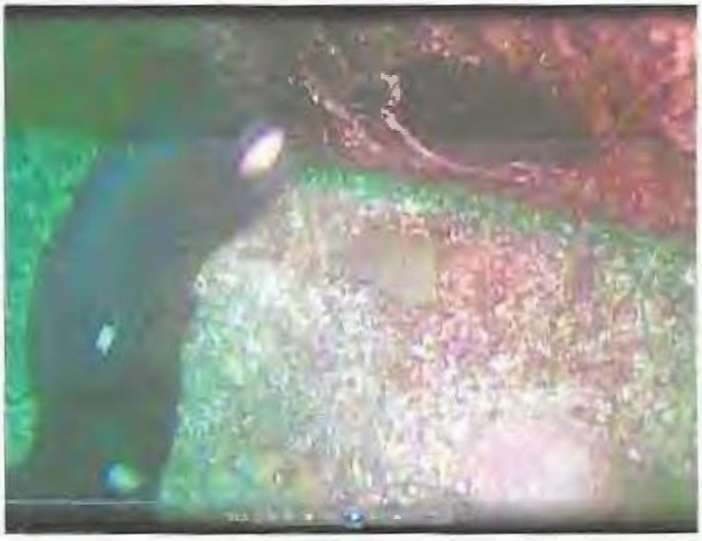
Cathodic Protection and Coating Measurements (for Feature # 1)

CP Reading #1 (mV) (north end of feature)	NR	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	NR
DFT #1 (mil) (north end of feature)	130	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	135

(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)

Temperature (°F)	N/R	**DFT Adjacent to Feature (mil)** (~2" away from edge)	150 180 190 200	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	160 160 250 105

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/01/17	Frame(HH:MM:SS)	N/R	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	-1592 -1585	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	-1702 -1604
DFT #1 (mil) (north end of feature)	< 25	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	< 25
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	N/R	**DFT Adjacent to Feature (mil)** (~2" away from edge)	125 160 160 200	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	155 125 150 140

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.





Date:	10/1/17	Frame(HH:MM:SS)	04:45:26	Date:	10/1/17	Frame(HH:MM:SS)	04:45:10

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

Note: CP reading #3 indicates a 98mV difference. It is due to possible CP reading fluctuation.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	**NR**	**CP Reading #2 (mV)** (center of feature)	**-1630** **-1681**	**CP Reading #3 (mV)** (south end of feature)	**NR**
DFT #1 (mil) (north end of feature)	**NR**	**DFT #2 (mil)** (center of feature)	**100**	**DFT #3 (mil)** (south end of feature)	**NR**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**N/R**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**140** **160** **180** **135**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**145** **180** **145** **180**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.





Date:	10/1/17	Frame(HH:MM:SS)	04:51:41	Date:	10/1/17	Frame(HH:MM:SS)	04:50:58

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

Note: CP reading #2 indicates a 51mV difference. It is due to possible CP reading fluctuation.

Note: CP reading #2 indicates probe contact with pipe metal. Because no bare metal was observed, we believe the CP gun probe tip penetrated residual coating for this reading.

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Diver Inspection Form for L5 Straits of Mackinac

General Information

Date:	10/26/17	**Diver:**	Troy Baskett
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	E-6 (E-25A / E-25B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	5' 9" North	12:00	0.04 (4" X 1½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	5' 1" North	12:00	0.01 (1½"X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	3' 4" North	11:00	0.002 (½" X ½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
4	2' 2" North	12:00	0.01 (1" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
5	5' 8" North	10:00	0.01 (1" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
6	2' North	3:00	0.002 (½" X ½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
7	1' North	1:00	0.002 (½" X ½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
	NO FEATURES SOUTH ANCHOR			☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area

NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)	**Biota present:**	☒ YES ☐ NO
Dislodged coating observed on the lake floor: ☐ YES ☒ NO	**Lake floor location wrt pipe:**	In span 10" off lake floor

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Diver Inspection Form for L5 Straits of Mackinac

	Comments/Issues/Discussion
	NO FEATURES IDENTIFIED 6' SOUTH OF ANCHOR
	[redacted]
	Contractor Signature / Enbridge Representative/ Inspector Signature

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	Product:	211 Coating Thickness Gauge
Last Calibrated:	N/R	Next Calibration Due:	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	Coating Thickness (mil)	Distance from Anchor (ft)	Location on Pipe (o'clock)
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	58°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.





Date:	10/26/17	Frame(HH:MM:SS)	00:14:34	Date:	10/26/17	Frame(HH:MM:SS)	00:22:14

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	58°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance



Date:	10/26/17	Frame(HH:MM:SS)	00.17:44	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	58°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance



Date:	10/26/17	Frame(HH:MM:SS)	00:16:24	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long, record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/26/17	Frame(HH:MM:SS)	00:17:21	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 5)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	58°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
included the date and time stamps associated with video surveillance.



Date:	10/26/17	Frame(HH:MM:SS)	00:18:28	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 6)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature [°F]	58°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:

Included the date and time stamps associated with video surveillance.



Date:	10/26/17	Frame(HH:MM:SS)	00:20:43	Date:	00:25:51	Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 7)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long, record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:

Included the date and time stamps associated with video surveillance.



Date:	10/26/17	Frame(HH:MM:SS)	00:21:56	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (OVER VIEW OF 6' SOUTH ANCHOR)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/26/17	Frame(HH:MM:SS)	00:13:22	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

General Information

Date:	10/2/17	**Diver:**	Chad Cantrell, Mike Racette
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	E-7 (E-23A South / E-23A North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

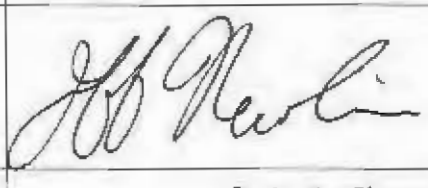
Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	4' 9"– 5' 7" South	6:00	0.21 (7½" X 4")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	4' South	12:00	0.06 (2" X 4")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	4' South	11:50	0.001 (½" X ¼")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
4	2' South	5:00 – 6:30	0.05 (7" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)			**Biota present:**	☒ YES ☐ NO	
Dislodged coating observed on the lake floor: ☐ YES ☒ NO			**Lake floor location wrt pipe:**	In span 30" off lake floor	

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Diver Inspection Form for LS Straits of Mackinac

	Comments/Issues/Discussion
	Feature 1, Approximately 2% of the area showed bare metal after deposit removal. Sample taken of deposit, peeling some coating off with sample, believed to be outer wrap Feature 2, Approximately 75% of the area showed bare metal after deposit removal Feature 3, Approximately 25% of the area showed bare metal after deposit removal Feature 4, 0% of the area showed bare metal after deposit removal–outer wrap missing – after DFTs and CP readings, no bare metal as the diver visually thought
	 [redacted]
	Contractor Signature / Enbridge Representative/ Inspector Signature

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	09/15/2017	**Next Calibration Due:**	9/15/2018
Gauge verified prior to use:	☒YES ☐NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	109	5	10:00
North of Anchor #2	109	5	2:00
South of Anchor #1	120	5	10:00
South of Anchor #2	125	5	2:00
Average Thickness	115		

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	-1480 -1500	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	-1460 -1485
DFT #1 (mil) (north end of feature)	<25	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	<25
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	51°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	145 100 135 85	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	150 130 99 99

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10.2.17	Frame(HH:MM:SS)	11:25:41	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**-1606 -1608**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**-1604 -1609**
DFT #1 (mil) (north end of feature)	**<25**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**<25**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**51°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**95**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**110**
			135		**165**
			125		**115**
			110		**115**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/2/17	Frame(HH:MM:SS)	10:23:25	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	-1587 -1597	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	100	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	51°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	100 85 107 130	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	140 120 130 120

Provide 1 to 2 photos of feature, below:

Included the date and time stamps associated with video surveillance.



Date:	10/2/17	Frame(HH:MM:SS)	11:23:43	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	-200 -202	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	-198 -202
DFT #1 (mil) (north end of feature)	74	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	135
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	51°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	175 95 140 135	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	190 120 102 125

Provide 1 to 2 photos of feature, below:

Included the date and time stamps associated with video surveillance.



Date:	10/2/17	Frame(HH:MM:SS)	11:24:21	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

General Information

Date:	10/26/17	**Diver:**	Scott Woodward
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	E-8 (E-23A North / E-23B South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	5' 7" South	7:00	0.17 (6" X 4")	☐ Dislodged Area ☒ Deposit	☐Holiday (bare metal) ☐Disturbed Area
2	3' 6" South	6:00	1.0 (12" X 12" D) 0.02 (1" X 3" D)	☒ Dislodged Area ☒ Deposit	☐Holiday (bare metal) ☐Disturbed Area
3	Anchor to 6' South	360°	9.42 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
4	3" North	6:00	0.03 (2" X 2")	☐ Dislodged Area ☒ Deposit	☐Holiday (bare metal) ☐Disturbed Area
5	1' North	7:00	0.17 (5" X 5")	☐ Dislodged Area ☒ Deposit	☐Holiday (bare metal) ☐Disturbed Area
6	Anchor to 6' North	360°	9.42 (72" X 62.83")	☒ Dislodged Area ☐ Deposit ☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area ☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area

NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)	**Biota present:**	☒YES ☐ NO
Dislodged coating observed on the lake floor: ☐YES ☒NO	**Lake floor location wrt pipe:**	In span 20" off lake floor

Comments/Issues/Discussion

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Diver Inspection Form for L5 Straits of Mackinac

Feature 2, Deposit area (1" X 1" next to a 1" X 2") within Dislodged area 12" X 12"

Feature 3, Dislodged area is approximately 30% of area from anchor to 6' South that has outer wrap missing

Feature 6, Dislodged area is approximately 30% of area from anchor to 6' North that has outer wrap missing

Contractor Signature	[redacted]
	Enbridge Representative/ Inspector Signature

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	Product:	211 Coating Thickness Gauge
Last Calibrated:	N/R	Next Calibration Due:	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	Coating Thickness (mil)	Distance from Anchor (ft)	Location on Pipe (o'clock)
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/26/17	Frame(HH:MM:SS)	00:12:05



Date:	10/26/17	Frame(HH:MM:SS)	00:12:34

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/26/17	Frame(HH:MM:SS)	00:14:00	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/26/17	Frame(HH:MM:SS)	00:15:38	Date:		Frame(HH:MM:SS)	

ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/26/17	Frame(HH:MM:SS)	00:17:06	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 5)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long, record #1 and #3 for features 2"-8" long, record #1, #2 and #3 for features >8" long)					
Temperature (°F)	58°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R
			N/R		N/R
			N/R		N/R
			N/R		N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/26/17	Frame(HH:MM:SS)	00:18:52	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 6)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/26/17	Frame(HH:MM:SS)	00:20:09	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for LS Straits of Mackinac

General Information			
Date:	10/26/17	**Diver:**	Chad Cantrell
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	E-9 (E-23B South / E-23B North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	Anchor to 6' South	360°	26.70 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	3' 4" South	4:00	0.08 (6"X 2")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	1' South	2:00	0.01 (1" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
4	4' 4" North	9:00 – 6:00	0.10 (2" X 7")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
5	Anchor to 6' North	360°	3.14 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
6	1' 5" North	7:00	0.03 (2" X 2")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
7	4" North	5:00	0.04 (3" X 2")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
8	2' 4" North	5:00	0.06 (2" X 4")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
9	5' 6" North	5:00	0.04 (1½" X 4")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
10	5' 7" North	5:30	0.08 (4" X 3")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)			**Biota present:**	☒ YES ☐ NO	
Dislodged coating observed on the lake floor: ☐ YES ☒ NO			**Lake floor location wrt pipe:**	In span 12" off lake floor	

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Diver Inspection Form for L5 Straits of Mackinac

	Comments/Issues/Discussion
	Feature 1, Dislodged area is approximately 85% of area from anchor to 6' South that has outer wrap missing Feature 5, Dislodged area is approximately 10% of area from anchor to 6' North that has outer wrap missing

Contractor Signature	Enbridge Representative/ Inspector Signature
[signature]	[redacted]

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	Product:	211 Coating Thickness Gauge
Last Calibrated:	N/R	Next Calibration Due:	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	Coating Thickness (mil)	Distance from Anchor (ft)	Location on Pipe (o'clock)
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	58°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:

Included the date and time stamps associated with video surveillance.



Date:	10/26/17	Frame(HH:MM:SS)	00:14:43	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/26/17	Frame(HH:MM:SS)	00:12:35	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	58°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:

Included the date and time stamps associated with video surveillance.



Date:	10/26/17	Frame(HH:MM:SS)	00:13:38	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long, record #1, #2 and #3 for features >8" long)					
Temperature [°F]	**58°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/26/17	Frame(HH:MM:SS)	00:16:47	Date:		Frame(HH:MM:SS)	

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Cathodic Protection and Coating Measurements (for Feature # 5)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature [°F]	**58°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/26/17	Frame(HH:MM:SS)	00:22:25	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 6)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/26/17	Frame(HH:MM:SS)	00:18:36	Date:	00:25:51	Frame(HH:MM:SS)

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 7)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature [°F]	58°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/26/17	Frame(HH:MM:SS)	00:19:35	Date:		Frame(HH:MM:SS)	

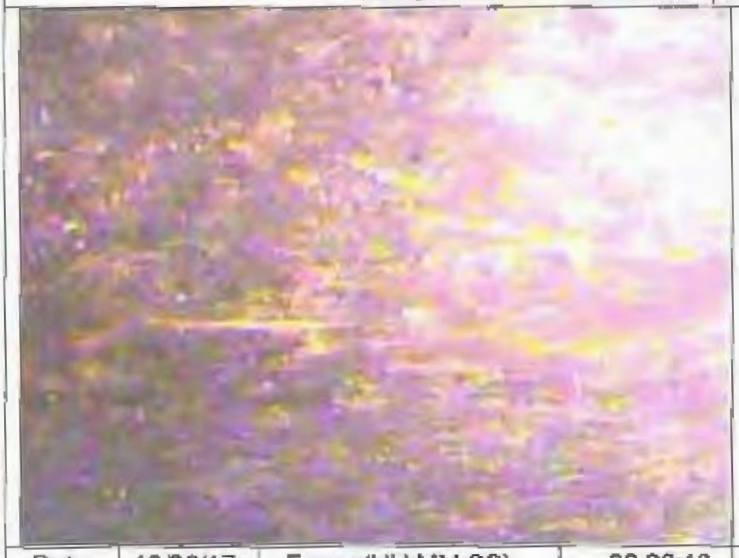
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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 8)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R** **N/R** **N/R** **N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R** **N/R** **N/R** **N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/26/17	Frame(HH:MM:SS)	00:20:13	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 9)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	58°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/26/17	Frame(HH:MM:SS)	00:21:21	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 10)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	58°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:

Included the date and time stamps associated with video surveillance.



Date:	10/26/17	Frame(HH:MM:SS)	00:22:04	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

General Information			
Date:	**10/2/17, 10/3/17, 10/6/17**	**Diver:** 10/2/17 Maurice Unger, Andrew Albers, McKenzie Tompkins	10/3/17 Joe Reimer, Chad Cantrell, Mike Racette, Maurice Unger 10/6/17 Scott Woodward
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	E-10 (E-28A South / E28 North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	4' South	3:00 – 5:00	5.54 (19" X 42")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	2' South	11:00	0.02 (2" X 1½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	1' 8" South	10:00	0.003 (2" X ¼")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
4	1' 8" South	9:00	0.08 (3" X 4")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
5	Adjacent to saddle South	10:00	0.05 (2½" X 3")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
6	3" North	3:00	0.03 (3" X 1½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
7	2' 6" North	12:00 – 3:00	0.28 (4" X 10")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
8	2' 6" North	6:00	0.01 (2" X ½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
9	5' North	3:00	0.39 (7" X 8")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
9A	5' 4" North	6:00 – 9:00	0.12 (5" x 3 1/2")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
9B	5' 4" North	6:00	0.25 (6" x 6")	☐ Dislodged Area ☒ Deposit	☒ Holiday (bare metal) ☐ Disturbed Area
10	6' North	9:00 – 12:00	0.89 (16" X 8")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
11	7' 6" North	7:00	0.19 (3½" X 8")	☐ Dislodged Area ☐ Deposit	☒ Holiday (bare metal) ☐ Disturbed Area
12	7' 7" North	9:00	0.10 (4¼" X 3½")	☐ Dislodged Area ☐ Deposit	☒ Holiday (bare metal) ☐ Disturbed Area
13	8' 5" North	5:30	0.11 (4" X 4")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
14	8' 8" North	11:00	0.22 (4" X 8")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
15	9' North	8:00 – 10:00	0.75 (9" X 1')	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
16	10' North	6:00 – 8:00	2.77 (19" X 21")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area

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Diver Inspection Record (continued)

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft²)	Visual Classification of Feature	
17	11' 6" North	3:00 – 5:00	1.0 (12" X 12")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
18	11' 6" North	7:00	0.01 (1" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
19	11' 7" North	11:00	0.15 (5¼" X 4")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
20	13' North	6:00	0.03 (2" X 2")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
21	12' 4" North	10:00 – 12:00	0.42 (1" X 5")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
22	12' 6" North	9:00	0.01 (1" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
23	14' North	7:00	1.07 (14" X 11")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
24	16' 6" North	12:00	0.33 (8" X 6")	☐ Dislodged Area ☐ Deposit	☒ Holiday (bare metal) ☐ Disturbed Area
25	16' 6" North	9:00	0.17 (6" X 4")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
26	17' 6" North	4:00	0.001 (1" X ¼")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
27	17' 7" North	5:00	0.02 (3" X 1")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
28	17' 6" North	6:00	0.0004 (½" X 1/8")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)			**Biota present:**	☒ YES ☐ NO	
Dislodged coating observed on the lake floor: ☐ YES ☒ NO			**Lake floor location wrt pipe:**	In span 9" – 24" off lake floor	

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	Comments/Issues/Discussion
	Feature 1, Dislodged, DFTs over 40 mils Feature 2, Deposit sample taken, 0% of the area showed bare meetal after deposit removal, possibly down to primer Feature 3, Deposit sample taken, 0% of the area showed bare metal after deposit removal Feature 4, Deposit sample taken, 0% of the area showed bare metal after deposit removal Feature 5, Deposit sample taken, approximately 5% of the area showed bare metal after deposit removal, Diver McKenzie started inspection 10/2/17, Diver Joe Reiman took samples on 10/3/17 am Feature 6, Deposit sample taken, approximately 3% of the area showed bare metal after deposit removal Feature 7, Deposit sample taken, approximately 5% of the area showed bare metal after deposit removal Feature 8, Deposit sample taken, 0% of the area showed bare metal after deposit removal Feature 9, Deposit sample taken, 0% of the area showed bare metal after deposit removal Feature 9A, discovered after initial inspection during coating repair at E-10. The feature had calcareous deposits, no bare metal. The feature was included in the overall repair at E-10 Feature 9B, discovered after initial inspection during coating repair at E-10. The feature had calcareous deposits, no bare metal. The feature was included in the overall repair at E-10 Feature 10, Deposit sample taken, 0% of the area showed bare metal after deposit removal Feature 11, Holiday, bare metal observed prior to removing deposit, Deposit sample taken, approximately 50% of the area showed bare metal after deposit removal Feature 12, Holiday, bare Metal 4¼" X 3½" upon inspection, (originally identified as Dislodged 1' 5" X 1') Feature 13, Dislodged Feature 14, Dislodged Feature 15, Dislodged Feature 16, Deposit sample taken, approximately 2% of the area showed bare metal after deposit removal Feature 17, Dislodged Feature 18, Deposit sample taken, 0% of the area showed bare metal after deposit removal Feature 19, Deposit sample taken, 0% of the area showed bare metal after deposit removal Feature 20, Dislodged Feature 21, Dislodged Feature 22, Deposit sample taken, 0% of the area showed bare metal after deposit removal Feature 23, Deposit sample taken, 0% of the area showed bare metal after deposit removal Feature 24, Holiday, bare metal Feature 25, Deposit sample taken, approximately 20% of the area showed bare metal after deposit removal Feature 26, Identified as dislodged, Bare metal 0% (1st Diver identified as holiday, 2nd Diver verified with CP & DFT readings, no Holiday, no deposit, CP readings taken to verify-but not necessary due to DFTs above 40 mils) Feature 27, Identified as dislodged, Bare metal 0% (1st Diver identified as holiday, 2nd Diver verified with CP & DFT readings, no Holiday, no deposit, CP readings taken to verify-but not necessary due to DFTs above 40 mils) Feature 28, Identified as dislodged, Bare metal 0% (1st Diver identified as holiday, 2nd Diver verified with CP & DFT readings, no Holiday, no deposit, CP readings taken to verify-but not necessary due to DFTs above 40 mils)

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

	Contractor Signature	[redacted]	Enbridge Representative/ Inspector Signature

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	Product:	211 Coating Thickness Gauge
Last Calibrated:	09/15/2017	Next Calibration Due:	09/15/2018
Gauge verified prior to use:	☒YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	Coating Thickness (mil)	Distance from Anchor (ft)	Location on Pipe (o'clock)
North of Anchor #1	115	5	10:00
North of Anchor #2	82	5	2:00
South of Anchor #1	92	5	10:00
South of Anchor #2	110	5	2:00
Average Thickness	100		

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	95	**DFT #2 (mil)** (center of feature)	80	**DFT #3 (mil)** (south end of feature)	80
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	56°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	80 115 115 115	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	80 120 82 82

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date: 10/2/17 Frame(HH:MM:SS) 02:35:42 | Date: Frame(HH:MM:SS)

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**-1546 -1559**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**-1553 -1556**
DFT #1 (mil) (north end of feature)	**36**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**55**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**52°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**250** **200** **180** **125**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**120** **200** **210** **180**
Provide 1 to 2 photos of feature, below: *Included the date and time stamps associated with video surveillance.*					



Date:	10/2/17	Frame(HH:MM:SS)	14:10:28	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

Note: CP readings #1 and #3 indicates probe contact with pipe metal. Because no bare metal was observed, we believe the CP gun probe tip penetrated residual coating for the readings.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	**-272** **-282**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**-285** **-291**
DFT #1 (mil) (north end of feature)	**140**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**135**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**54°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**180**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**115**
			180		**190**
			200		**170**
			160		**180**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/2/17	Frame(HH:MM:SS)	14:12:13	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	-208 -212	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	-205 -213
DFT #1 (mil) (north end of feature)	210	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	240
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long, record #1, #2 and #3 for features >8" long)					
Temperature (°F)	54°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	250 210 240 230	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	160 120 190 190

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/2/17	Frame(HH:MM:SS)	N/R	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 5)					
CP Reading #1 (mV) (north end of feature)	-1571 -1568	CP Reading #2 (mV) (center of feature)	N/R	CP Reading #3 (mV) (south end of feature)	-1571 -1575
DFT #1 (mil) (north end of feature)	27	DFT #2 (mil) (center of feature)	N/R	DFT #3 (mil) (south end of feature)	66
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	56°	DFT Adjacent to Feature (mil) (~2" away from edge)	190 125 135 125	DFT Adjacent to Feature (mil) (~8"-12" away from edge)	170 160 95 160
Provide 1 to 2 photos of feature, below: *Included the date and time stamps associated with video surveillance.*					



Date:	10/2/17	Frame(HH:MM:SS)	02:13:17	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 6)					
CP Reading #1 (mV) (north end of feature)	**-1569 -1568**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**-1559 -1563**
DFT #1 (mil) (north end of feature)	**<25**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**<25**
(record #2 for features < 2" long, record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**100** **95** **101** **103**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**105** **94** **98** **109**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/2/17	Frame(HH:MM:SS)	14:17:09	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 7)					
CP Reading #1 (mV) (north end of feature)	-1475 -1476	**CP Reading #2 (mV)** (center of feature)	-1470 -1472	**CP Reading #3 (mV)** (south end of feature)	-1476 -1483
DFT #1 (mil) (north end of feature)	<25	**DFT #2 (mil)** (center of feature)	25	**DFT #3 (mil)** (south end of feature)	<25
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	56°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	70 101 75 95	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	73 96 66 51

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/2/17	Frame(HH:MM:SS)	02:46:54	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 8)					
CP Reading #1 (mV) (north end of feature)	-210 -208	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	-227 -224
DFT #1 (mil) (north end of feature)	92	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	78
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	56°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	110 88 96 76	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	110 105 98 94

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/2/17	Frame(HH:MM:SS)	14:19:37	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Cathodic Protection and Coating Measurements (for Feature # 9)					
CP Reading #1 (mV) (north end of feature)	-210 -212	**CP Reading #2 (mV)** (center of feature)	-215 -214	**CP Reading #3 (mV)** (south end of feature)	-257 -258
DFT #1 (mil) (north end of feature)	80	**DFT #2 (mil)** (center of feature)	84	**DFT #3 (mil)** (south end of feature)	90
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	56°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	120 92 65 92	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	110 118 84 110

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/2/17	Frame(HH:MM:SS)	14:22:16	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 10)					
CP Reading #1 (mV) (north end of feature)	-226 -231	**CP Reading #2 (mV)** (center of feature)	-255 -258	**CP Reading #3 (mV)** (south end of feature)	-195 -198
DFT #1 (mil) (north end of feature)	48	**DFT #2 (mil)** (center of feature)	90	**DFT #3 (mil)** (south end of feature)	79
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	56°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	115 101 101 111	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	84 95 100 125

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/2/17	Frame(HH:MM:SS)	02:38:26	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Cathodic Protection and Coating Measurements (for Feature # 11)					
CP Reading #1 (mV) (north end of feature)	-1509 -1511	**CP Reading #2 (mV)** (center of feature)	-1476 -1479	**CP Reading #3 (mV)** (south end of feature)	-1453 -1457
DFT #1 (mil) (north end of feature)	<25	**DFT #2 (mil)** (center of feature)	<25	**DFT #3 (mil)** (south end of feature)	<25
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long, record #1, #2 and #3 for features >8" long)					
Temperature (°F)	56°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	94 111 100 105	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	75 89 110 93

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/2/17	Frame(HH:MM:SS)	14:59:57	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 12)					
CP Reading #1 (mV) (north end of feature)	-374 -372	**CP Reading #2 (mV)** (center of feature)	-1485 -1487	**CP Reading #3 (mV)** (south end of feature)	-405 -401
DFT #1 (mil) (north end of feature)	93	**DFT #2 (mil)** (center of feature)	<25	**DFT #3 (mil)** (south end of feature)	110
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	57°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	98 100 104 109	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	119 96 96 111

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/6/17	Frame(HH:MM:SS)	N/R	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature #13)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	72	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	84
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	57°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	111 82 96 100	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	125 85 115 109

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/6/17	Frame(HH:MM:SS)	N/R	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature #14)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**105**	**DFT #2 (mil)** (center of feature)	**105**	**DFT #3 (mil)** (south end of feature)	**94**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**57°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**125** **125** **110** **111**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**86** **108** **105** **121**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/6/17	Frame(HH:MM:SS)	N/R	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature #15)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**54**	**DFT #2 (mil)** (center of feature)	**91**	**DFT #3 (mil)** (south end of feature)	**76**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**57°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**109** **120** **115** **120**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**120** **120** **94** **102**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/6/17	Frame(HH:MM:SS)	N/R	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature #16)					
CP Reading #1 (mV) (north end of feature)	**-1554** **-1556**	**CP Reading #2 (mV)** (center of feature)	**-1502** **-1504**	**CP Reading #3 (mV)** (south end of feature)	**-1511** **-1509**
DFT #1 (mil) (north end of feature)	**<25**	**DFT #2 (mil)** (center of feature)	**37**	**DFT #3 (mil)** (south end of feature)	**32**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**110** **109** **99** **100**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**110** **115** **100** **100**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/2/17	Frame(HH:MM:SS)	15:14:07	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature #17)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**71**	**DFT #2 (mil)** (center of feature)	**70**	**DFT #3 (mil)** (south end of feature)	**74**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**57°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**100** **84** **72** **115**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**105** **87** **125** **102**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/6/17	Frame(HH:MM:SS)	N/R	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Cathodic Protection and Coating Measurements (for Feature # 18)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**-293** **-289**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**49**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**95** **115** **110** **80**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**110** **115** **100** **90**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/3/17	Frame(HH:MM:SS)	15:25:55	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature #19)					
CP Reading #1 (mV) (north end of feature)	-170 -173	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	-200 -203
DFT #1 (mil) (north end of feature)	110	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	120
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	56°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	115 115 85 100	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	115 106 83 83

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/2/17	Frame(HH:MM:SS)	15:32:21	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature #20)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**110**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**115**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**57°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**115** **115** **112** **109**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**83** **115** **95** **110**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/6/17	Frame(HH:MM:SS)	N/R	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature #21)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	77	**DFT #2 (mil)** (center of feature)	76	**DFT #3 (mil)** (south end of feature)	87
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	57°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	84 69 91 105	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	82 91 94 100

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/6/17	Frame(HH:MM:SS)	N/R	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 22)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	-177 -180	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	101	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long, record #1, #2 and #3 for features >8" long)					
Temperature (°F)	56°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	105 100 125 79	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	95 120 100 109

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/2/17	Frame(HH:MM:SS)	15:42:30	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature #23)					
CP Reading #1 (mV) (north end of feature)	**-1601** **-1607**	**CP Reading #2 (mV)** (center of feature)	**-347** **-347**	**CP Reading #3 (mV)** (south end of feature)	**-300** **-303**
DFT #1 (mil) (north end of feature)	**71**	**DFT #2 (mil)** (center of feature)	**52**	**DFT #3 (mil)** (south end of feature)	**65**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long. record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**110** **38** **105** **100**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**88** **70** **94** **95**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/2/17	Frame(HH:MM:SS)	15:43:55	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

Note: CP reading #1 indicates probe contact with pipe metal. Because no bare metal was observed, we believe the CP gun probe tip penetrated residual coating for this reading.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature #24)					
CP Reading #1 (mV) (north end of feature)	-1396 -1398	CP Reading #2 (mV) (center of feature)	-1230 -1275	CP Reading #3 (mV) (south end of feature)	-1389 -1383
DFT #1 (mil) (north end of feature)	29	DFT #2 (mil) (center of feature)	30	DFT #3 (mil) (south end of feature)	30
Temperature (°F)	56°	DFT Adjacent to Feature (mil) (~2" away from edge)	84 75 76 70	DFT Adjacent to Feature (mil) (~8"-12" away from edge)	85 72 105 73

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/2/17	Frame(HH:MM:SS)	02:43:36	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature #25)					
CP Reading #1 (mV) (north end of feature)	-196 -200	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	-1500 -1513
DFT #1 (mil) (north end of feature)	73	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	<25
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	56°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	80 75 74 75	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	59 74 115 72

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date: 10/3/17 | Frame(HH:MM:SS) | N/R

Date: | Frame(HH:MM:SS)

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature #26)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**-179** **-181**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**74**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**74** **66** **69** **71**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**70** **82** **74** **105**
Provide 1 to 2 photos of feature, below: *Included the date and time stamps associated with video surveillance.*					



Date:	10/2/17	Frame(HH:MM:SS)	15:51:42	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 27)					
CP Reading #1 (mV) (north end of feature)	-173 -175	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	-165 -168
DFT #1 (mil) (north end of feature)	72	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	72
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	56°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	68 70 68 74	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	70 105 80 74

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date: 10/2/17 | Frame(HH:MM:SS) | 15:57:20 | Date: | Frame(HH:MM:SS)

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 28)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	-265 -265	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	74	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	56°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	76 78 76 74	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	110 51 74 72

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/2/17	Frame(HH:MM:SS)	15:57:57	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

General Information

Date:	10/28/17	**Diver:**	George Palmer
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	E-11 (E-28A North / E-28B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	4' 7" South	8:00	0.003 (1" X ½")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	3' 10" South	6:00	0.21 (6" X 5" Di) 0.14 (5" X 4" D)	☒ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
	NO FEATURES NORTH ANCHOR			☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)			**Biota present:**	☒ YES ☐ NO	
Dislodged coating observed on the lake floor: ☐ YES ☒ NO			**Lake floor location wrt pipe:**	In span 24" to lake floor	

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Diver Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Feature 2, Deposit 5" X 4" within a Dislodged area 6" X 5" NO FEATURES IDENTIFIED NORTH OF ANCHOR

Contractor Signature	Enbridge Representative/ Inspector Signature
[signature]	[redacted]

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	N/R	**Next Calibration Due:**	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	54°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/28/17	Frame(HH:MM:SS)	00:19:45



Date:	10/28/17	Frame(HH:MM:SS)	00:22:22

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	54°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R
			N/R		N/R
			N/R		N/R
			N/R		N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/28/17	Frame(HH:MM:SS)	00:21:07	Date:		Frame(HH:MM:SS)	N/R

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (OVER VIEW OF 6' NORTH ANCHOR)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long, record #1 and #3 for features 2"-8" long, record #1, #2 and #3 for features >8" long)					
Temperature (°F)	54°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R
			N/R		N/R
			N/R		N/R
			N/R		N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/28/17	Frame(HH:MM:SS)	00:24:52	Date:		Frame(HH:MM:SS)	N/R

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

General Information

Date:	10/28/17	**Diver:**	Maurice Unger
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	E-12 (E-30A / E-30B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	Anchor to 6' South	360°	29.87 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	9" - 2' South	6:00	0.25 (24" X 1½") 0.94 (27" X 5")	☒ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	4' 9" North	11:00	0.03 (2" X 2")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
4	Anchor to 6' North	360°	31.44 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
5	5' North	3:00	0.10 (5" X 3")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)			**Biota present:**	☒ YES ☐ NO	
Dislodged coating observed on the lake floor: ☐ YES ☒ NO			**Lake floor location wrt pipe:**	In span 18" to lake floor	

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Diver Inspection Form for L5 Straits of Mackinac

	Comments/Issues/Discussion
	Feature 1, Dislodged area is approximately 95% of area from anchor to 6' South of anchor that has outer wrap missing Feature 2, Deposit is 27" X 5" with a Dislodged 24" X 1½" area through the Deposit Feature 4, Dislodged area is approximately 100% of area from anchor to 6' North of anchor that has outer wrap missing
	[redacted]
	Contractor Signature / **Enbridge Representative/ Inspector Signature**

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	N/R	**Next Calibration Due:**	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	54°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R
			N/R		N/R
			N/R		N/R
			N/R		N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/28/17	Frame(HH:MM:SS)	00:22:47	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

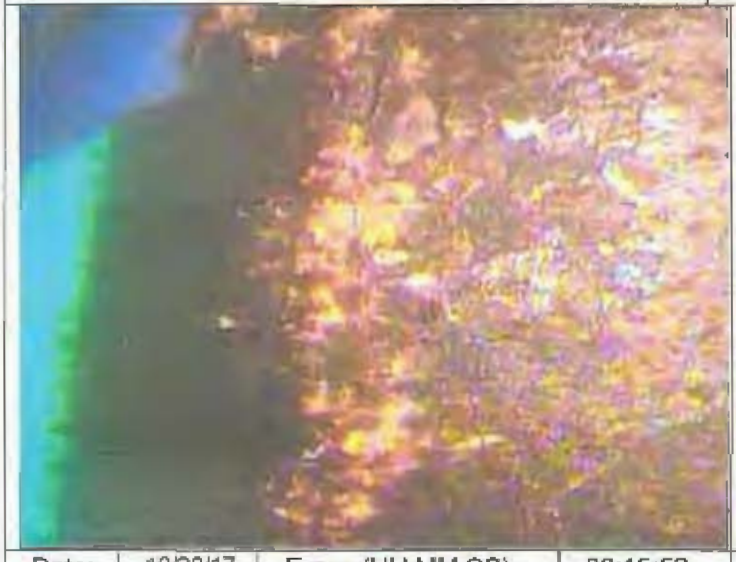
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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	54°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R
			N/R		N/R
			N/R		N/R
			N/R		N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/28/17	Frame(HH:MM:SS)	00:15:52	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	54°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



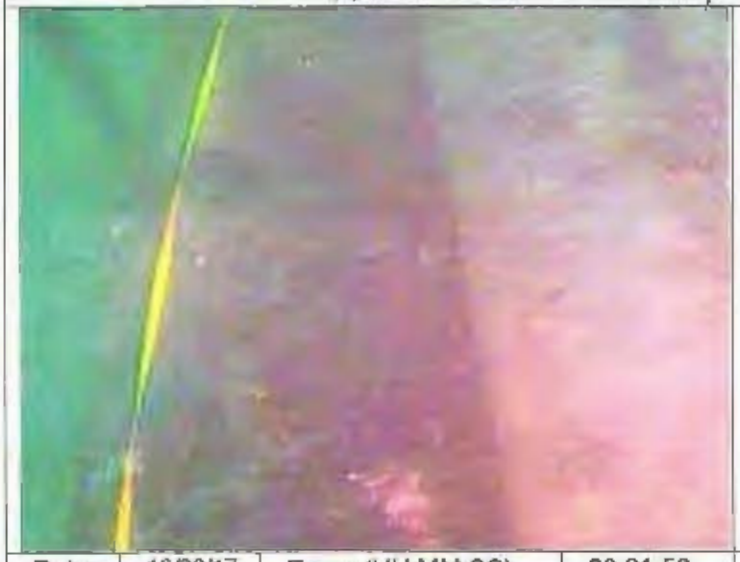
Date:	10/28/17	Frame(HH:MM:SS)	00:22:16	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	54°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R
			N/R		N/R
			N/R		N/R
			N/R		N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/28/17	Frame(HH:MM:SS)	00:21:53	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 5)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**54°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**
Provide 1 to 2 photos of feature, below: *Included the date and time stamps associated with video surveillance.*					



Date:	10/28/17	Frame(HH:MM:SS)	00:21:18	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

General Information			
Date:	10/6/17, 10/9/17	**Diver:** 10/6/17 Troy Baskett, Chad Cantrell, George Palmer	10/9/17 Maurice Unger, Craig Palmer
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	Jesse Salazar
Pipe Support Anchor:	E-13 (E-35A / E-35B)	**Water Depth (ft):**	78
Longitude:	84.76577568	**Latitude:**	45.80398452

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	27' South	12:00	0.34 (7" X 7")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	26' South	7:00 continues into lake bed	0.003 (1" X ½")	☐ Dislodged Area ☐ Deposit	☒ Holiday (bare metal) ☐ Disturbed Area
3	25' 9" South	2:30	0.04 (3" X 2")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
4	25' 7" South	7:00	0.002 (½" X ½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
5	25' 7" South	6:00 – 7:30	0.28 (5" X 8")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
6	24' 7" South	9:00	0.11 (4" X 4")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
7	24' 7" South	7:30	0.25 (6" X 6")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
8	23' 8" South	7:30	0.06 (3" X 3")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
9	23' 9" South	12:30	0.13 (2 holidays that are 1" X ½")	☐ Dislodged Area ☐ Deposit	☒ Holiday (bare metal) ☐ Disturbed Area
10	24' 1"South	3:00	0.58 (16" X 5")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
11	23' 5" South	6:00 – 9:00	0.01 (1" X 1")	☐ Dislodged Area ☐ Deposit	☒ Holiday (bare metal) ☐ Disturbed Area
12	22' 8" South	9:00	0.06 (2" X 4")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
13	22' 11" South	7:00	0.01 (1" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
14	22' 10" South	6:00 – 7:00	0.17 (8" X 3")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
15	22' South	11:45	0.03 (2" X 2")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
16	22' 4" South	6:30 – 8:00	0.28 (10" X 4")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area

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Diver Inspection Form for L5 Straits of Mackinac

Diver Inspection Record (continued)

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
17	21' 7" South	1:00	0.02 (3" X 1")	☐ Dislodged Area ☐ Deposit	☒ Holiday (bare metal) ☐ Disturbed Area
18	21' 9" South	11:00	0.12 (3½" X 5" Di) 0.03 (2¼" X 2¼" D)	☒ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
19	22' South	6:00 – 9:00	0.05 (12" X 8" Di) 0.01 (1" X 1" H)	☒ Dislodged Area ☐ Deposit	☒ Holiday (bare metal) ☐ Disturbed Area
20	17' 6" South	3:00	0.02 (1¼" X 2")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
21	17' 6" South	3:00 – 5:00	0.50 (16" X 4½")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
22	17' 5" South	9:00	0.89 (16" X 8" Di) 0.29 (14" X 3" D)	☒ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
23	17' South	6:00 – 9:00	0.003 (1" x ½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
24	16' South	2:00	0.01 (1½" X 1¼")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
25	16' South	3:30	0.24 (23" X 1½" Di) 0.003 (2" X ¼" D)	☒ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
26	14' 4" South	6:00	0.08 (3" X 4"Di) 0.003 (1" X ½" D)	☒ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
27	13' South	3:00	0.01 (6" X ¼")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
28	12' South	6:00	0.75 (18" X 6")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
29	10' 8" South	12:00	0.12 (4½" X 3 ¾")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
30	8' 4" South	2:00	1.50 (18" X 12")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
31	7' 7" South	9:00 – 10:00	1.0 (12" X 12" Di) 0.17 (6" X 4" D)	☒ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
32	South Anchor Adjacent	11:00	0.0003 (1/8" X 3/8")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
33	1' North	10:00	0.001 (⅛" X 3/8")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area

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Diver Inspection Form for L5 Straits of Mackinac

Diver Inspection Record (continued)

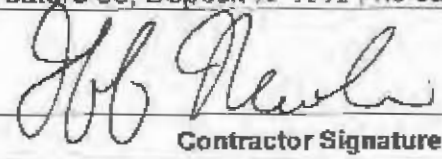
Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
34	4' 9" North	2:00	0.003 (½" X ¾")	☐ Dislodged Area ☒ Deposit	☐Holiday (bare metal) ☐Disturbed Area
35	5' 2" North	6:00	0.002 (½" X ½")	☐ Dislodged Area ☒ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)			**Biota present:**	☒YES ☐ NO	
Dislodged coating observed on the lake floor: ☐YES ☒NO			**Lake floor location wrt pipe:**	In span 0 – 18" off lake floor	

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Diver Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Feature 1, Deposit 7" X 7", no sample taken Feature 2, Holiday 1" X ½" within a Deposit 2" X 13" long @ 7:00 that continues on pipe into lake bed (pipe touches lake bed at 6:00) Feature 3, Deposit 3" x 2", no sample taken Feature 4, Deposit ½" X ⅜", no sample taken Feature 5, Deposit 5" X 8", no sample taken Feature 6, Deposit 4" X 4", no sample taken Feature 7, Deposit 6" X 6", no sample taken Feature 8, Deposit 3" X 3", no sample taken Feature 9, Holiday (A total of 2 holidays that are 1" X ½", next to each other) within a Deposit 15" X 3" Feature 10, Deposit 16" X 5", no sample taken Feature 11, Holiday 1" X 1" within a Deposit 5" X 16" Feature 12, Deposit 2" X 4", no sample taken Feature 13, Deposit 1" X 1", no sample taken Feature 14, Deposit 8" X 3", no sample taken Feature 15, Deposit 2" X 2", no sample taken Feature 16, Deposit 10" X 4", no sample taken Feature 17, Holiday 3" X 1" Feature 18, Deposit 2¼" X 2¼" within a 3½" X 5" dislodged area Feature 19, Holiday 1" X 1" within a Deposit 10½" X 2 ¾ " within Dislodged area 12" X 8" Feature 20, Deposit 1¼" X 2", no sample taken Feature 21, Dislodged 16" X 4½" Feature 22, Deposit (3 connectected, aprox. 14" X 3") within 16" X 8" Dislodged area Feature 23, Deposit 1" X ½", no sample taken Feature 24, Deposit 1½" X 1¼", no sample taken Feature 25, Deposit 2" X ¼" within a 23" X 1½" Dislodged area Feature 26, Deposit 1" X ½" within a 3" X 4" Dislodged area Feature 27, Deposit 6" X ¼", no sample taken Feature 28, Deposit 18" X 6", no sample taken Feature 29, Deposit 4½" X 3 ¾", no sample taken Feature 30, Dislodged area 18" X 12" Feature 31, Deposits (2 next to each other 4" X 4", 3" X 2½") within 12" X 12" Dislodged area Feature 32, Deposit 1/8" X 3/8", no sample taken Feature 33, Deposit ½" X 3/8" no sample taken Feature 34, Deposit ½" X ¾" no sample taken Feature 35, Deposit ½" X ½", no sample taken



Contractor Signature

[redacted]

Enbridge Representative/ Inspector Signature

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Diver Inspection Form for L5 Straits of Mackinac

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	Product:	211 Coating Thickness Gauge
Last Calibrated:	09/15/2017	Next Calibration Due:	09/15/2018
Gauge verified prior to use:	☒YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	Coating Thickness (mil)	Distance from Anchor (ft)	Location on Pipe (o'clock)
North of Anchor #1	74	5	10:00
North of Anchor #2	85	5	2:00
South of Anchor #1	88	5	10:00
South of Anchor #2	74	5	2:00
Average Thickness	75		

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	56°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	84 84 48 66	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	80 62 52 64

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/6/17	Frame(HH:MM:SS)	00:32:54	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**-1524** **-1513**	**CP Reading #2 (mV)** (center of feature)	**-1519** **-1507**	**CP Reading #3 (mV)** (south end of feature)	**-1484** **-1479**
DFT #1 (mil) (north end of feature)	**<25**	**DFT #2 (mil)** (center of feature)	**<25**	**DFT #3 (mil)** (south end of feature)	**<25**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**57°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**72** **65** **57** **79**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**75** **70** **68** **80**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/6/17	Frame(HH:MM:SS)	00:23:59	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	57°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/6/17	Frame(HH:MM:SS)	00:31:50	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**57°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/6/17	Frame(HH:MM:SS)	00:30:46	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

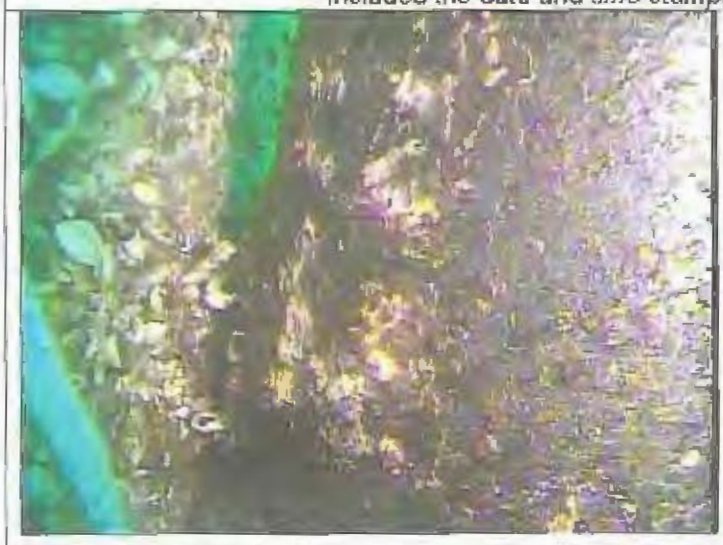
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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 5)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	57°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/6/17	Frame(HH:MM:SS)	00:31:10	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 6)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**57°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/6/17	Frame(HH:MM:SS)	00:33:32	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 7)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	57°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/6/17	Frame(HH:MM:SS)	00:34:50	Date:		Frame(HH:MM:SS)	

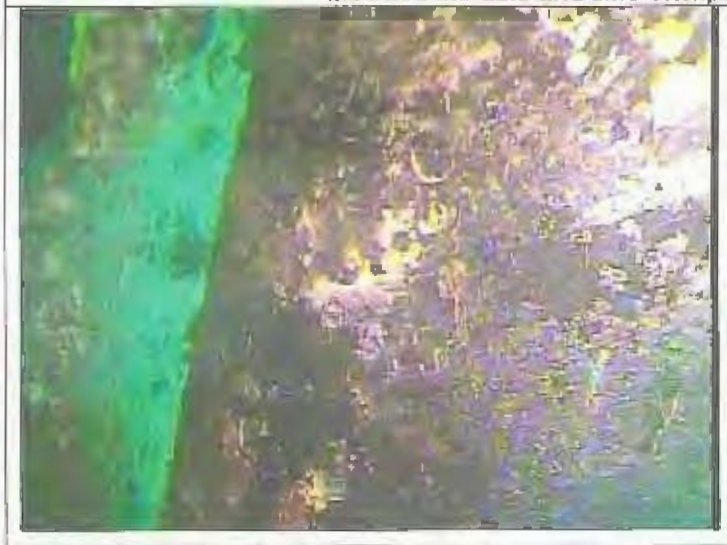
Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 8)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	57°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/617	Frame(HH:MM:SS)	00:35:39	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 9)					
CP Reading #1 (mV) (north end of feature)	**-1513** **-1505**	**CP Reading #2 (mV)** (center of feature)	**-1464** **-1295**	**CP Reading #3 (mV)** (south end of feature)	**-1499** **-1509**
DFT #1 (mil) (north end of feature)	**<25**	**DFT #2 (mil)** (center of feature)	**<25**	**DFT #3 (mil)** (south end of feature)	**66**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**57°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**72** **72** **82** **74**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**82** **58** **80** **68**
Provide 1 to 2 photos of feature, below: *Included the date and time stamps associated with video surveillance.*					



Date:	10/6/17	Frame(HH:MM:SS)	00:36:47

Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

Note: CP reading #2 indicates a 169mV difference. It is due to possible CP reading fluctuation.

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Cathodic Protection and Coating Measurements (for Feature # 10)					
CP Reading #1 (mV) (north end of feature)	**N/A**	**CP Reading #2 (mV)** (center of feature)	**N/A**	**CP Reading #3 (mV)** (south end of feature)	**N/A**
DFT #1 (mil) (north end of feature)	**N/A**	**DFT #2 (mil)** (center of feature)	**N/A**	**DFT #3 (mil)** (south end of feature)	**N/A**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long, record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**57°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/A**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/A**
			N/A		**N/A**
			N/A		**N/A**
			N/A		**N/A**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/6/17	Frame(HH:MM:SS)	00:38:11	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 11)					
CP Reading #1 (mV) (north end of feature)	**-1511** **-1507**	**CP Reading #2 (mV)** (center of feature)	**-1493** **-1486**	**CP Reading #3 (mV)** (south end of feature)	**-1473** **-1457**
DFT #1 (mil) (north end of feature)	**<25**	**DFT #2 (mil)** (center of feature)	**59**	**DFT #3 (mil)** (south end of feature)	**64**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**57°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**71** **73** **45** **79**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**88** **67** **50** **70**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/6/17	Frame(HH:MM:SS)	00:44:05	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 12)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**57°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/6/17	Frame(HH:MM:SS)	00:46:57	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 13)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**57°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/6/17	Frame(HH:MM:SS)	00:49:30	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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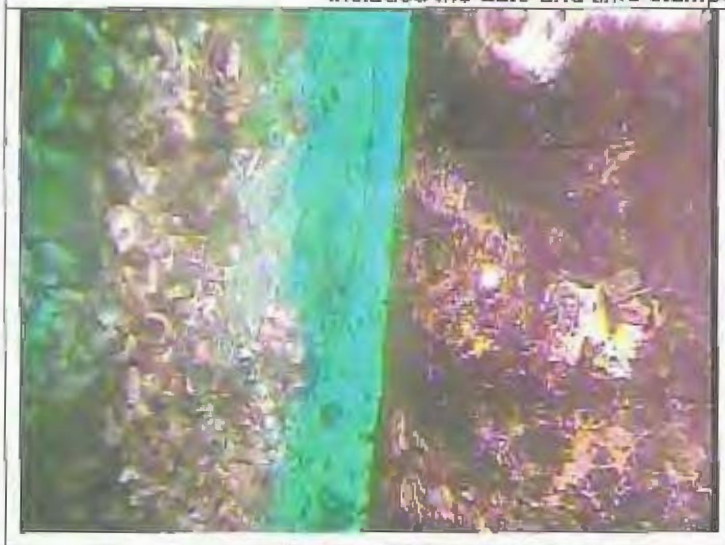
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Diver Inspection Form for L5 Straits of Mackinac

3

Cathodic Protection and Coating Measurements (for Feature # 14)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	57°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/6/17	Frame(HH:MM:SS)	00:50:43	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 15)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	57°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/6/17	Frame(HH:MM:SS)	00:51:48	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 16)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long, record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	57°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/6/17	Frame(HH:MM:SS)	00:53:58	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 17)					
CP Reading #1 (mV) (north end of feature)	**-1501 -1505**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**-1475 -1482**
DFT #1 (mil) (north end of feature)	**<25**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**<25**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long, record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**57°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**88** **62** **84** **86**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**82** **50** **66** **96**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/6/17	Frame(HH:MM:SS)	00:20:58	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 18)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	54	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	60
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	57°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	100 80 80 62	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	100 82 51 74

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/6/17	Frame(HH:MM:SS)	00:38:08	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 19)					
CP Reading #1 (mV) (north end of feature)	-250 -243	**CP Reading #2 (mV)** (center of feature)	-331 -324	**CP Reading #3 (mV)** (south end of feature)	-287 -279
DFT #1 (mil) (north end of feature)	72	**DFT #2 (mil)** (center of feature)	38	**DFT #3 (mil)** (south end of feature)	74
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	57°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	80 100 72 72	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	120 78 110 70

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/6/17	Frame(HH:MM:SS)	00:48:52	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

Note: Diver was mistaken when he observed the apparent holiday, and that DFT and CP readings confirm the existence of coating.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature #20)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long, record #1, #2 and #3 for features >8" long)					
Temperature (°F)	57°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/6/17	Frame(HH:MM:SS)	00:51:23	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 21)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**72**	**DFT #2 (mil)** (center of feature)	**84**	**DFT #3 (mil)** (south end of feature)	**65**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**57°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**105** **105** **94** **94**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**105** **95** **94** **95**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/6/17	Frame(HH:MM:SS)	1:00:15	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 22)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**82**	**DFT #2 (mil)** (center of feature)	**110**	**DFT #3 (mil)** (south end of feature)	**94**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**100** **94** **110** **125**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**110** **100** **125** **85**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/9/17	Frame(HH:MM:SS)	00:24:36	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Cathodic Protection and Coating Measurements (for Feature # 23)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	56°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/9/17	Frame(HH:MM:SS)	00:36:07	Date:		Frame(HH:MM:SS)	

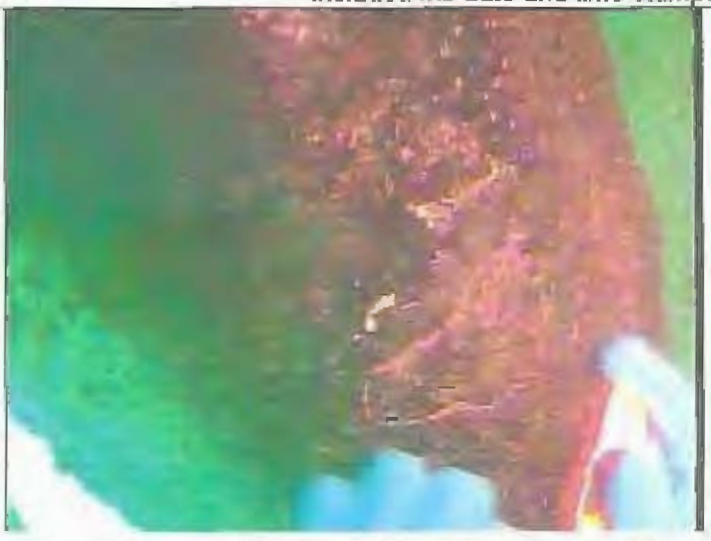
Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Cathodic Protection and Coating Measurements (for Feature # 24)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R** **N/R** **N/R** **N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R** **N/R** **N/R** **N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/9/17	Frame(HH:MM:SS)	00:37:28	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 25)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	120	**DFT #2 (mil)** (center of feature)	74	**DFT #3 (mil)** (south end of feature)	72
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	56°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	115	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	135
			115		120
			115		160
			110		160

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/9/17	Frame(HH:MM:SS)	00:48:53	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 26)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**135**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**145**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**145** **135** **145** **115**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**145** **92** **105** **135**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/9/17	Frame(HH:MM:SS)	00:58:23	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 27)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	56°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/9/17	Frame(HH:MM:SS)	00:59:17	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 28)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	56°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/9/17	Frame(HH:MM:SS)	00:10:44	Date:		Frame(HH:MM:SS)	

Note

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Cathodic Protection and Coating Measurements (for Feature # 29)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/9/17	Frame(HH:MM:SS)	00:12:10	Date:		Frame(HH:MM:SS)	

Note

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 30)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**90**	**DFT #2 (mil)** (center of feature)	**92**	**DFT #3 (mil)** (south end of feature)	**88**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**90** **105** **110** **100**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**105** **110** **88** **105**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/9/17	Frame(HH:MM:SS)	00:26:02	Date:		Frame(HH:MM:SS)	

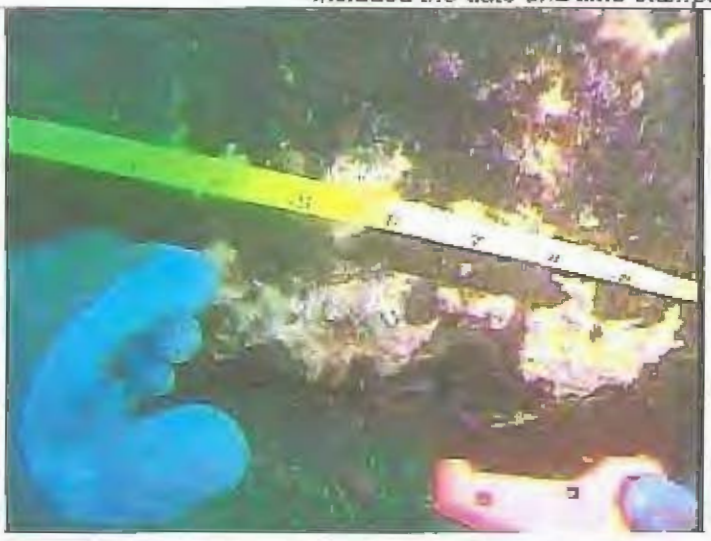
Note

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Cathodic Protection and Coating Measurements (for Feature # 31)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**88**	**DFT #2 (mil)** (center of feature)	**88**	**DFT #3 (mil)** (south end of feature)	**96**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**112**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**96**
			120		**92**
			90		**125**
			108		**120**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/9/17	Frame(HH:MM:SS)	00:38:02	Date:		Frame(HH:MM:SS)	

Note

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Cathodic Protection and Coating Measurements (for Feature # 32)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	56°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R
			N/R		N/R
			N/R		N/R
			N/R		N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/9/17	Frame(HH:MM:SS)	00:41:20	Date:		Frame(HH:MM:SS)	

Note

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Cathodic Protection and Coating Measurements (for Feature # 33)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	56°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/9/17	Frame(HH:MM:SS)	00:46:03	Date:		Frame(HH:MM:SS)	

Note

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Cathodic Protection and Coating Measurements (for Feature # 34)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long, record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	56°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/9/17	Frame(HH:MM:SS)	00:48:38	Date:		Frame(HH:MM:SS)	

Note

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 35)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/9/17	Frame(HH:MM:SS)	00:50:03	Date:		Frame(HH:MM:SS)	

Note

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Diver Inspection Form for L5 Straits of Mackinac

General Information

Date:	10/22/17	**Diver:**	Brad Joanis
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	E-14 (E-34A / E-34B South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
	NO FEATURES South of anchor			☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
	NO FEATURES North of anchor			☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
NB: Insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)			**Biota present:**	☒ YES ☐ NO	
Dislodged coating observed on the lake floor: ☐ YES ☒ NO			**Lake floor location wrt pipe:**	In span 18" off lake floor at anchor 6' North of anchor pipe at 6 o'clock	

Comments/Issues/Discussion

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Diver Inspection Form for L5 Straits of Mackinac

No features identified South of anchor
No features identified North of anchor

Note: Grout bags at 4' 8' North of anchor

Contractor Signature	Enbridge Representative/ Inspector Signature
[signature]	[redacted]

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	Product:	211 Coating Thickness Gauge
Last Calibrated:	N/R	Next Calibration Due:	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	Coating Thickness (mil)	Distance from Anchor (ft)	Location on Pipe (o'clock)
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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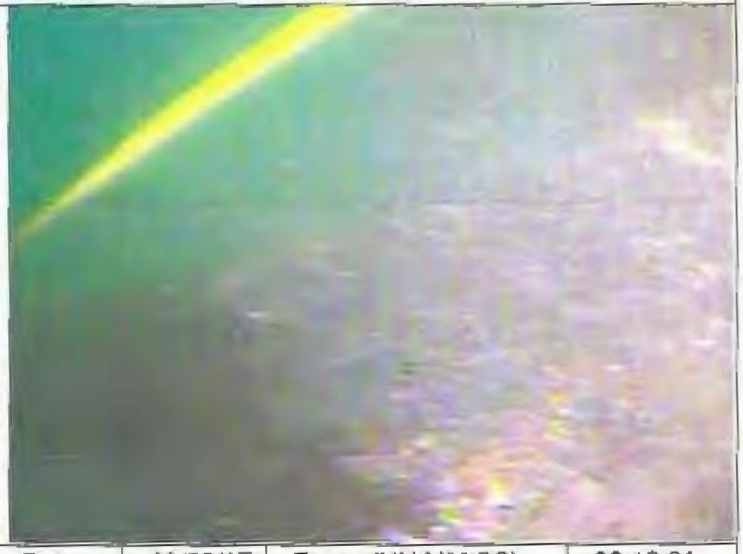
ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # N/A)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	58°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance



Date:	10/22/17	Frame(HH:MM:SS)	00:16:15



Date:	10/22/17	Frame(HH:MM:SS)	00:12:21

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

NO FEATURES SOUTH OF ANCHOR

NO FEATURES NORTH OF ANCHOR

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Diver Inspection Form for L5 Straits of Mackinac

General Information			
Date:	10/22/17	Diver:	Brad Joanis
AFE / W.O.#:	20011702	Company Rep / Inspector:	[redacted]
Pipe Support Anchor:	E-15 (E-34B South / E-34B North)	Water Depth (ft):	[redacted]
Longitude:	[redacted]	Latitude:	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	3' South	9:00	0.0002 (½" X ½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	3' North	6:00	0.0004 (¼" X ¼")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)			Biota present:	☒ YES ☐ NO	
Dislodged coating observed on the lake floor: ☐ YES ☒ NO			Lake floor location wrt pipe:	In span 6" - 12" off lake floor	

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Diver Inspection Form for L5 Straits of Mackinac

	Comments/Issues/Discussion

	Contractor Signature	[redacted]
		Enbridge Representative/ Inspector Signature

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	Product:	211 Coating Thickness Gauge
Last Calibrated:	N/R	Next Calibration Due:	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	Coating Thickness (mil)	Distance from Anchor (ft)	Location on Pipe (o'clock)
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	58°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/22/17	Frame(HH:MM:SS)	00:26:54	Date:		Frame(HH:MM:SS)	N/R

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	58°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below;
Included the date and time stamps associated with video surveillance.



Date:	10/22/17	Frame(HH:MM:SS)	00:29:57	Date:		Frame(HH:MM:SS)	N/R

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

General Information

Date:	10/22/17	**Diver:**	Brad Joanis
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	E-15 (E-34B South / E-34B North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft²)	Visual Classification of Feature	
1	3' South	9:00	0.0002 (⅛" X ½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	3' North	6:00	0.0004 (¼" X ¼")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)			**Biota present:**	☒ YES ☐ NO	
Dislodged coating observed on the lake floor: ☐ YES ☒ NO			**Lake floor location wrt pipe:**	In span 8" – 12" off lake floor	

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Diver Inspection Form for L5 Straits of Mackinac

	Comments/Issues/Discussion
	[redacted]
Contractor Signature	Enbridge Representative/ Inspector Signature

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	Product:	211 Coating Thickness Gauge
Last Calibrated:	N/R	Next Calibration Due:	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	Coating Thickness (mil)	Distance from Anchor (ft)	Location on Pipe (o'clock)
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	58°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R
			N/R		N/R
			N/R		N/R
			N/R		N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/22/17	Frame(HH:MM:SS)	00:26:54	Date:		Frame(HH:MM:SS)	N/R

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	58°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R
			N/R		N/R
			N/R		N/R
			N/R		N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/22/17	Frame(HH:MM:SS)	00:29:57	Date:		Frame(HH:MM:SS)	N/R

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

General Information

Date:	10/29/17	**Diver:**	Troy Baskett
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	E-16 (E-32A-A / E-32A South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	2' South	12:00	0.01 (1" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	3' North	12:00	0.02 (3" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	3' North	11:00	0.01 (1" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
4	1' 6" North	12:00	0.01 (2" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
NB: Insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)			**Biota present:**	☒ YES ☐ NO	
Dislodged coating observed on the lake floor: ☒ YES ☐ NO			**Lake floor location wrt pipe:**	In span 3" off lake floor	

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Diver Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
NOTE. Diver observed a piece of dislodged coating 1½" dia. on lake floor between anchor an 2' South. Diver visually inspected area and also felt bottom of the pipe and could not determine where the piece of dislodged coating came from. Pipe is in span 3" off lake floor from anchor to 6' North Pipe is in span 3" off lake floor to 4' South, then buried to 3:00 and 9:00 o'clock to 6' S

Contractor Signature	Enbridge Representative/ Inspector Signature
[signature]	[redacted]

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	N/R	**Next Calibration Due:**	N/R
Gauge verified prior to use:	☒ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	58°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date: 10/29/17 | Frame(HH:MM:SS) 00:10:29



Date: 10/29/17 | Frame(HH:MM:SS) 00:14:14

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	58°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date: 10/29/17 | Frame(HH:MM:SS) 00:15:26



Date: 10/29/17 | Frame(HH:MM:SS) 00:18:21

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	58°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R
			N/R		N/R
			N/R		N/R
			N/R		N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/29/17	Frame(HH:MM:SS)	00:16:04	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

ENBRIDGE

Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	58°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R
			N/R		N/R
			N/R		N/R
			N/R		N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/29/17	Frame(HH:MM:SS)	00:16:33	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

General Information

Date:	10/29/17	**Diver:**	Scott Woodward
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	E-17 (E-32A South / E-32A North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

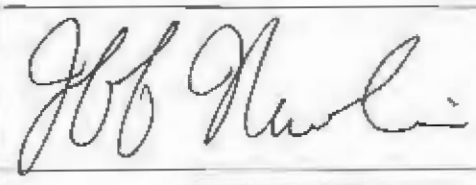
Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	5' 6" South	3:00 - 12:00	0.75 (6" X 18")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	Anchor to 6' South	360°	21.99 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	3' 6" South	9:00	0.01 (1" X 1½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
	NO FEATURES North of anchor			☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area

NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)	**Biota present:**	☒ YES ☐ NO
Dislodged coating observed on the lake floor: ☐ YES ☒ NO	**Lake floor location wrt pipe:**	In span 24" off lake floor

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Diver Inspection Form for L5 Straits of Mackinac

	Comments/Issues/Discussion
	Feature 2, Dislodged area is approximately 70% of area from anchor to 6' South that has outer wrap missing NO FEATURES IDENTIFIED NORTH OF ANCHOR
	 [redacted]
	Contractor Signature / Enbridge Representative/ Inspector Signature

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	Product:	211 Coating Thickness Gauge
Last Calibrated:	N/R	Next Calibration Due:	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	Coating Thickness (mil)	Distance from Anchor (ft)	Location on Pipe (o'clock)
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/29/17	Frame(HH:MM:SS)	00:13:19	Date:		Frame(HH:MM:SS)	

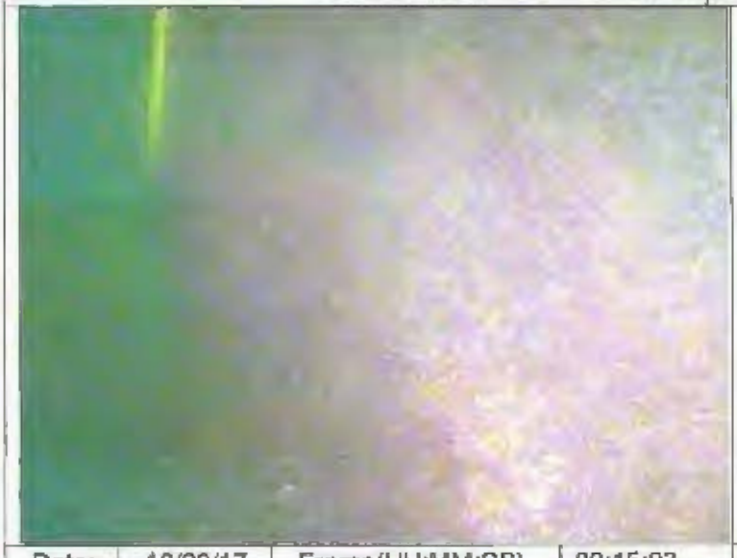
Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/29/17	Frame(HH:MM:SS)	00:15:03	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	56°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/29/17	Frame(HH:MM:SS)	00:15:50	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (OVERVIEW OF 6' NORTH ANCHOR)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	56°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R
			N/R		N/R
			N/R		N/R
			N/R		N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/29/17	Frame(HH:MM:SS)	00:20:03	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

General Information

Date:	10/29/17	**Diver:**	Chad Cantrell
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	E-18 (E-32A North / E-32B South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	4' 6" South	9:00	0.08 (6" X 2")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	4' 4" South	11:00	0.002 (1" X ¼")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	3' 3" South	1:00	0.01 (1" X 1½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
4	3' 3" South	2:30	0.002 (1" X ¼")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
5	3' 3" South	4:00	0.50 (6" X 12")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
6	2' North	11:00 – 9:00	0.50 (12" X 6")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
7	5' North	7:00	0.04 (1" X 6")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
8	Anchor to 6' North	360°	1.57 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area

NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)		**Biota present:**	☒ YES ☐ NO
Dislodged coating observed on the lake floor: ☐ YES ☒ NO		**Lake floor location wrt pipe:**	In span 24" off lake floor

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Diver Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Feature 8, Dislodged area is approximately 5% of area from anchor to 6' North that has outer wrap missing

Contractor Signature	Enbridge Representative/ Inspector Signature
[signature]	[redacted]

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	Product:	211 Coating Thickness Gauge
Last Calibrated:	N/R	Next Calibration Due:	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	Coating Thickness (mil)	Distance from Anchor (ft)	Location on Pipe (o'clock)
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	58°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R
			N/R		N/R
			N/R		N/R
			N/R		N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/29/17	Frame(HH:MM:SS)	00:12:41



Date:	10/29/17	Frame(HH:MM:SS)	00:13:29

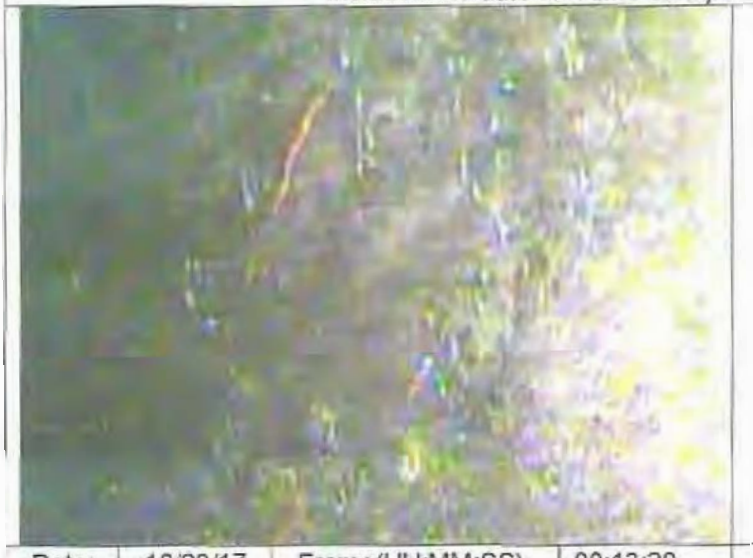
Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	58°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R
			N/R		N/R
			N/R		N/R
			N/R		N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/29/17	Frame(HH:MM:SS)	00:13:20	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/29/17	Frame(HH:MM:SS)	00:13:58	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/29/17	Frame(HH:MM:SS)	00:14:32	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 5)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below;
Included the date and time stamps associated with video surveillance.



Date:	10/29/17	Frame(HH:MM:SS)	00:15:57	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

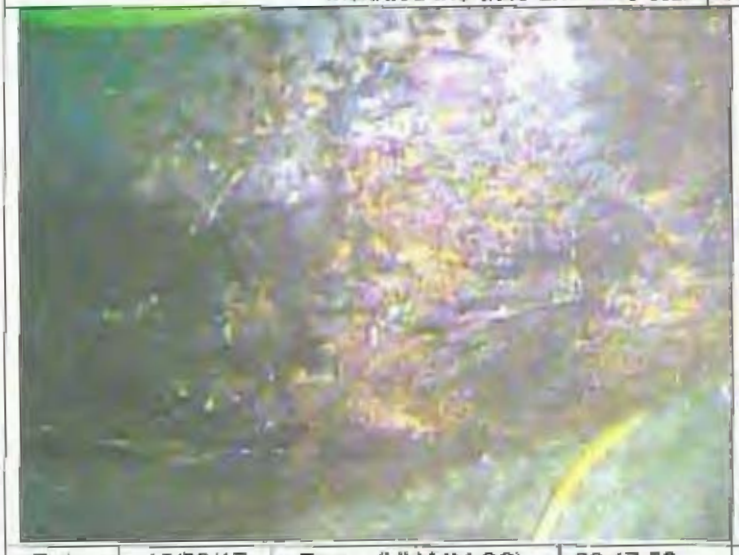
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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 6)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	58°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R
			N/R		N/R
			N/R		N/R
			N/R		N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/29/17	Frame(HH:MM:SS)	00:17:52	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 7)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/29/17	Frame(HH:MM:SS)	00:18:32	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

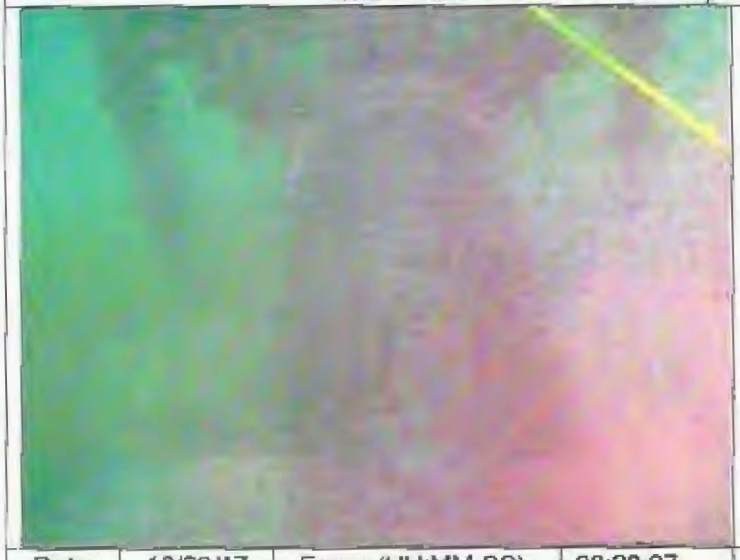
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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 8)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long, record #1 and #3 for features 2"-8" long, record #1, #2 and #3 for features >8" long)					
Temperature (°F)	58°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R
			N/R		N/R
			N/R		N/R
			N/R		N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/29/17	Frame(HH:MM:SS)	00:20:27	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

General Information

Date:	10/29/17	**Diver:**	George Palmer
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	E-19 (E-32B South / E-32B North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	**5' 8" South**	6:00	1.42 (12" X 17" Di) 0.58 (12" X 7" D)	☒ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	**3' South**	8:00	0.02 (3" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	**2' 6" South**	4:00	0.002 (½" X ½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
4	**2' 6" South**	6:00	0.02 (3" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
5	**6' to anchor South**	360°	9.42 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
6	**2' North**	6:00	0.01 (1" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
7	**5' 5" North**	8:00	0.002 (½" X ½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
8	**5' 8" North**	12:00 – 9:00	0.02 (12" X ¼")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
9	**6' to anchor North**	360°	9.42 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area

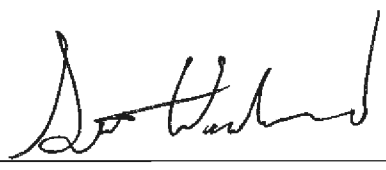
NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)		**Biota present:**	☒ YES ☐ NO
Dislodged coating observed on the lake floor: ☐ YES ☒ NO		**Lake floor location wrt pipe:**	In span 24" off lake floor

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Diver Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Feature 1, Deposit 12" X 7" within a Dislodged 12" X 17" area Feature 5, Dislodged area is approximately 30% of area from anchor to 6' South that has outer wrap missing Feature 9, Dislodged area is approximately 30% of area from anchor to 6' North that has outer wrap missing

Contractor Signature	Enbridge Representative/ Inspector Signature
	[redacted]

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	N/R	**Next Calibration Due:**	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/29/17	Frame(HH:MM:SS)	00:18:08	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

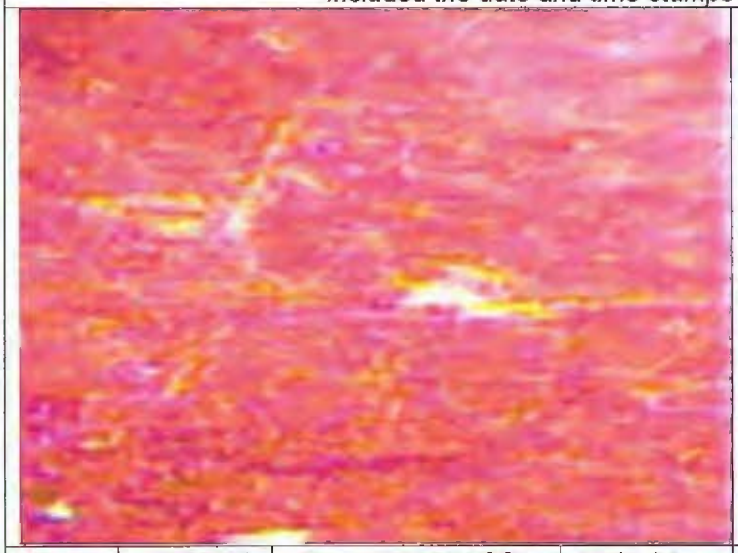
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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/29/17	Frame(HH:MM:SS)	00:19:34	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/29/17	Frame(HH:MM:SS)	00:20:35	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/29/17	Frame(HH:MM:SS)	00:21:05	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 5)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/29/17	Frame(HH:MM:SS)	00:21:55	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 6)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/29/17	Frame(HH:MM:SS)	00:23:12	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 7)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



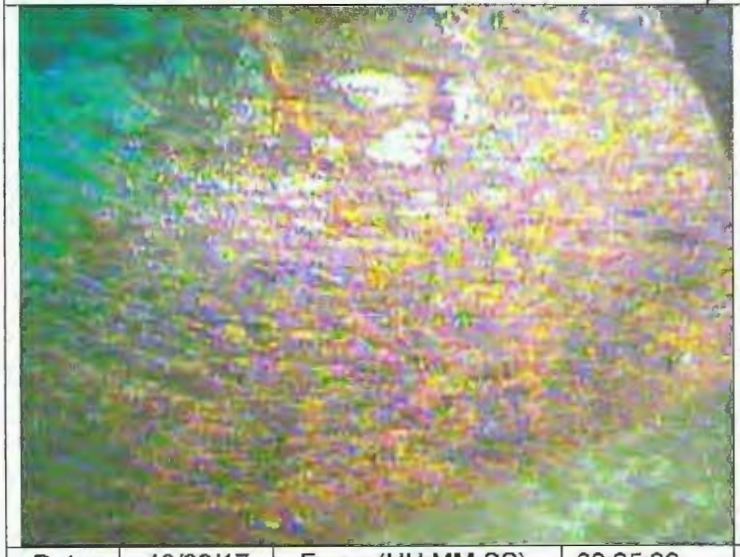
Date:	10/29/17	Frame(HH:MM:SS)	00:24:03	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 8)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/29/17	Frame(HH:MM:SS)	00:25:26	Date:		Frame(HH:MM:SS)	

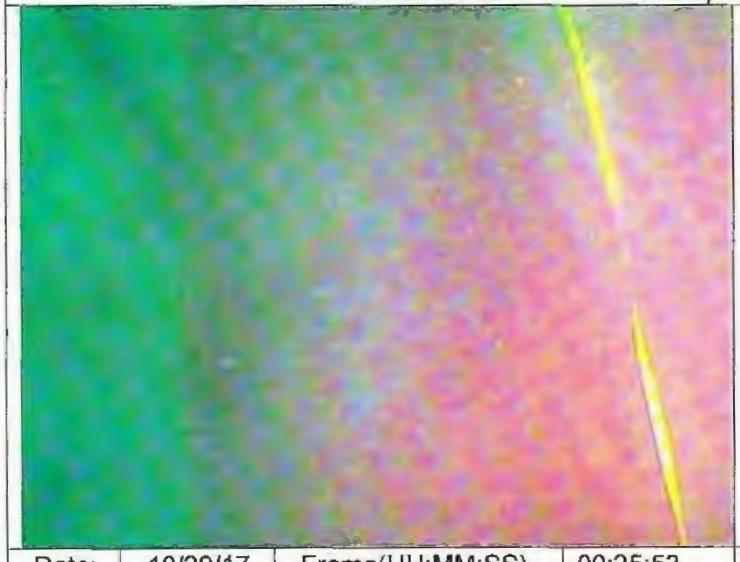
Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 9)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/29/17	Frame(HH:MM:SS)	00:25:53	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

General Information

Date:	10/29/17	**Diver:**	Maurice Unger
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	E-20 (E-39A / E-39B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	Anchor to 6' South	360°	31.41 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	5' 4" North	9:00	0.06 (3" X 3")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	Anchor to 6' North	360°	31.41 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area

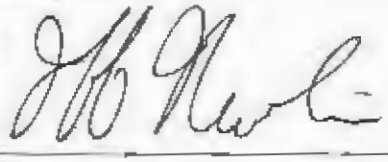
NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)	**Biota present:**	☒ YES ☐ NO
Dislodged coating observed on the lake floor: ☐ YES ☒ NO	**Lake floor location wrt pipe:**	In span 24" off lake floor

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Diver Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Feature 1, Dislodged area is approximately 100% of area from anchor to 6' South that has outer wrap missing Feature 3, Dislodged area is approximately 100% of area from anchor to 6' North that has outer wrap missing CP Open water reading -210/-220 Feature 2 – No change in CP readings to indicate on/off potentials -271/-273 -249/-257 -217/-227 -210/-220

Contractor Signature	Enbridge Representative/ Inspector Signature
	[redacted]

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	N/R	**Next Calibration Due:**	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**54°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/29/17	Frame(HH:MM:SS)	00:12:29	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**54°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance



Date:	10/29/17	Frame(HH:MM:SS)	00:17:33	Date:		Frame(HH:MM:SS)	N/R

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**54°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/29/17	Frame(HH:MM:SS)	00:19:04	Date:		Frame(HH:MM:SS)	N/R

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

General Information

Date:	10/29/17	**Diver:**	Brad Joanis
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	E-21 (E-40A / E-40B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	Anchor to 5' South	3:00	1.57 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	1' North	1:00	0.004 (1" X ½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	5' 6" North	6:00	0.06 (4" X 2")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
4	Anchor to 6' North	360°	1.57 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
5	3' 6" North	12:00	0.01 (1" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area

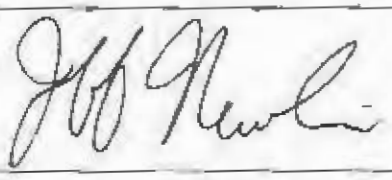
NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)	**Biota present:**	☒ YES ☐ NO
Dislodged coating observed on the lake floor: ☐ YES ☒ NO	**Lake floor location wrt pipe:**	In span 7" off lake floor

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Diver Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Feature 1, Dislodged area is approximately 5% of area from anchor to 6' South that has outer wrap missing Feature 4, Dislodged area is approximately 5% of area from anchor to 6' North that has outer wrap missing Open water reading -197/-196 No change in CP readings on deposits to indicate on/off potentials Feature 2 -277/-266 -277/-266 Feature 3 No reading due to the CP gun not fitting under the 7" span under pipe Feature 5 -271/-260 -278/-267 -260/-250

Contractor Signature	Enbridge Representative/ Inspector Signature
	[redacted]

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	N/R	**Next Calibration Due:**	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/29/17	Frame(HH:MM:SS)	00:15:22	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/29/17	Frame(HH:MM:SS)	00:19:32	Date:		Frame(HH:MM:SS)	

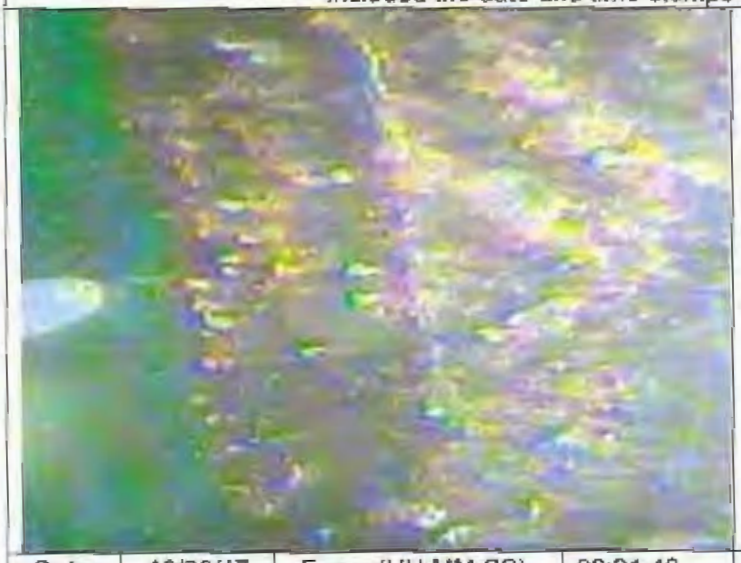
Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance



Date:	10/29/17	Frame(HH:MM:SS)	00:21:40	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/29/17	Frame(HH:MM:SS)	00:22:40	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 5)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/29/17	Frame(HH:MM:SS)	00:23:56	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

General Information			
Date:	10/28/17	**Diver:**	Kevin Lewis
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	E-23 (E-45A / E-45B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	2' 4" to North	12:00	0.07 (2½" X 4")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	2' 2" North	12:00 - 6:00	0.02 (¼" X 12")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	3' 6" North	5:00	0.50 (6" X 12")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
4	3' 8" North	1:00	0.01 (8" X ¼")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
5	4' 8" North	11:00	0.003 (2" X ¼")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
6	5' 8 " North	1:00	0.02 (9" X ¼")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
7	5' 10" North	6:00 – 9:00	0.62 (5" X 18" Di) 0.17 (4" X 6" D)	☒ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
	NO FEATURES SOUTH OF ANCHOR			☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area

NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)	**Biota present:**	☒ YES ☐ NO
Dislodged coating observed on the lake floor: ☐ YES ☒ NO	**Lake floor location wrt pipe:**	In span 12" to lake floor

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Diver Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Feature 7, Deposit 4" X 6" is within a Dislodged 5" X 18" area NO FEATURES IDENTIFIED SOUTH OF ANCHOR NOTE: Due to a technical issue of losing power it caused the loss of Diver video (no Diver video images were captured). The photo (6' to anchor North) in report was captured by the ROV with limited visibility due to the fast current and particulates in the water.

Contractor Signature	Enbridge Representative/ Inspector Signature
[signature]	[redacted]

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	N/R	**Next Calibration Due:**	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**54°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/28/17	Frame(HH:MM:SS)	2:48:40	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**54°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**
Provide 1 to 2 photos of feature, below. Included the date and time stamps associated with video surveillance.					
See comments					
Date:	10/28/17	Frame(HH:MM:SS)		Date:	Frame(HH:MM:SS)

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**54°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.

See comments							
Date:	10/28/17	Frame(HH:MM:SS)		Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**54°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R** **N/R** **N/R** **N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R** **N/R** **N/R** **N/R**
Provide 1 to 2 photos of feature, below: *Included the date and time stamps associated with video surveillance.*					
See comments					
Date:	10/28/17	Frame(HH:MM:SS)		Date:	Frame(HH:MM:SS)

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 5)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**54°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.

See comments							
Date:	10/28/17	Frame(HH:MM:SS)		Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 6)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**54°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below;
Included the date and time stamps associated with video surveillance.

See comments	
Date: 10/28/17 Frame(HH:MM:SS)	Date: Frame(HH:MM:SS)

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 7)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long, record #1 and #3 for features 2"-8" long, record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**54°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.

See comments	
Date: 10/28/17 Frame(HH:MM:SS)	Date: Frame(HH:MM:SS)

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (OVER VIEW OF 6' SOUTH OF ANCHOR)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**54°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.

See comments							
Date:	10/28/17	Frame(HH:MM:SS)		Date:		Frame(HH:MM:SS)	

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ENBRIDGE

Diver Inspection Form for L5 Straits of Mackinac

General Information

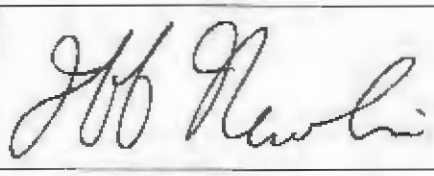
Date:	10/28/17	**Diver:**	Brad Joanis
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	E-24 (E-42 South / E-42 North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	Anchor to 6' South	360°	28.30 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	Anchor to 6' North	360°	28.30 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	6" North	11:00	0.0004 (¼" X ¼")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)			**Biota present:**	☒ YES ☐ NO	
Dislodged coating observed on the lake floor: ☐ YES ☒ NO			**Lake floor location wrt pipe:**	In span 6" – 24" off lake floor	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion	
Feature 1, Dislodged area is approximately 90% of area from anchor to 6' South that has outer wrap missing Feature 2, Dislodged area is approximately 90% of area from anchor to 6' North that has outer wrap missing	
	[redacted]
Contractor Signature	Enbridge Representative/ Inspector Signature

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	N/R	**Next Calibration Due:**	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

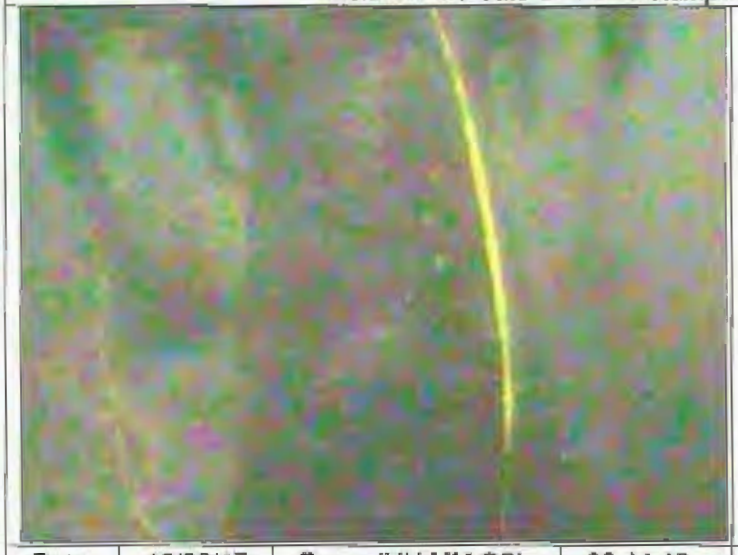
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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/28/17	Frame(HH:MM:SS)	00:14:13	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/28/17	Frame(HH:MM:SS)	00:20:05	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

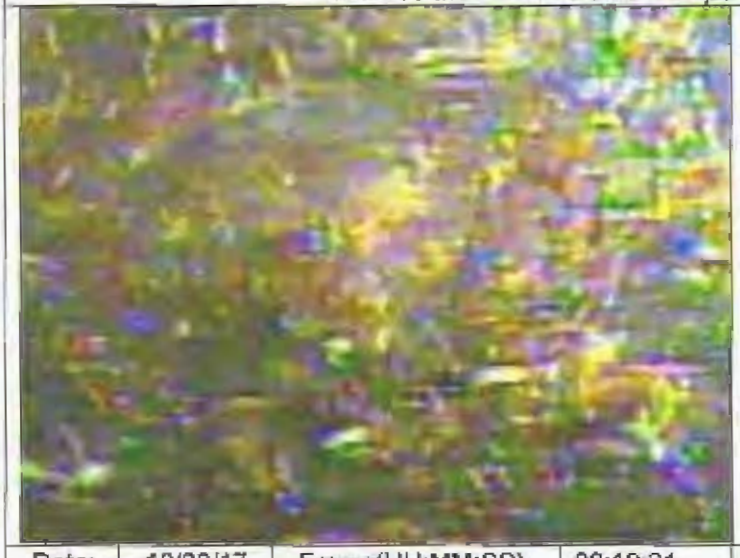
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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/28/17	Frame(HH:MM:SS)	00:19:21	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

General Information

Date:	10/23/17	**Diver:**	Kevin Lewis
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	E-25 (E-47A / E-47B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

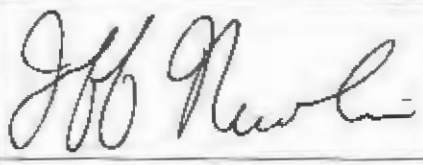
Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	Anchor to 6' South	360°	18.85 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	Anchor to 6' North	360°	1.57 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)			**Biota present:**	☒ YES ☐ NO	
Dislodged coating observed on the lake floor: ☐ YES ☒ NO			**Lake floor location wrt pipe:**	In span 6" – 12" to lake floor	

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Diver Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Feature 1, Dislodged area is approximately 60% of area from anchor to 6' South that has outer wrap missing Feature 2, Dislodged area is approximately 5% of area from anchor to 6' North that has outer wrap missing

Contractor Signature	Enbridge Representative/ Inspector Signature
	[redacted]

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	N/R	**Next Calibration Due:**	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	56°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R
			N/R		N/R
			N/R		N/R
			N/R		N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/23/17	Frame(HH:MM:SS)	00:14:32	Date:		Frame(HH:MM:SS)	N/R

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/23/17	Frame(HH:MM:SS)	00:17:10	Date:		Frame(HH:MM:SS)	N/R

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

General Information			
Date:	10/23/17	**Diver:**	Troy Baskett
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	E-26 (E-48A / E-48B South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	**Anchor to 6' South**	360°	3.14 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
	NO FEATURES NORTH OF ANCHOR			☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)			**Biota present:**	☒ YES ☐ NO	
Dislodged coating observed on the lake floor: ☐ YES ☒ NO			**Lake floor location wrt pipe:**	In span 18" off lake floor	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion	
	Feature 1, Dislodged area is approximately 10% of area from anchor to 6' South that has outer wrap missing NO FEATURES IDENTIFIED NORTH OF ANCHOR
	[redacted]
	Contractor Signature / Enbridge Representative/ Inspector Signature

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	N/R	**Next Calibration Due:**	N/R
Gauge verified prior to use:	☐YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance



Date:	10/23/17	Frame(HH:MM:SS)	00:12:07	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

General Information			
Date:	10/23/17	**Diver:**	Scott Woodward
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	E-27 (E-48B S / E-48B N)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	4' South	6:00	1.0 (12" X 12")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	1" South	5:30	0.02 (1½" X 1½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	Anchor to 6' South	360°	31.42 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
4	Saddle North	6:00	2.01 (12" X 5")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
5	Saddle North	7:00	0.05 (1½" X 5")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
6	5' North	6:00	0.50 (12" X 6")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
7	5' 10" North	360°	0.05 (1/8" X 62.83")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area

NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)	**Biota present:**	☒YES ☐ NO
Dislodged coating observed on the lake floor: ☐YES ☒NO	**Lake floor location wrt pipe:**	In span 18" off lake floor

Comments/Issues/Discussion

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Diver Inspection Form for L5 Straits of Mackinac

Feature 1, Deposit area12" X 12" in a Dislodged area approximately12" X 12"

Feature 3, Dislodged area is approximately 100% of area from anchor to 6' South that has outer wrap missing

Feature 6, Deposit area 12" X 6" in a Dislodged area approximately 12" X 6"

Feature 7, Deposit is 1/8" X 62.83" (around pipe 360°)

[redacted]

Contractor Signature | **Enbridge Representative/ Inspector Signature**

[redacted]

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	N/R	**Next Calibration Due:**	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R	[redacted]	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**52**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/23/17	Frame(HH:MM:SS)	00:13:07	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**52**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/23/17	Frame(HH:MM:SS)	00:15:23	Date:		Frame(HH:MM:SS)	

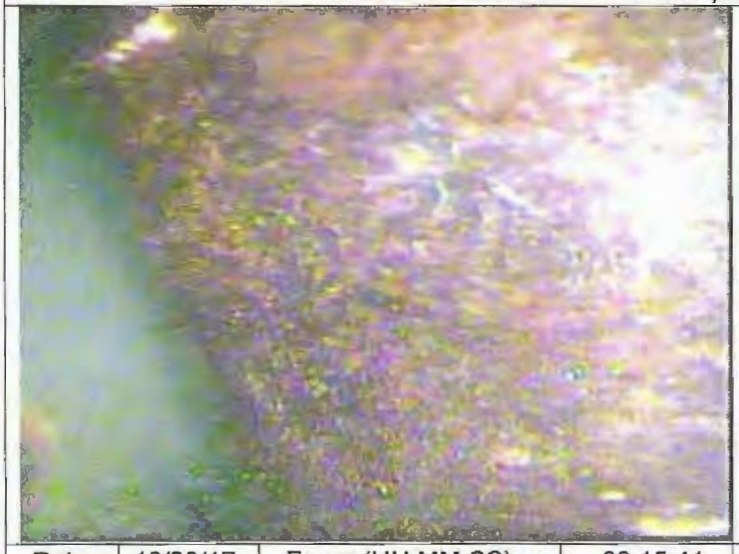
Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**52**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/23/17	Frame(HH:MM:SS)	00:15:41	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**52**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/23/17	Frame(HH:MM:SS)	00:20:03	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 5)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**52**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/23/17	Frame(HH:MM:SS)	00:20:03	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 6)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**52**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/23/17	Frame(HH:MM:SS)	00:21:28	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

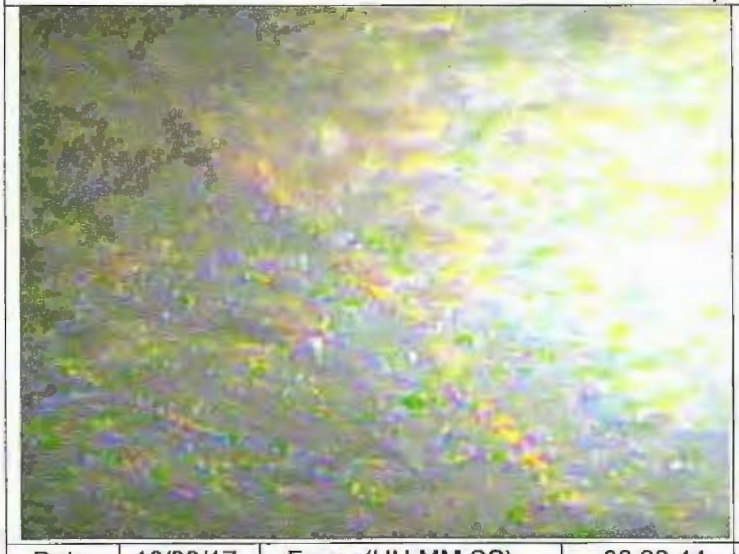
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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 7)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**52**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/23/17	Frame(HH:MM:SS)	00:22:44	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

General Information			
Date:	10/23/17	**Diver:**	Chad Cantrell
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	E-28 (E-66A South / E-66A North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	Anchor to 6' South	360°	31.42 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	Anchor to 6' North	360°	3.14 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)			**Biota present:**	☒ YES ☐ NO	
Dislodged coating observed on the lake floor: ☐ YES ☒ NO			**Lake floor location wrt pipe:**	In span 12" off lake floor	

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Diver Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion

Feature 1, Dislodged area is approximately 100% of area from anchor to 6' South that has outer wrap missing
Feature 2, Dislodged area is approximately 10% of area from anchor to 6' North that has outer wrap missing

NOTE: DFT gage 57 available to take readings on Dislodged areas
DFTs taken due to only Dislodged areas identified South and North of anchor E-28

	12 o'clock	3 o'clock	6 o'clock	9 o'clock
South at anchor	139	115	110	110
5' South of anchor	115	120	115	110
North at anchor	110	115	105	115
5' North of anchor	120	95	99	125



[redacted]

Contractor Signature | Enbridge Representative/ Inspector Signature

Coating Gauge Information

Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	10/6/2017	**Next Calibration Due:**	10/6/2018
Gauge verified prior to use:	☒ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)

Location	Coating Thickness (mil)	Distance from Anchor (ft)	Location on Pipe (o'clock)
North of Anchor #1	110	5	10
North of Anchor #2	115	5	2
South of Anchor #1	110	5	10
South of Anchor #2	120	5	2
Average Thickness	113		

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/23/17	Frame(HH:MM:SS)	00:10:51	Date:		Frame(HH:MM:SS)	N/R

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/23/17	Frame(HH:MM:SS)	00:14.12	Date:		Frame(HH:MM:SS)	N/R

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

General Information			
Date:	10/23/17	**Diver:**	George Palmer
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	E-29 (E-66A North / E-66B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	5' 9" South	12:00	0.007 (1½" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	5' 8" South	2:00	0.0004 (¼" X ¼")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	Anchor to 6' South	360°	3.14 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
4	3' 4" North	9:00	0.10 (5" X 3" D) 0.01 (½" X ¼" D)	☒ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
5	4' North	3:00	0.003 (¼" X 2")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
6	4' North	7:00	0.50 (24" X 3" D) 0.04 (24" X ¼" D)	☒ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
7	Anchor to 6' North	360°	6.28 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area

NB. Insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)	**Biota present:**	☒YES ☐ NO
Dislodged coating observed on the lake floor: ☐YES ☒NO	**Lake floor location wrt pipe:**	In span 6" off lake floor

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ENBRIDGE | Diver Inspection Form for US Straits of Mackinac

Comments/Issues/Discussion	
	Feature 3, Dislodged area is approximately 10% of area from anchor to 6' South that has outer wrap missing Feature 4, Deposit ½" X ¼" within a Dislodged area 5" X 3" Feature 6, Deposit 24" X ¼" with in a Dislodged area 24" X 3" Feature 7, Dislodged area is approximately 20% of area from anchor to 6' North that has outer wrap missing
	[redacted]
	Contractor Signature / Enbridge Representative/ Inspector Signature

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	N/R	**Next Calibration Due:**	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**54°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/23/17	Frame(HH:MM:SS)	00:17:05	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**54°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/23/17	Frame(HH:MM:SS)	00:18:01	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**54°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/23/17	Frame(HH:MM:SS)	00:19:41	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**54°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/23/17	Frame(HH:MM:SS)	00:24:09	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 5)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**54°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/23/17	Frame(HH:MM:SS)	00:26:00	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 6)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**54°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/23/17	Frame(HH:MM:SS)	00:32.11	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 7)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**54°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/23/17	Frame(HH:MM:SS)	00:31:03	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

General Information			
Date:	10/23/17	**Diver:**	Maurice Unger
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	E-30 (E-56A / E-56B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

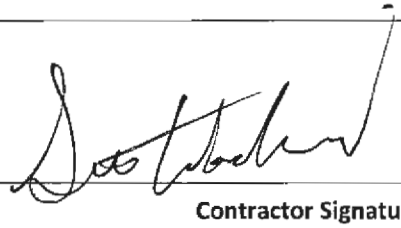
Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	Anchor to 6' South	360°	31.42 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	2' 6" South	6:00	0.56 (9" X 9" Di) 0.005 (3"X ¼" D)	☒ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	9" North	9:00	0.002 (1" X ¼")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
4	4 4" North	12:00	0.002 (½" X ½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
5	4 4" North	1:00	0.006 (½" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
6	4' 4" North	3:00	0.01 (½" X 2")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
7	4' 4" North	2:00	0.002 (½" X ½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)			**Biota present:**	☒YES ☐ NO	
Dislodged coating observed on the lake floor: ☐YES ☒NO			**Lake floor location wrt pipe:**	In span 24" off lake floor	

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Diver Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Feature 1, Dislodged area is approximately 100% of area from anchor to 6' South that has outer wrap missing Feature 2, Deposit 3" X ¼" within a Dislodged area 9" X 9" Note: Features 4-7 appears to be over a weld

Contractor Signature	Enbridge Representative/ Inspector Signature
	[redacted]

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	N/R	**Next Calibration Due:**	N/R
Gauge verified prior to use:	☒YES ☐ NO		

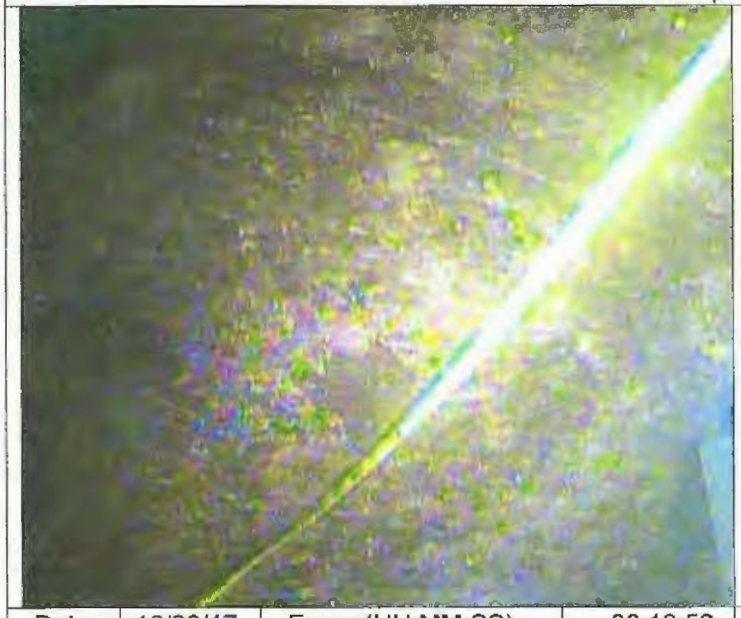
Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**54°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/23/17	Frame(HH:MM:SS)	00:19:58	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**54°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/23/17	Frame(HH:MM:SS)	00:19:30	Date:		Frame(HH:MM:SS)	

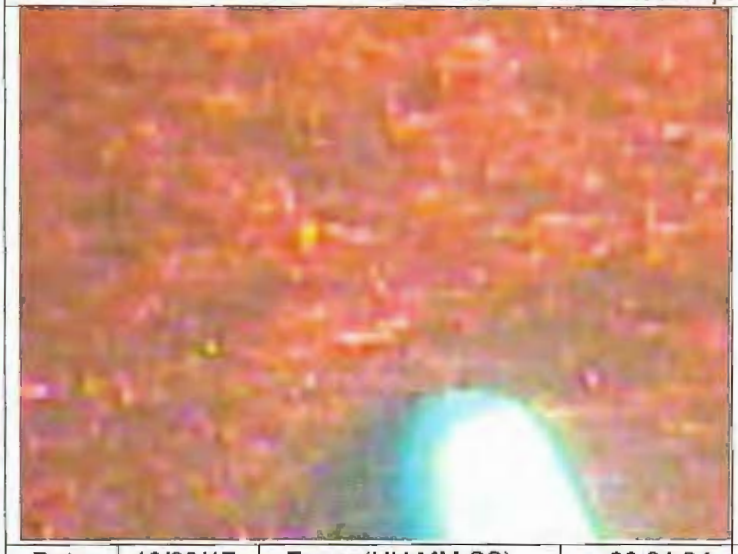
Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**54°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/23/17	Frame(HH:MM:SS)	00:21:24	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**54°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/23/17	Frame(HH:MM:SS)	00:25:30	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 5)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**54°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/23/17	Frame(HH:MM:SS)	00:25:40	Date:		Frame(HH:MM:SS)	

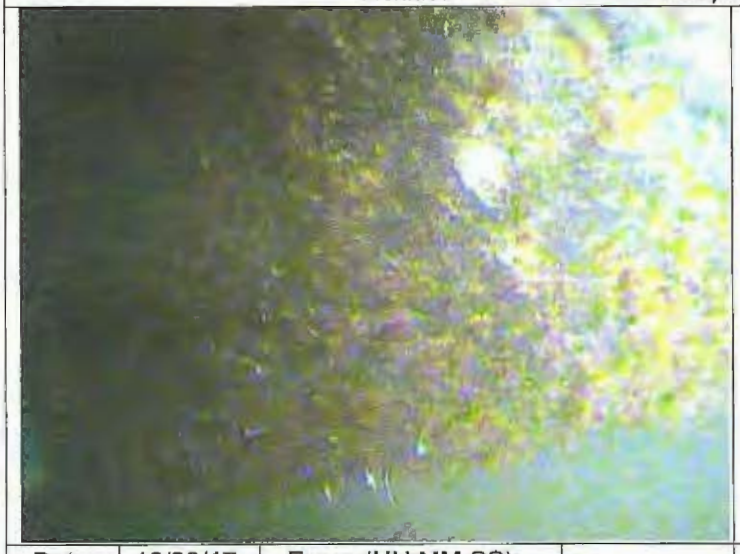
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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 6)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**54°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/23/17	Frame(HH:MM:SS)		Date:	00:25:51	Frame(HH:MM:SS)	

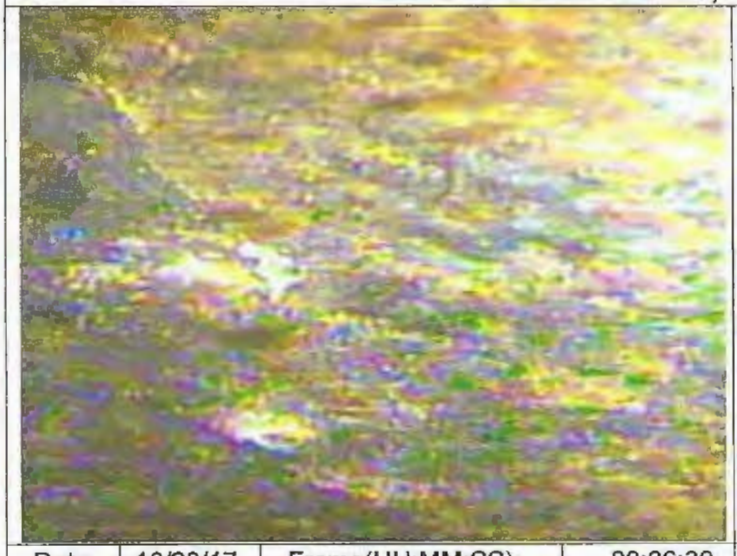
Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 7)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**54°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/23/17	Frame(HH:MM:SS)	00:26:39	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

General Information

Date:	11/5/17	**Diver:**	Kevin Lewis
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	E-67 (E65A / E-65B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	5' South	5:00	0.25 2" X 18"	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	1' South	5:00	0.50 6" X 12"	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	Anchor to 6' South	360°	21.98 (72" X 62.83")	☒ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
4	Saddle to 4' North	5:00 to 6:00	2.67 (8" X 48") 0.03 (4@ 1" X 1")	☒ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
5	5' North	5:00 to 6:00	0.56 (8" X 10" Dl) 0.21 (5" X 6" D)	☒ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
6	Anchor to 6' North	360°	15.7 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
NB: Insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)			**Biota present:**	☒ YES ☐ NO	
Dislodged coating observed on the lake floor: ☐ YES ☒ NO			**Lake floor location wrt pipe:**	In span 24" off lake floor on the South side. In span 3" off lake floor on the North side	

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Diver Inspection Form for 15 Straits of Mackinac

Comments/Issues/Discussion
Feature 3, Dislodged area is approximately 30% of area from anchor to 6' South that has outer wrap missing Feature 4, Deposit area (4 @ 1" X 1") within a Dislodged area (8" X 48") Feature 5, Deposit area (3" X 3", 2" X 1" and 1" X 1") within a Dislodged area (8" X 10") Feature 6, Dislodged area is approximately 50% of area from anchor to 6' North that has outer wrap missing

Contractor Signature	Enbridge Representative/ Inspector Signature
[signature]	[redacted]

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	N/R	**Next Calibration Due:**	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**50**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	11/5/17	Frame(HH:MM:SS)	00:20:58	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	50	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R
			N/R		N/R
			N/R		N/R
			N/R		N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	11/5/17	Frame(HH:MM:SS)	00:21:44	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**50**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	11/5/17	Frame(HH:MM:SS)	00:19:10	Date:		Frame(HH:MM:SS)	

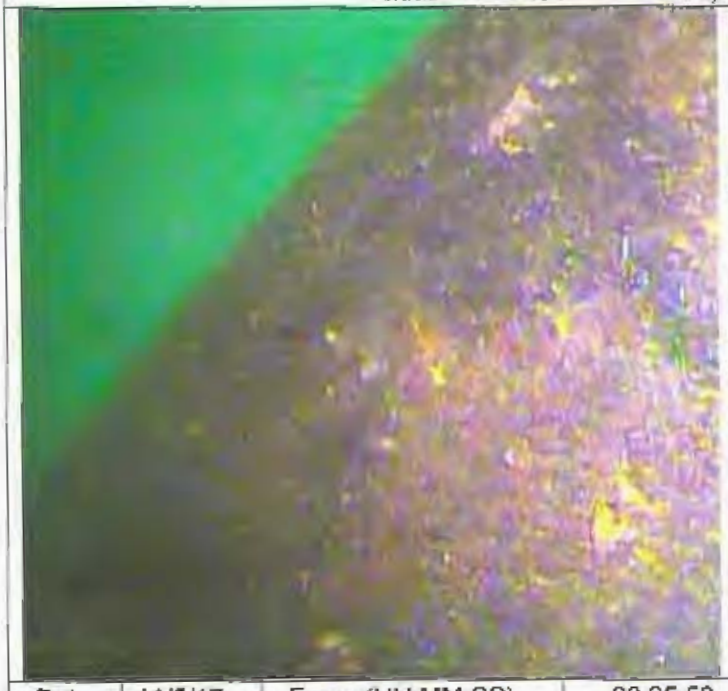
Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**50**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



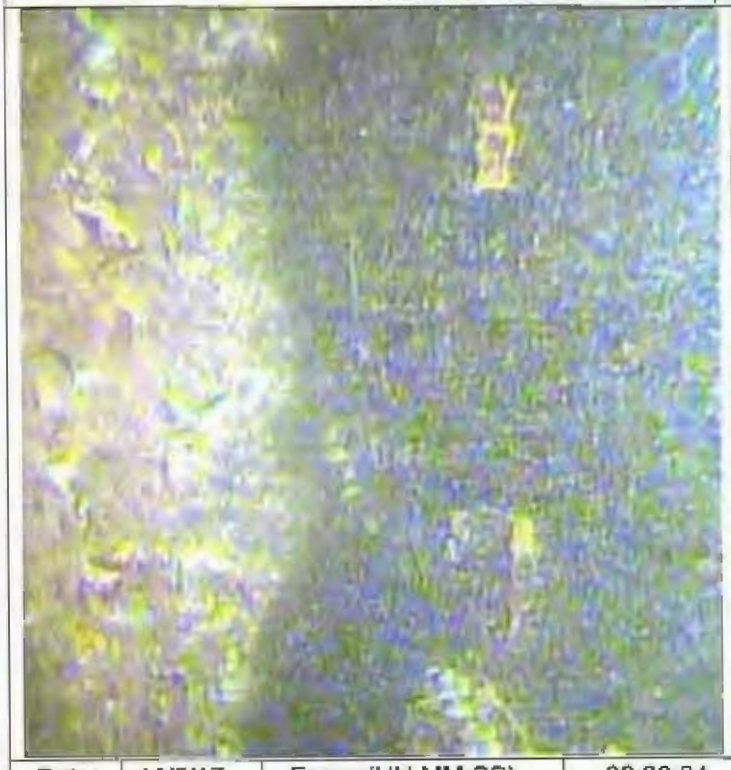
Date:	11/5/17	Frame(HH:MM:SS)	00:25:53	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 5)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**50**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	11/5/17	Frame(HH:MM:SS)	00:30:04	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 6)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**50**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	11/5/17	Frame(HH:MM:SS)	00:30:32	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

General Information			
Date:	10/14/17	**Diver:**	George Palmer, Maurice Unger, Brad Joanis & Kevin Lewis
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	W-1 (W-01A / W-01B South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

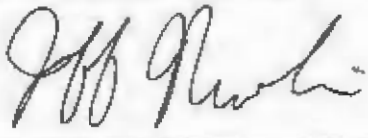
Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	5' North	10:00-6:00	0.83 (15" X 8")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	2' 4" North	10:00-4:00	0.10 (3" X 5")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	1' North	12:00-6:00	1.44 (26" X 8")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
4	North at anchor	3:00	0.10 (3" X 4 ¾")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
5	3" North	6:00	0.08 (3" X 4")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
6	South at anchor	12:00	0.04 (6" X 1")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
7	South at Saddle	10:00-11:00	0.15 (7" X 3")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
8	2" South	6:00	0.08 (4" X 3")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
9	South at Saddle	1:00	0.04 (3" X 2")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
10	12" South	11:00-7:00	0.53 (19" X 4")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
11	13" South	11:00	0.04 (3" X 2")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
12	17"- 26" South	5:00-6:00	0.75 (9" X 12")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)			**Biota present:**	☒ YES ☐ NO	
Dislodged coating observed on the lake floor: ☐ YES ☒ NO			**Lake floor location wrt pipe:**	In span 18" – 24" off lake floor	

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Diver Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Anchor to 6' South of anchor, Dislodged areas at locations throughout that has outer wrap missing Anchor to 6' North of anchor, Dislodged areas at locations throughout that has outer wrap missing

Contractor Signature	Enbridge Representative/ Inspector Signature
	[redacted]

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	10/06/2017	**Next Calibration Due:**	10/06/2018
Gauge verified prior to use:	☒YES ☐NO		

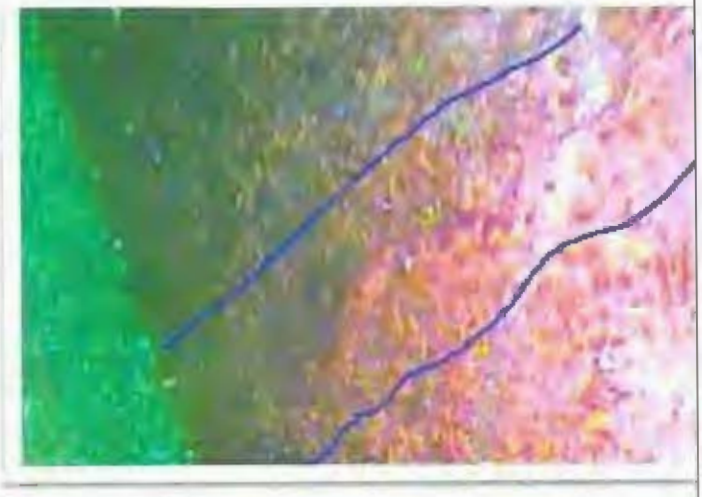
Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	145	5	10:00
North of Anchor #2	105	5	2:00
South of Anchor #1	150	5	10:00
South of Anchor #2	100	5	2:00
Average Thickness	125		

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**140**	**DFT #2 (mil)** (center of feature)	**140**	**DFT #3 (mil)** (south end of feature)	**82**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**55°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**200** **125** **135** **250**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**145** **130** **110** **180**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/14/17	Frame(HH:MM:SS)	00:33:23	Date:		Frame(HH:MM:SS)	

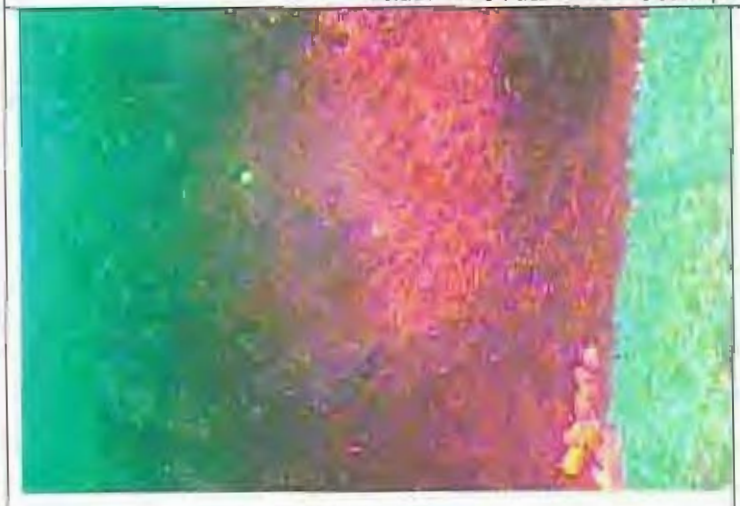
Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**160**	**DFT #2 (mil)** (center of feature)	**130**	**DFT #3 (mil)** (south end of feature)	**145**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**55°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**160** **200** **170** **200**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**120** **200** **200** **250**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/14/17	Frame(HH:MM:SS)	00:15:12	Date:		Frame(HH:MM:SS)	

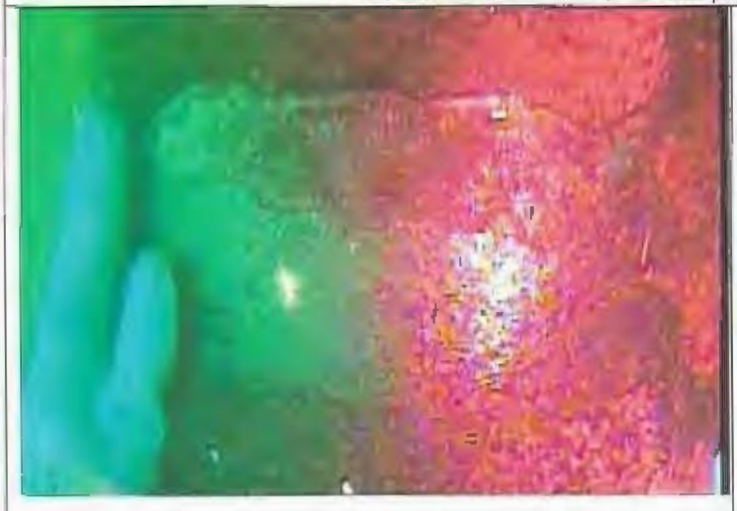
Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**170**	**DFT #2 (mil)** (center of feature)	**150**	**DFT #3 (mil)** (south end of feature)	**200**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**55°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**210**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**180**
			135		**200**
			190		**240**
			200		**250**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/14/17	Frame(HH:MM:SS)	00:36:50	Date:		Frame(HH:MM:SS)	

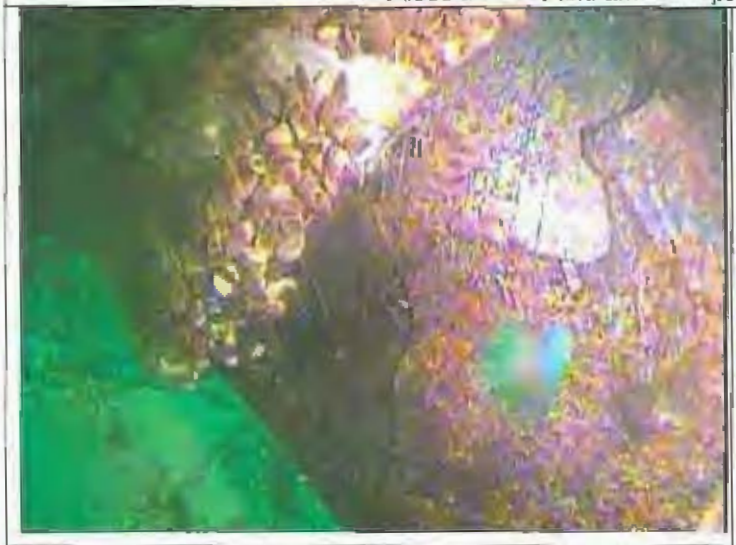
Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**160**	**DFT #2 (mil)** (center of feature)	**150**	**DFT #3 (mil)** (south end of feature)	**160**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**55°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**190** **170** **170** **200**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**200** **190** **160** **170**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/14/17	Frame(HH:MM:SS)	00:52:56	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 5)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**94**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**94**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**55°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**115** **120** **150** **125**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**125** **115** **105** **92**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/14/17	Frame(HH:MM:SS)	00:14:40	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 6)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	92	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	84
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	55°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	110 120 110 110	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	110 115 110 95

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/14/17	Frame(HH:MM:SS)	00:17:47	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 7)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	88	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	92
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	55°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	115 110 115 105	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	94 110 120 110

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/14/17	Frame(HH:MM:SS)	00:28:09	Date:		Frame(HH:MM:SS)	

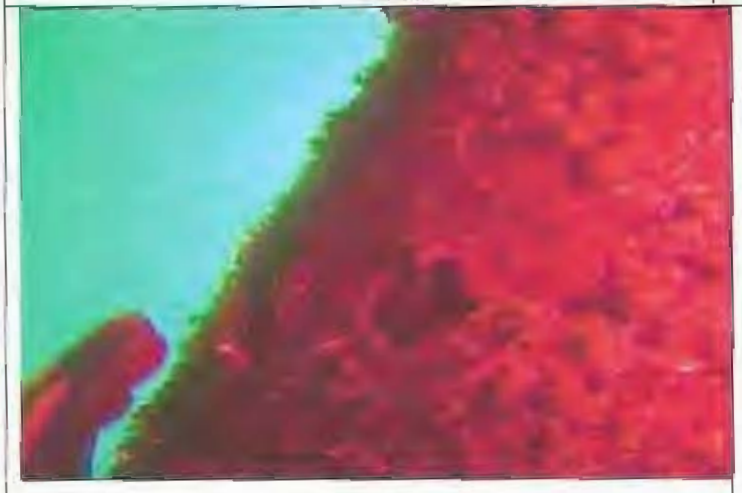
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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 8)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**105**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**110**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**55°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**96** **105** **105** **110**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**105** **100** **105** **100**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/14/17	Frame(HH:MM:SS)	00:35:21	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 9)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**88**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**90**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**55°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**98**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**105**
			110		**100**
			110		**100**
			105		**115**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/14/17	Frame(HH:MM:SS)	00:47:31	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 10)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**78**	**DFT #2 (mil)** (center of feature)	**86**	**DFT #3 (mil)** (south end of feature)	**88**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**55°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**90** **125** **110** **120**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**120** **130** **120** **100**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/14/17	Frame(HH:MM:SS)	00:55:30	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 11)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**105**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**104**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**55°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**125** **115** **115** **120**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**125** **120** **125** **120**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/14/17	Frame(HH:MM:SS)	00:25:05	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 12)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**115**	**DFT #2 (mil)** (center of feature)	**115**	**DFT #3 (mil)** (south end of feature)	**105**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**55°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**130** **103** **120** **96**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**74** **125** **125** **110**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/14/17	Frame(HH:MM:SS)	00:44:59



Date:	10/14/17	Frame(HH:MM:SS)	00:45:20

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Diver Inspection Form for L5 Straits of Mackinac

General Information

Date:	10/20/17	**Diver:**	Scott Woodward
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	W-2 (W-018 South / W-018 North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

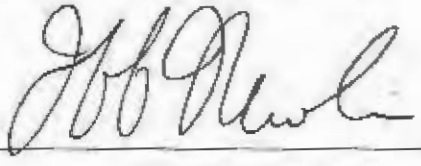
Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	3' South	5:00	0.0004 (¼" X¼")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	Anchor to 3' South	360	11.0 (36" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	18" North	3:00	0.02 (1½" X 2")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
4	4' North	7:00	0.33 (6" X 8")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
5	5' North	3:00	0.17 (5" X 5")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
6	5' North	3:00 – 6:00	0.25 (18" X 2")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area

NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)	**Biota present:**	☒YES ☐ NO
Dislodged coating observed on the lake floor: ☐YES ☒NO	**Lake floor location wrt pipe:**	In span 12" off lake floor

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ENBRIDGE

Diver Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion	
Feature 2, Dislodged area is approximately 70% of area from anchor to 3' South of anchor that has outer wrap missing and the most concentrated area is located from 6:00 – 9:00 o'clock on east side	
	[redacted]
Contractor Signature	Enbridge Representative/ Inspector Signature

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	N/R	**Next Calibration Due:**	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**60°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10.20.17	Frame(HH:MM:SS)	00:17:43	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

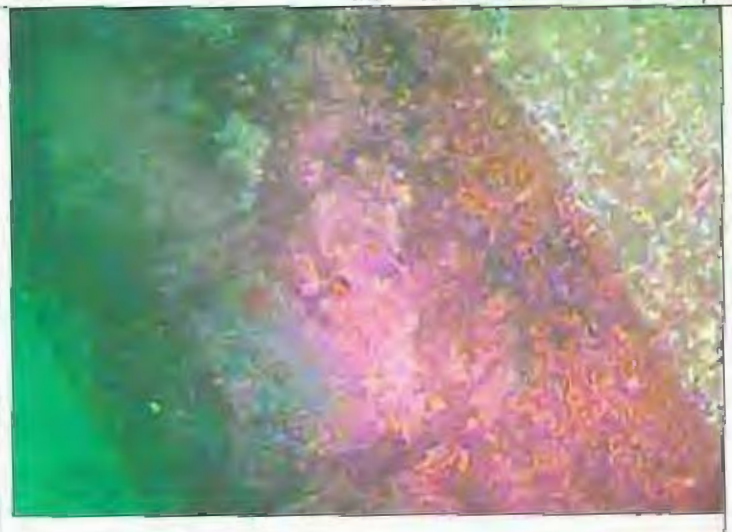
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Diver Inspection Form for LS Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**60°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/20/17	Frame(HH:MM:SS)	00:20:24	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**60°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/20/17	Frame(HH:MM:SS)	00:22:50	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**60°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/20/17	Frame(HH:MM:SS)	00:24:57	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

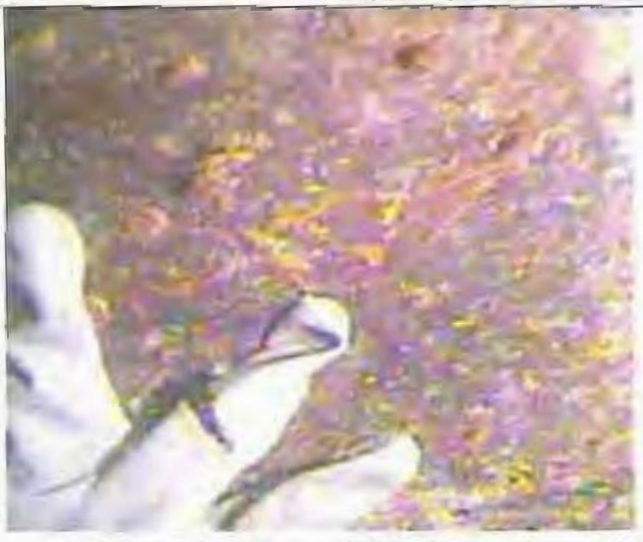
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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 5)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**60°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/20/17	Frame(HH:MM:SS)	00:26:05	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 6)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**60°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/20/17	Frame(HH:MM:SS)	00:27:30	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

General Information			
Date:	10/9/17, 10/13/17	**Diver:** Shawn Binsfield, Scott Woodward	Scott Woodward, Chad Cantrell
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	W-3 (W-5A / W-5B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft²)	Visual Classification of Feature	
1	7' North	12:00	0.003 (½" X ¾")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	7' North	11:30	0.001 (¼ X ¾")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	7' North	6:00	0.35 (5" X 10" Di) 0.17 (5" X 5" D) 0.03 (1½" X ¾" & 3" X 1" H)	☒ Dislodged Area ☒ Deposit	☒ Holiday (bare metal) ☐ Disturbed Area
4	7' 6" North	3:00	0.21 (6" X 5")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
5	12' 3" North	3:00 – 8:00	10.0 (48" X 30")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
6	18' North	2:00 – 12:00	0.29 (6" X 7")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
7	19' North	6:00 – 11:00	4.0 (24" X 24" Di) 0.02 (1⅛" X 2" D)	☒ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
8	19' North	3:30	0.0008 (¼" X ⅛")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
9	19' 1" North	4:00	0.007 (2" X ½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
10	19' 1" North	4:30	0.003 (½" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)			**Biota present:**	☒ YES ☐ NO	
Dislodged coating observed on the lake floor: ☐ YES ☒ NO			**Lake floor location wrt pipe:**	In span 12" – 15" off lake floor	

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Diver Inspection Form for LS Straits of Mackinac

Comments/Issues/Discussion
Feature 1, Deposit ½" X ¾", no sample taken Feature 2, Deposit ¼" X ¾", no sample taken Feature 3, Feature 3, Holidays (3" X 1" and 1½" X ¾"), next to a Deposit 5" X 5" (no sample taken). The holidays and deposit were within Dislodged area (5" X 10") Feature 4, Dislodged 6" X 5" area Feature 5, Dislodged 48" X 30" area (photo shows a white tag placed on the dislodged area w/magnet) Feature 6, Dislodged 6" X 7" area Feature 7, Deposit 1½" X 2" no sample taken, within 24" X 24" Dislodged area Feature 8, Deposit ¼" X ½", no sample taken Feature 9, Deposit 2" X ½", no sample taken Feature 10, Deposit ½" X 1", no sample taken

Contractor Signature	Enbridge Representative/ Inspector Signature

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	Z11 Coating Thickness Gauge
Last Calibrated:	08/09/2017	**Next Calibration Due:**	08/09/2018
Gauge verified prior to use:	☒YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	178	5	10:00
North of Anchor #2	96	5	2:00
South of Anchor #1	122	5	10:00
South of Anchor #2	96	5	2:00
Average Thickness	123		

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/09/17	Frame(HH:MM:SS)	00:05:30	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/0917	Frame(HH:MM:SS)	00:06:55	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

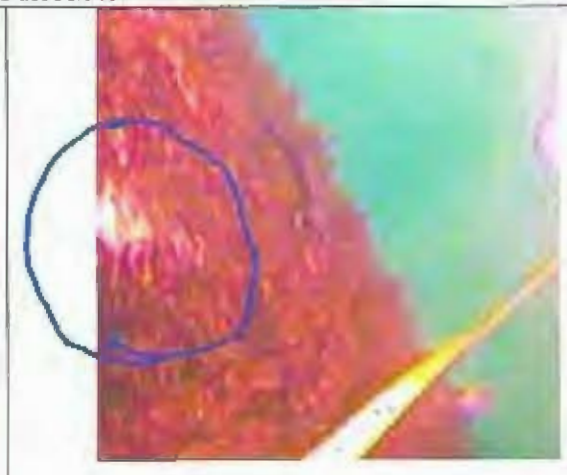
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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	**-1653** **-1636**	**CP Reading #2 (mV)** (center of feature)	**-483** **-482**	**CP Reading #3 (mV)** (south end of feature)	**-1583** **-1553**
DFT #1 (mil) (north end of feature)	**90**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**<25**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R** **N/R** **N/R** **N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R** **N/R** **N/R** **N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.





Date:	10/9/17	Frame(HH:MM:SS)	00:39:38	Date:	10.13.17	Frame(HH:MM:SS)	00:16:56

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

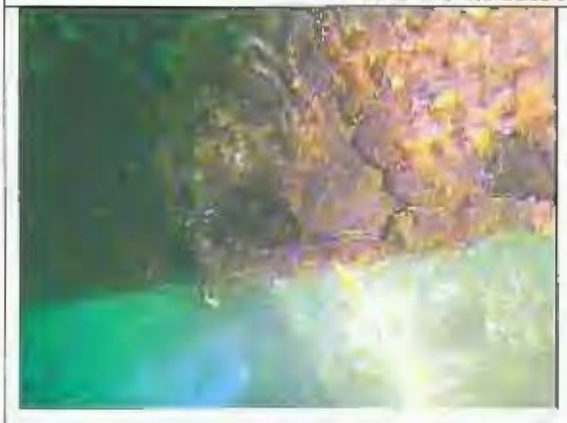
NOTE: CP reading #2 on this feature appears to indicate CP probe did not make complete contact to pipe metal.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**96**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**96**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**100**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**115**
			96		**95**
			115		**114**
			120		**112**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/09/17	Frame(HH:MM:SS)	00:13:59	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for LS Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 5)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	100	**DFT #2 (mil)** (center of feature)	120	**DFT #3 (mil)** (south end of feature)	101
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	56°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	250 190 170 200	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	200 200 200 200

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/13/17	Frame(HH:MM:SS)	00:50:31	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 6)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	155	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	185
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	56°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	200	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	200
			200		210
			200		170
			200		230

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/09/17	Frame(HH:MM:SS)	00:38:28	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 7)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**120**	**DFT #2 (mil)** (center of feature)	**160**	**DFT #3 (mil)** (south end of feature)	**125**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**225**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**190**
			190		**225**
			145		**140**
			180		**210**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/9/17	Frame(HH:MM:SS)	00:37:17	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 8)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 – 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/9/17	Frame(HH:MM:SS)	00:35:49	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 9)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 – 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 – 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/9/17	Frame(HH:MM:SS)	00:35:49	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 10)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/13/17	Frame(HH:MM:SS)	00:26:31	Date:		Frame(HH:MM:SS)	

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ENBRIDGE

Diver Inspection Form for L5 Straits of Mackinac

General Information

Date:	10/20/17	**Diver:**	Chad Cantrell
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	W-4 (W-2A / W-2B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	Anchor to 5' N	360°	26.18 (60" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
	NO FEATURES SOUTH ANCHOR			☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)			**Biota present:**	☒ YES ☐ NO	
Dislodged coating observed on the lake floor: ☐ YES ☒ NO			**Lake floor location wrt pipe:**	In span 12" off lake floor	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion	
Feature #1, Dislodged area is approximately 100% of area from anchor to 5' North that has outer wrap missing No features identified South of anchor	
	[redacted]
Contractor Signature	Enbridge Representative/ Inspector Signature

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	N/R	**Next Calibration Due:**	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**59°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/20/17	Frame(HH:MM:SS)	00:13:41	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

General Information

Date:	10/21/17	**Diver:**	George Palmer
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	W-5 (W-6A / W-6B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	4' 9" South	12:00	0.002 (½" X ½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	4' 6" South	1:00 – 3:00	0.17 (5" X 5")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	2' South	12:00	0.02 (3" X 1" Di) 0.01 (1½" X 1" D)	☒ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
4	2' South	2:00	0.0004 (¼" X ¼")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
5	2' South	10:00	0.0004 (¼" X ¼")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
6	6" North	12:00	0.002 (½" x ½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
7	Anchor to 6' North	360°	31.41 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
8	5' North	9:00	0.01 (1" X 2")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
9	3' 4" North	3:00	0.01 (1" X 1¾")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☒ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area

NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)	**Biota present:**	☒ YES ☐ NO
Dislodged coating observed on the lake floor: ☐ YES ☒ NO	**Lake floor location wrt pipe:**	In span 24" off lake floor

Comments/Issues/Discussion

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

	Feature 3, Deposit 1½" X 1" within a Dislodged area 3" X 1" Feature 7, Dislodged area is approximately 100% of area from anchor to 6' North of anchor that has outer wrap missing
	[redacted]
Contractor Signature	**Enbridge Representative/ Inspector Signature**

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	N/R	**Next Calibration Due:**	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	**NR**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**NR**
DFT #1 (mil) (north end of feature)	**NR**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**NR**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**NR** **NR** **NR** **NR**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**NR** **NR** **NR** **NR**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:17:30	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**NR**	**CP Reading #2 (mV)** (center of feature)	**NR**	**CP Reading #3 (mV)** (south end of feature)	**NR**
DFT #1 (mil) (north end of feature)	**NR**	**DFT #2 (mil)** (center of feature)	**NR**	**DFT #3 (mil)** (south end of feature)	**NR**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**NR** **NR** **NR** **NR**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**NR** **NR** **NR** **NR**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:17:09	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	**NR**	**CP Reading #2 (mV)** (center of feature)	**NR**	**CP Reading #3 (mV)** (south end of feature)	**NR**
DFT #1 (mil) (north end of feature)	**NR**	**DFT #2 (mil)** (center of feature)	**NR**	**DFT #3 (mil)** (south end of feature)	**NR**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**NR** **NR** **NR** **NR**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**NR** **NR** **NR** **NR**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:19:01	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	**NR**	**CP Reading #2 (mV)** (center of feature)	**NR**	**CP Reading #3 (mV)** (south end of feature)	**NR**
DFT #1 (mil) (north end of feature)	**NR**	**DFT #2 (mil)** (center of feature)	**NR**	**DFT #3 (mil)** (south end of feature)	**NR**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**NR** **NR** **NR** **NR**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**NR** **NR** **NR** **NR**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:10:46	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 5)					
CP Reading #1 (mV) (north end of feature)	**NR**	**CP Reading #2 (mV)** (center of feature)	**NR**	**CP Reading #3 (mV)** (south end of feature)	**NR**
DFT #1 (mil) (north end of feature)	**NR**	**DFT #2 (mil)** (center of feature)	**NR**	**DFT #3 (mil)** (south end of feature)	**NR**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**NR** **NR** **NR** **NR**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**NR** **NR** **NR** **NR**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:20:53	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 6)					
CP Reading #1 (mV) (north end of feature)	**NR**	**CP Reading #2 (mV)** (center of feature)	**NR**	**CP Reading #3 (mV)** (south end of feature)	**NR**
DFT #1 (mil) (north end of feature)	**NR**	**DFT #2 (mil)** (center of feature)	**NR**	**DFT #3 (mil)** (south end of feature)	**NR**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**NR**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**NR**
			NR		**NR**
			NR		**NR**
			NR		**NR**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:23:22	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 7)					
CP Reading #1 (mV) (north end of feature)	**NR**	**CP Reading #2 (mV)** (center of feature)	**NR**	**CP Reading #3 (mV)** (south end of feature)	**NR**
DFT #1 (mil) (north end of feature)	**NR**	**DFT #2 (mil)** (center of feature)	**NR**	**DFT #3 (mil)** (south end of feature)	**NR**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**NR** **NR** **NR** **NR**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**NR** **NR** **NR** **NR**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:28:20	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 8)					
CP Reading #1 (mV) (north end of feature)	**NR**	**CP Reading #2 (mV)** (center of feature)	**NR**	**CP Reading #3 (mV)** (south end of feature)	**NR**
DFT #1 (mil) (north end of feature)	**NR**	**DFT #2 (mil)** (center of feature)	**NR**	**DFT #3 (mil)** (south end of feature)	**NR**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**NR** **NR** **NR** **NR**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**NR** **NR** **NR** **NR**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:25:51	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 9)					
CP Reading #1 (mV) (north end of feature)	**NR**	**CP Reading #2 (mV)** (center of feature)	**NR**	**CP Reading #3 (mV)** (south end of feature)	**NR**
DFT #1 (mil) (north end of feature)	**NR**	**DFT #2 (mil)** (center of feature)	**NR**	**DFT #3 (mil)** (south end of feature)	**NR**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**58**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**NR** **NR** **NR** **NR**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**NR** **NR** **NR** **NR**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:27:09	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

General Information

Date:	10/21/17	**Diver:**	Maurice Unger
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	W-6 (W-12A / W-12B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	Anchor to 6' South	360°	31.42 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	2' 6" South	9:00	0.0004 (¼" X ¼")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	Anchor to 6' North	360°	28.27 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area

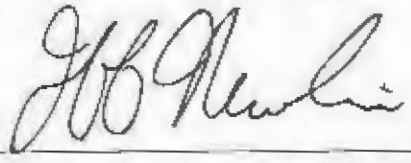
NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)	**Biota present:**	☒ YES ☐ NO
Dislodged coating observed on the lake floor: ☐ YES ☒ NO	**Lake floor location wrt pipe:**	In span 9" off lake floor

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ENBRIDGE

Diver Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Feature 1, Dislodged area is approximately 100% of area from anchor to 6' South that has outer wrap missing Feature 3, Dislodged area is approximately 90% of area from anchor to 6' North that has outer wrap missing

Contractor Signature	Enbridge Representative/ Inspector Signature
	[redacted]

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	N/R	**Next Calibration Due:**	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**59°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:20:27	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**59°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:22:26	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2 – 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	59°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	N/R
			N/R		N/R
			N/R		N/R
			N/R		N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance



Date:	10/21/17	Frame(HH:MM:SS)	00:26:00	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

General Information

Date:	10/21/17	**Diver:**	Brad Joanis
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	W-7 (W-13A / W-13B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

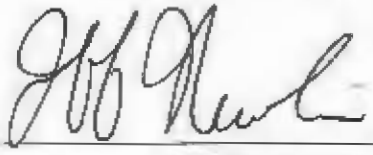
Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	Anchor South	11:00	0.68 (7" X 14")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	8" South	11:00	0.002 (½"X ½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	2' North	12:00	0.0004 (¼"X ¼")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)			**Biota present:**	☒ YES ☐ NO	
Dislodged coating observed on the lake floor: ☐ YES ☒ NO			**Lake floor location wrt pipe:**	In span 24" off lake floor	

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ENBRIDGE

Diver Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion	

		[redacted]
	Contractor Signature	Enbridge Representative/ Inspector Signature

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	N/R	**Next Calibration Due:**	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

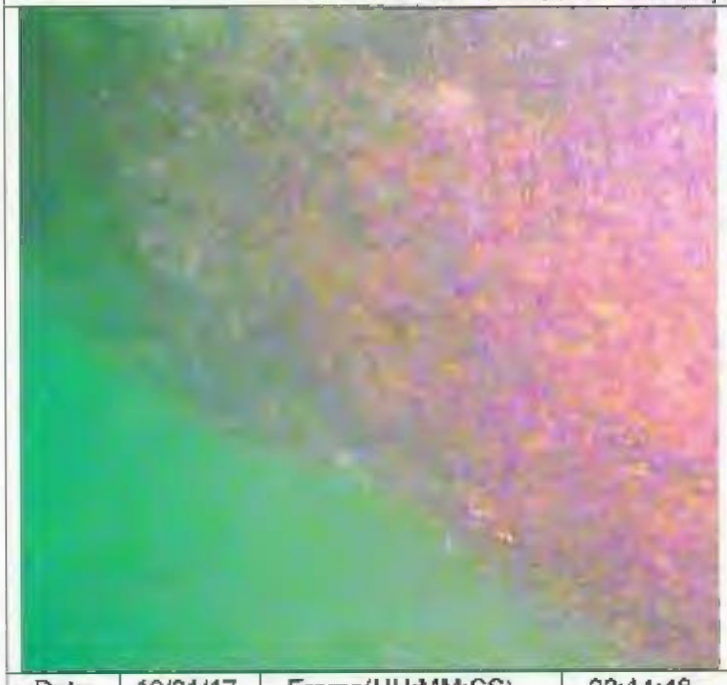
Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**59**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:14:48	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**59**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:15:37	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**59**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:18:33	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for LS Straits of Mackinac

General Information			
Date:	10/21/17	**Diver:**	Kevin Lewis
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	W-8 (W-18A_A / W-18A South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

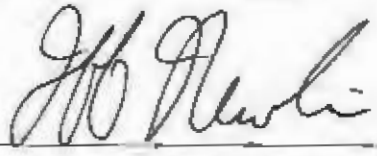
Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	10" South	12:00	0.002 (½" X ½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	11" South to 6'	360°	26.18 (60" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	16" North	1:00	0.01 (½" X 1 ¾")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
4	3' North	9:00	0.01 (1" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
5	4' North	8:00	0.003 (½" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
6	Anchor to 6' North	360°	28.27 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area

NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)		**Biota present:**	☒YES ☐ NO
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Lake floor location wrt pipe:**	In span 24" off lake floor, pipe is at 6:00 o'clock 60" South of Anchor

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Diver Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion	
Features 2, Dislodged area is approximately 80% of area 11" to 6' South of anchor that has outer wrap missing Feature 6, Dislodged area is approximately 90% of area from anchor to 6' North that has outer wrap missing	
	[redacted]
Contractor Signature	Enbridge Representative/ Inspector Signature

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	N/R	**Next Calibration Due:**	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

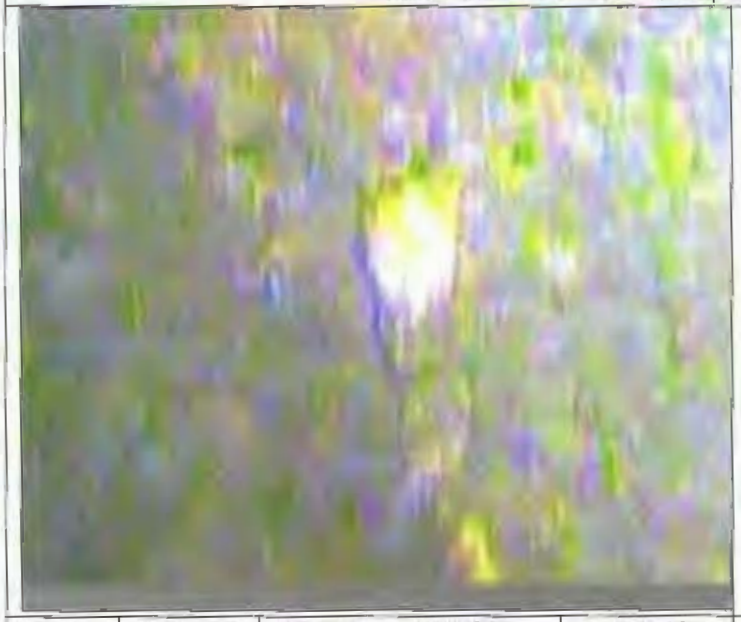
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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:18:03	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:19:50	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:22:15	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

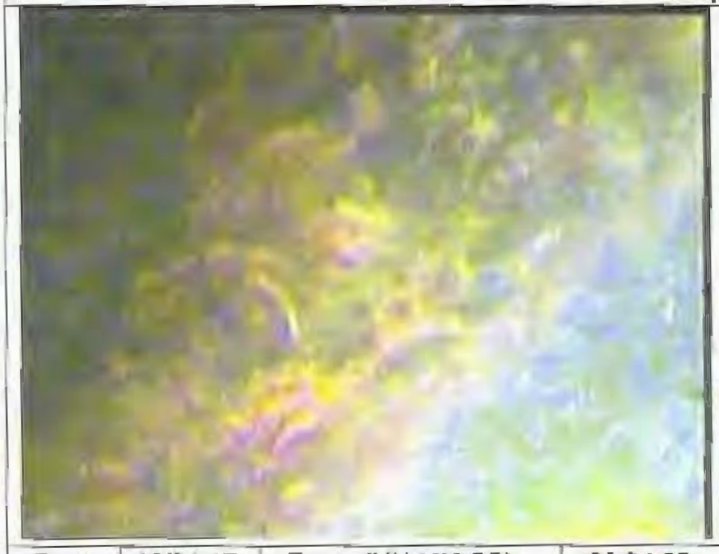
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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:24:06	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 5)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:25:16	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 6)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 – 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:26:47	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE

Diver Inspection Form for L5 Straits of Mackinac

General Information

Date:	10/21/17	**Diver:**	Troy Baskett
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	W-9 (W-18A South / W-18A North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

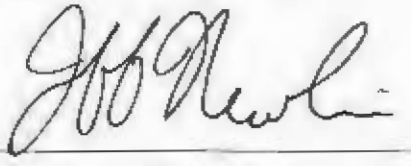
Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	1' North	12:00	0.01 (1" X 1 ½")	☐ Dislodged Area ☒ Deposit	☐Holiday (bare metal) ☐Disturbed Area
2	5' North	6:00	0.003 (1" X ½")	☐ Dislodged Area ☒ Deposit	☐Holiday (bare metal) ☐Disturbed Area
3	3' North	6:00	0.39 (7" X 8")	☐ Dislodged Area ☒ Deposit	☐Holiday (bare metal) ☐Disturbed Area
	NO FEATURES SOUTH ANCHOR			☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
NB. insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)			**Biota present:**	☒YES ☐ NO	
Dislodged coating observed on the lake floor: ☐YES ☒NO			**Lake floor location wrt pipe:**	In span 29" to 36" off lake floor	

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Diver Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion	
NO FEATURES IDENTIFIED SOUTH OF ANCHOR	
	[redacted]
Contractor Signature	Enbridge Representative/ Inspector Signature

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	N/R	**Next Calibration Due:**	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**59°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:12:50	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2- 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**59°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:14:02	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**59°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:14:42	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

General Information			
Date:	10/21/17	**Diver:**	Scott Woodward
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	W-10 (W-18A North/ W-18B South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	5' 4" South	7:00	0.19 (9" X 3")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	6' South	12:00	0.01 (3" X ½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	5' South	12:00	0.16 (4 ½" X 5")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
4	4'	12:00	0.14 (5" X 4")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
5	3' South	2:00	0.004 (¾" X ¾")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
6	Saddle South	7:30	0.07 (2" X 5")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
7	3" North	9:00	0.04 (6" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
8	4" North	6:00	0.06 (3" X 3")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
9	6" North	3:00	0.02 (1" X 3")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
10	1' 2" North	3:00	0.01 (1½" X ½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
11	2' North	6:00	0.13 (6" X 3")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
12	2' North	3:00	0.03 (2" X 2")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
13	3' 3" North	6:30	0.17 (5" X 5" Di) 0.01 (2" X 1" D)	☒ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
14	3' 6" North	9:00	0.0004 (¼" X ¼")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
15	5' 8" North	9:00	0.11 (4" X 4")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
16	5' 10" North	6:00	0.25 (6" X 6")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☒ Disturbed Area
NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)			**Biota present:**	☒ YES ☐ NO	

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Diver Inspection Form for L5 Straits of Mackinac

Dislodged coating observed on the lake floor: ☐YES ☒NO	Lake floor location wrt pipe:	In span 18" off lake floor

Comments/Issues/Discussion
Feature 13, Deposit 2" X 1" within a Dislodged area 5" X 5"

Contractor Signature	Enbridge Representative/ Inspector Signature
[signature]	[redacted]

Coating Gauge Information

Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	N/R	**Next Calibration Due:**	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)

Location	Coating Thickness (mil)	Distance from Anchor (ft)	Location on Pipe (o'clock)
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	**NR**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**NR**
DFT #1 (mil) (north end of feature)	**NR**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**NR**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**NR** **NR** **NR** **NR**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**NR** **NR** **NR** **NR**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:16:16	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**NR**	**CP Reading #2 (mV)** (center of feature)	**NR**	**CP Reading #3 (mV)** (south end of feature)	**NR**
DFT #1 (mil) (north end of feature)	**NR**	**DFT #2 (mil)** (center of feature)	**NR**	**DFT #3 (mil)** (south end of feature)	**NR**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**NR**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**NR**
			NR		**NR**
			NR		**NR**
			NR		**NR**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:16:55	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	**NR**	**CP Reading #2 (mV)** (center of feature)	**NR**	**CP Reading #3 (mV)** (south end of feature)	**NR**
DFT #1 (mil) (north end of feature)	**NR**	**DFT #2 (mil)** (center of feature)	**NR**	**DFT #3 (mil)** (south end of feature)	**NR**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**NR** **NR** **NR** **NR**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**NR** **NR** **NR** **NR**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:17:52	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	**NR**	**CP Reading #2 (mV)** (center of feature)	**NR**	**CP Reading #3 (mV)** (south end of feature)	**NR**
DFT #1 (mil) (north end of feature)	**NR**	**DFT #2 (mil)** (center of feature)	**NR**	**DFT #3 (mil)** (south end of feature)	**NR**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**NR** **NR** **NR** **NR**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**NR** **NR** **NR** **NR**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance



Date:	10/21/17	Frame(HH:MM:SS)	00:18:29	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 5)					
CP Reading #1 (mV) (north end of feature)	**NR**	**CP Reading #2 (mV)** (center of feature)	**NR**	**CP Reading #3 (mV)** (south end of feature)	**NR**
DFT #1 (mil) (north end of feature)	**NR**	**DFT #2 (mil)** (center of feature)	**NR**	**DFT #3 (mil)** (south end of feature)	**NR**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**NR** **NR** **NR** **NR**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**NR** **NR** **NR** **NR**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:19:36	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 6)					
CP Reading #1 (mV) (north end of feature)	**NR**	**CP Reading #2 (mV)** (center of feature)	**NR**	**CP Reading #3 (mV)** (south end of feature)	**NR**
DFT #1 (mil) (north end of feature)	**NR**	**DFT #2 (mil)** (center of feature)	**NR**	**DFT #3 (mil)** (south end of feature)	**NR**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**NR** **NR** **NR** **NR**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**NR** **NR** **NR** **NR**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:20:45	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 7)					
CP Reading #1 (mV) (north end of feature)	**NR**	**CP Reading #2 (mV)** (center of feature)	**NR**	**CP Reading #3 (mV)** (south end of feature)	**NR**
DFT #1 (mil) (north end of feature)	**NR**	**DFT #2 (mil)** (center of feature)	**NR**	**DFT #3 (mil)** (south end of feature)	**NR**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**NR** **NR** **NR** **NR**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**NR** **NR** **NR** **NR**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:22:05	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 8)					
CP Reading #1 (mV) (north end of feature)	**NR**	**CP Reading #2 (mV)** (center of feature)	**NR**	**CP Reading #3 (mV)** (south end of feature)	**NR**
DFT #1 (mil) (north end of feature)	**NR**	**DFT #2 (mil)** (center of feature)	**NR**	**DFT #3 (mil)** (south end of feature)	**NR**
(record #2 for features <2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**NR** **NR** **NR** **NR**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**NR** **NR** **NR** **NR**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:22:44	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 9)					
CP Reading #1 (mV) (north end of feature)	**NR**	**CP Reading #2 (mV)** (center of feature)	**NR**	**CP Reading #3 (mV)** (south end of feature)	**NR**
DFT #1 (mil) (north end of feature)	**NR**	**DFT #2 (mil)** (center of feature)	**NR**	**DFT #3 (mil)** (south end of feature)	**NR**
(record #2 for features < 2" long; record #1 and #3 for features 2 – 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**NR** **NR** **NR** **NR**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**NR** **NR** **NR** **NR**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:23:27	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 10)					
CP Reading #1 (mV) (north end of feature)	**NR**	**CP Reading #2 (mV)** (center of feature)	**NR**	**CP Reading #3 (mV)** (south end of feature)	**NR**
DFT #1 (mil) (north end of feature)	**NR**	**DFT #2 (mil)** (center of feature)	**NR**	**DFT #3 (mil)** (south end of feature)	**NR**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**NR** **NR** **NR** **NR**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**NR** **NR** **NR** **NR**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance



Date:	10/21/17	Frame(HH:MM:SS)	00:24:12	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 11)					
CP Reading #1 (mV) (north end of feature)	**NR**	**CP Reading #2 (mV)** (center of feature)	**NR**	**CP Reading #3 (mV)** (south end of feature)	**NR**
DFT #1 (mil) (north end of feature)	**NR**	**DFT #2 (mil)** (center of feature)	**NR**	**DFT #3 (mil)** (south end of feature)	**NR**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**NR** **NR** **NR** **NR**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**NR** **NR** **NR** **NR**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:25:06	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 12)					
CP Reading #1 (mV) (north end of feature)	**NR**	**CP Reading #2 (mV)** (center of feature)	**NR**	**CP Reading #3 (mV)** (south end of feature)	**NR**
DFT #1 (mil) (north end of feature)	**NR**	**DFT #2 (mil)** (center of feature)	**NR**	**DFT #3 (mil)** (south end of feature)	**NR**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**NR** **NR** **NR** **NR**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**NR** **NR** **NR** **NR**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:25:38	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 13)					
CP Reading #1 (mV) (north end of feature)	**NR**	**CP Reading #2 (mV)** (center of feature)	**NR**	**CP Reading #3 (mV)** (south end of feature)	**NR**
DFT #1 (mil) (north end of feature)	**NR**	**DFT #2 (mil)** (center of feature)	**NR**	**DFT #3 (mil)** (south end of feature)	**NR**
(record #2 for features < 2" long; record #1 and #3 for features 2 – 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**NR** **NR** **NR** **NR**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**NR** **NR** **NR** **NR**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:27:09	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 14)					
CP Reading #1 (mV) (north end of feature)	**NR**	**CP Reading #2 (mV)** (center of feature)	**NR**	**CP Reading #3 (mV)** (south end of feature)	**NR**
DFT #1 (mil) (north end of feature)	**NR**	**DFT #2 (mil)** (center of feature)	**NR**	**DFT #3 (mil)** (south end of feature)	**NR**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**NR** **NR** **NR** **NR**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**NR** **NR** **NR** **NR**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:27:27	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 15)					
CP Reading #1 (mV) (north end of feature)	**NR**	**CP Reading #2 (mV)** (center of feature)	**NR**	**CP Reading #3 (mV)** (south end of feature)	**NR**
DFT #1 (mil) (north end of feature)	**NR**	**DFT #2 (mil)** (center of feature)	**NR**	**DFT #3 (mil)** (south end of feature)	**NR**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**NR** **NR** **NR** **NR**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**NR** **NR** **NR** **NR**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:28:45	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Cathodic Protection and Coating Measurements (for Feature # 16)					
CP Reading #1 (mV) (north end of feature)	**NR**	**CP Reading #2 (mV)** (center of feature)	**NR**	**CP Reading #3 (mV)** (south end of feature)	**NR**
DFT #1 (mil) (north end of feature)	**NR**	**DFT #2 (mil)** (center of feature)	**NR**	**DFT #3 (mil)** (south end of feature)	**NR**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**NR** **NR** **NR** **NR**	**DFT Adjacent to Feature (mil)** (~8 – 12" away from edge)	**NR** **NR** **NR** **NR**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/21/17	Frame(HH:MM:SS)	00:29:05	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

General Information			
Date:	10/22/17	**Diver:**	Chad Cantrell
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	W-11 (W-18B South / W-18B North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

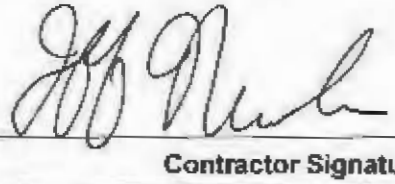
Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	6' South	12:00	0.01 (½" X 3")	☐ Dislodged Area ☒ Deposit	☐Holiday (bare metal) ☐Disturbed Area
2	4' South	360°	2.62 (6" X 62.83")	☐ Dislodged Area ☒ Deposit	☐Holiday (bare metal) ☐Disturbed Area
3	9" South	12:00	0.01 (1" X 1½")	☒ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
4	1' 3" North	10:00	0.007 (1" X 1")	☐ Dislodged Area ☒ Deposit	☐Holiday (bare metal) ☐Disturbed Area
5	7" South	4:00	0.007 (1" X 1")	☐ Dislodged Area ☒ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐Holiday (bare metal) ☐Disturbed Area
NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)			**Biota present:**	☒YES ☐ NO	
Dislodged coating observed on the lake floor: ☐YES ☒NO			**Lake floor location wrt pipe:**	In span 18" off lake floor	

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Diver Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Feature 2, Deposit is 6" wide X 62.83" (360° around pipe), 4' South of anchor appears to be banding with a piece of lathe still on pipe at 6:00

Contractor Signature	Enbridge Representative/ Inspector Signature
	[redacted]

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	N/R	**Next Calibration Due:**	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**55°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below.
Included the date and time stamps associated with video surveillance.



Date:	10/22/17	Frame(HH:MM:SS)	00:13:13	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**55°**	**DFT Adjacent to Feature (mil)** ("2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** ("8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/22/17	Frame(HH:MM:SS)	00:14:07	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**55°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/22/17	Frame(HH:MM:SS)	00:15:50	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**55°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/22/17	Frame(HH:MM:SS)	00:17:32	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 5)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**55°**	**DFT Adjacent to Feature (mil)** ("2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** ("8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/22/17	Frame(HH:MM:SS)	00:19:48	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

General Information

Date:	10/22/17	**Diver:**	George Palmer
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	W-12 (W-24A / W-24B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

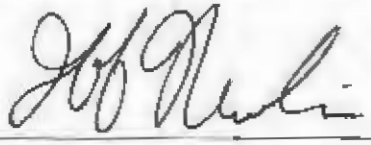
Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft²)	Visual Classification of Feature	
1	5' 4" South	12:00	0.002 (¼" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	3' 9" South	3:00	0.001 (¾" X ¼")	☒ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	2' 3" South	3.00	0.0002 (½" X ½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
4	Saddle South	12:00	0.04 (12" X ½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
5	6" North	12:00	0.02 (2" X 1½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
6	2' North	12:00	0.11 (4½" X 3½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area

NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)	**Biota present:**	☒ YES ☐ NO
Dislodged coating observed on the lake floor: ☐ YES ☒ NO	**Lake floor location wrt pipe:**	In span 12" off lake floor

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion	
Feature 2, Deposit area of (3 deposits ¼" X ¼" each) within a Dislodged area (2" X 2") Feature 4, Deposit 12" long X ½" wide next to saddle, appears to continue under the saddle Note: 5' North is banding, wood lathe on bottom of pipe at 4-8 o'clock	
	[redacted]
Contractor Signature	Enbridge Representative/ Inspector Signature

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	Product:	211 Coating Thickness Gauge
Last Calibrated:	N/R	Next Calibration Due:	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	Coating Thickness (mil)	Distance from Anchor (ft)	Location on Pipe (o'clock)
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**52°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/22/17	Frame(HH:MM:SS)	00:17:13	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**52°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



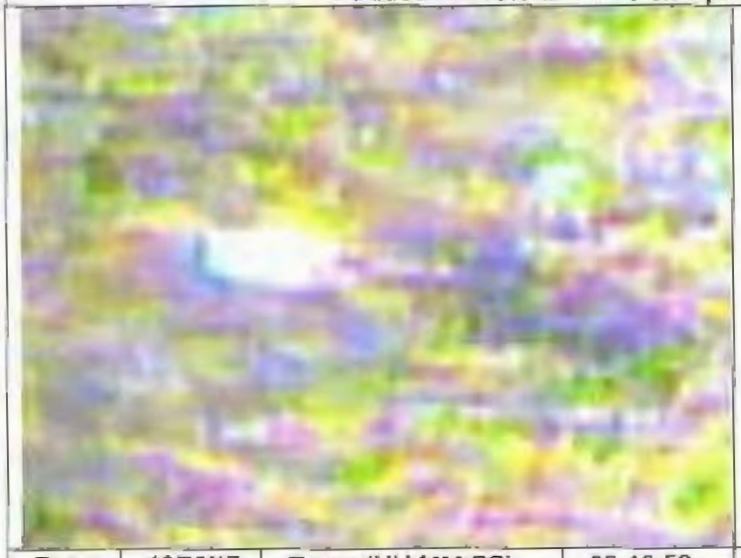
Date:	10/22/17	Frame(HH:MM:SS)	00:18:43	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**52°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below.
Included the date and time stamps associated with video surveillance.



Date:	10/22/17	Frame(HH:MM:SS)	00:19:53	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**52°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/22/17	Frame(HH:MM:SS)	00:21:08	Date:		Frame(HH:MM:SS)	

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ENBRIDGE

Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 5)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**52°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/22/17	Frame(HH:MM:SS)	00:22:43	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 6)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	52°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	N/R
			N/R		N/R
			N/R		N/R
			N/R		N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/22/17	Frame(HH:MM:SS)	00:23:34	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

General Information

Date:	10/22/17	**Diver:**	Maurice Unger
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	W-13 (W-23A / W-23B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	Anchor to 6' South	360°	29.84 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	1' 9" South	10:00	0.003 (½" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	4' North	10:00	0.002 (1" X ¼")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
4	5' 10" North	12:00	0.03 (3" X 1½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
5	Anchor to 6' North	360°	31.42 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)			**Biota present:**	☒ YES ☐ NO	
Dislodged coating observed on the lake floor: ☐ YES ☒ NO			**Lake floor location wrt pipe:**	In span 18" off lake floor	

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Diver Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Feature 1, Dislodged area is approximately 95% of area from anchor to 6' South that has outer wrap missing Feature 5, Dislodged area is approximately 100% of area from anchor to 6' North that has outer wrap missing

Contractor Signature	Enbridge Representative/ Inspector Signature
[signature]	[redacted]

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	N/R	**Next Calibration Due:**	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**55°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/22/17	Frame(HH:MM:SS)	00:24:24



Date:	10/22/17	Frame(HH:MM:SS)	00:24:33

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**55°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/22/17	Frame(HH:MM:SS)	00:18:00	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 – 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**55°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/22/17	Frame(HH:MM:SS)	00:21:11	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**55°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below.
Included the date and time stamps associated with video surveillance.



Date:	10/22/17	Frame(HH:MM:SS)	00:22:50	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 5)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**55°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/22/17	Frame(HH:MM:SS)	00:24:03	Date:		Frame(HH:MM:SS)	

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ENBRIDGE

Diver Inspection Form for L5 Straits of Mackinac

General Information

Date:	11/11/17	**Diver:**	Troy Baskett
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	W-57 (W-63A / W-63B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	3' 7" South	12:00	0.08 (3" X 4")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	Anchor to 6' South	360°	25.13 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	1' 3" South	2:00	0.02 (3" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
4	1' 1" South	2:00	.007 (1" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
5	5' 1" South	5:00	0.007 (1" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
6	5' 4" South	12:00 – 3:00	0.02 (24" X 1/8")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
7	4' 10" North	11:00	0.02 (2" X 1 ½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
8	1' 6" North	11:00	0.03 (2" X 2")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
9	1' 9" North	9:00 – 2:00	0.02 (20" X 1/8")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
10	Anchor to 6' North	360°	6.28 (72" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area

NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)	**Biota present:**	☒YES ☐ NO
Dislodged coating observed on the lake floor: ☐YES ☒NO	**Lake floor location wrt pipe:**	In span 8" off lake floor

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Diver Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Feature 2, Dislodged area is approximately 80% of area from anchor to 6' South that has outer wrap missing Feature 10, Dislodged area is approximately 20% of area from anchor to 6' North that has outer wrap missing Open water reading -266/-255 No change in CP readings on deposits to indicate on/off potentials NOTE: due to weather conditions 10° F, diver was in a no chamber decompression dive. Due to limited bottom time the diver was able to get CP readings for the following two features only. Feature 3 -262/-252 -245/-234 -245/-226 Feature 7 -243/-293 -234/-224 -285/-275 -238/-228

Contractor Signature	[redacted]
	Enbridge Representative/ Inspector Signature

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	N/R	**Next Calibration Due:**	N/R
Gauge verified prior to use:	☐ YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	N/R	N/R	N/R
North of Anchor #2	N/R	N/R	N/R
South of Anchor #1	N/R	N/R	N/R
South of Anchor #2	N/R	N/R	N/R
Average Thickness	N/R		

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	49°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	11/11/17	Frame(HH:MM:SS)	00:16:29	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**49°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	11/11/17	Frame(HH:MM:SS)	00:17:37	Date:		Frame(HH:MM:SS)	

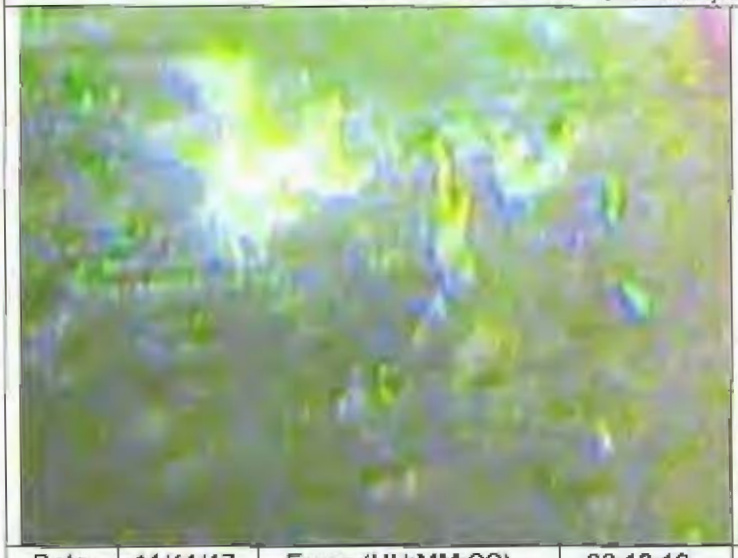
Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	N/R N/R	**CP Reading #2 (mV)** (center of feature)	N/R N/R	**CP Reading #3 (mV)** (south end of feature)	N/R N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	49°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	11/11/17	Frame(HH:MM:SS)	00:18:18	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**49°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	11/11/17	Frame(HH:MM:SS)	00:18:42	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 5)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**49°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	11/11/17	Frame(HH:MM:SS)	00:20:04	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 6)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**49°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	11/11/17	Frame(HH:MM:SS)	00:22:09	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 7)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**49°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	11/11/17	Frame(HH:MM:SS)	00:22:43	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 8)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**49°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	11/11/17	Frame(HH:MM:SS)	00:23:28	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 9)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	49°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	11/11/17	Frame(HH:MM:SS)	00:24:47	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 10)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	49°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8"-12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	11/11/17	Frame(HH:MM:SS)	00:26:18	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

General Information

Date:	10/12/17	**Diver:**	Kevin Lewis
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	W-58 (W-65A / W-65B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	4' South	3:00	.083 (3" X 4")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	4' North	11:00	.007 (1" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	5' North	8:00	.0008 (1" X 3")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
4	3' 9" – 5' 3" South SEE COMMENTS	360° around pipe SEE COMMENTS	.048 (18" X 62.83")	☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)			**Biota present:**	☒ YES ☐ NO	
Dislodged coating observed on the lake floor: ☐ YES ☒ NO			**Lake floor location wrt pipe:**	In span 18" off lake floor	

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Diver Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion
Feature 1, Deposit area 3" X 4", no sample taken Feature 2, Deposit 1" X 1", no sample taken Feature 3, Deposit area 1" X 3", no sample taken **Feature 4, IS NOT A FEATURE** but was initially identified on video recording by the Diver, the 18" wide area X 62.83" (360° circumference) is thicker than the coating on each side of this area, verified by the following: **DFT's taken on the 18" wide area** at the 10 o'clock (180 mils) and 2 o'clock (160 mils) **DFT's** were taken at the 12, 3, 6 & 9 o'clock positions, South and North of the 18" wide area

	12 o'clock	3 o'clock	6 o'clock	9 o'clock
South of area	115 mils	125 mils	120 mils	140 mils
North of area	92 mils	125 mils	92 mils	94 mils

Contractor Signature	Enbridge Representative/ Inspector Signature
[signature]	[redacted]

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	10/6/17	**Next Calibration Due:**	10/6/18
Gauge verified prior to use:	☒YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)

Location	Coating Thickness (mil)	Distance from Anchor (ft)	Location on Pipe (o'clock)
North of Anchor #1	110	5	10:00
North of Anchor #2	115	5	2:00
South of Anchor #1	180	5	10:00
South of Anchor #2	160	5	2:00
Average Thickness	141		

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**54°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/12/17	Frame(HH:MM:SS)	00:29:36	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**54°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 – 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/12/17	Frame(HH:MM:SS)	00:33:46	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for LS Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**54°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/12/17	Frame(HH:MM:SS)	00:34:53	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**54°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below;
Included the date and time stamps associated with video surveillance.



Date:	10/12/17	Frame(HH:MM:SS)	00:44:29



Date:	10/12/17	Frame(HH:MM:SS)	00:45:04

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

NOT A FEATURE, SEE COMMENTS:

The 18" wide area X 360° circumference is thicker than the coating on each side of this area, verified by the DFTs listed in the Comments/Issues/Discussion section

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Diver Inspection Form for L5 Straits of Mackinac

General Information

Date:	10/10/17	**Diver:**	Brad Joanis
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	W-59 (W-64A /W-64B South)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

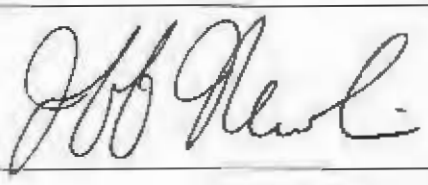
Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	9' South	12:00	0.006 (1" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	9' South	11:00	0.001 (½"X ½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	6' 10" South	12:00	0.07 (5" X 2")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
4	6' 9" South	12:00	0.003 (1" X ½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
5	4' South	9:00	0.01 (2" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
6	2' 9" North	12:00	0.003 (1" X ½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
7	5' 3" North	12:00	0.14 (4" X 5")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
8	5' 5" North	12:00	0.12 (3" X 6")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area

NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)	**Biota present:**	☒YES ☐ NO
Dislodged coating observed on the lake floor: ☐YES ☒NO	**Lake floor location wrt pipe:**	6:00 o'clock at lake floor

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Diver Inspection Form for LS Straits of Mackinac

Comments/Issues/Discussion	
	[redacted]
Contractor Signature	Enbridge Representative/ Inspector Signature

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	08/09/2017	**Next Calibration Due:**	08/09/2018
Gauge verified prior to use:	☒YES ☐NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	100	5	10:00
North of Anchor #2	130	5	2:00
South of Anchor #1	115	5	10:00
South of Anchor #2	120	5	2:00
Average Thickness	116		

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)		**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/10/17	Frame(HH:MM:SS)	00:41:48	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/10/17	Frame(HH:MM:SS)	00:42:28	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/10/17	Frame(HH:MM:SS)	00:44:05	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/10/17	Frame(HH:MM:SS)	00:44:39	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 5)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/10/17	Frame(HH:MM:SS)	00:45:33	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 6)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/10/17	Frame(HH:MM:SS)	00:49:00	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 7)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long, record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/10/17	Frame(HH:MM:SS)	00:50:52	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 8)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/10/17	Frame(HH:MM:SS)	00:51:14	Date:		Frame(HH:MM:SS)	

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ENBRIDGE

Diver Inspection Form for L5 Straits of Mackinac

General Information

Date:	10/10/17	**Diver:**	Maurice Unger, Craig Palmer
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	W-60 (W-64B South / W-64B North)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft^2)	Visual Classification of Feature	
1	15' South	12:00	0.02 (3" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	7' 3" South	9:00	0.05 (4" X 2")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	6' 8" South	8:30	0.02 (2 ½" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
4	6' 9" South	12:00	0.01 (1" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
5	Anchor to 20' South	360°	104.71 (240" X 62.83")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
6	Anchor North	12:00	0.05 (2" X 4")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
7	7" North	4:00	0.06 (3" X 3")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area

NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)	**Biota present:**	☒YES ☐ NO
Dislodged coating observed on the lake floor: ☐YES ☒NO	**Lake floor location wrt pipe:**	In span 6"- 18" off lake floor

Comments/Issues/Discussion

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Feature 5, Dislodged area is from the anchor to 20' South of anchor, 360° around the pipe

Contractor Signature	[redacted]
	Enbridge Representative/ Inspector Signature

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	Need calibr cert dates, gage 57	**Next Calibration Due:**	Need dates, gage 57
Gauge verified prior to use:	☒YES ☐ NO		

Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	145	5	10:00
North of Anchor #2	115	5	2:00
South of Anchor #1	115	5	10:00
South of Anchor #2	115	5	2:00
Average Thickness	122.50		

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)		**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R** **N/R** **N/R** **N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R** **N/R** **N/R** **N/R**
Provide 1 to 2 photos of feature, below: *Included the date and time stamps associated with video surveillance.*					



Date:	10/10/17	Frame(HH:MM:SS)	00:37:28	Date:		Frame(HH:MM:SS)	

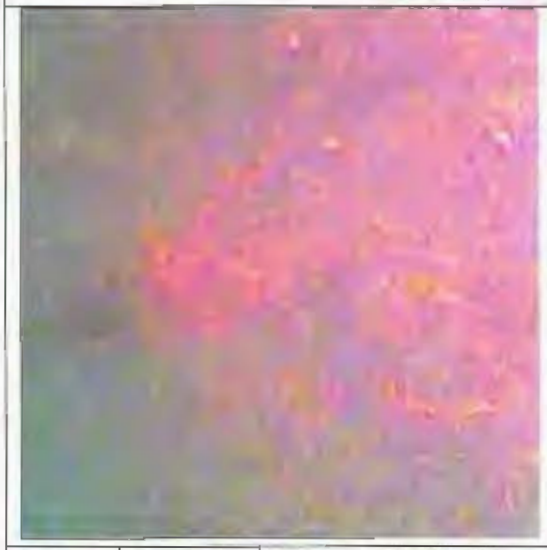
Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/10/17	Frame(HH:MM:SS)	00:39:35	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2"-8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/10/17	Frame(HH:MM:SS)	00:40:33	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/10/17	Frame(HH:MM:SS)	00:44:35	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 5)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



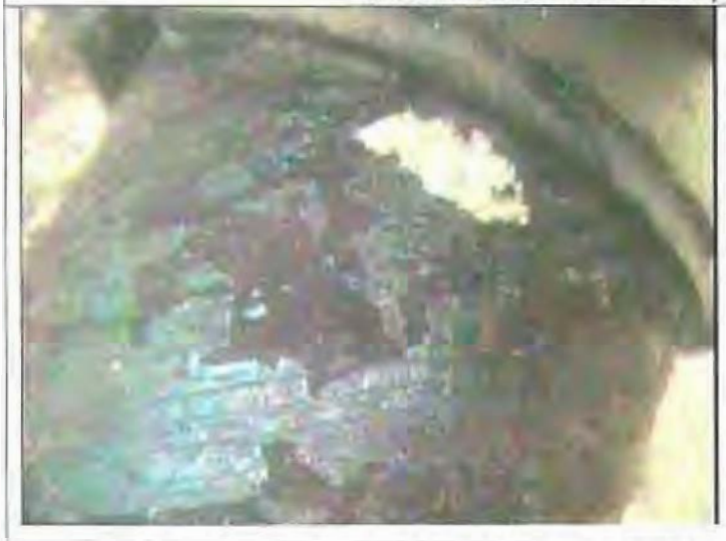
Date:	10/10/17	Frame(HH:MM:SS)	00:19:53	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 6)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/10/17	Frame(HH:MM:SS)	00:23:31	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 7)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/10/17	Frame(HH:MM:SS)	00:27.01	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 8)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)		**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**
Provide 1 to 2 photos of feature, below: *Included the date and time stamps associated with video surveillance.*					
Date:		Frame(HH:MM:SS)		Date:	Frame(HH:MM:SS)

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ENBRIDGE

Diver Inspection Form for L5 Straits of Mackinac

General Information

Date:	10/10/17	**Diver:**	Maurice Unger, Chad Cantrell, George Palmer
AFE / W.O.#:	20011702	**Company Rep / Inspector:**	[redacted]
Pipe Support Anchor:	W-61 (W-67A / W-67B)	**Water Depth (ft):**	[redacted]
Longitude:	[redacted]	**Latitude:**	[redacted]

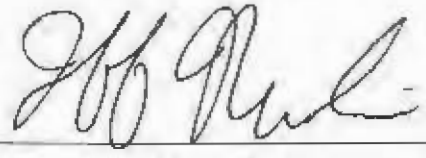
Diver Inspection Record

Feature Number	Location of Feature (w.r.t. pipe support)	Circumferential Position of the Feature (o'clock position)	Measured Feature size (ft²)	Visual Classification of Feature	
1	5' 9" South	6:00	0.003 (1" X ½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
2	2' South	6:00	.0008 (½" X ¼")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
3	Saddle North	11:30	0.005 (1" X ¾")	☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
4	2" North	11:30	0.003 (½" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
5	4" North	11:30	0.007 (2" X ½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
6	5" North	11:30	0.002 (½" X ½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
7	2' 4" North	11:30	0.002 (½" X ½")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
8	3" North	4:00	0.06 (3" X 3")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
9	7" North	4:00	0.14 (5" X 4")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
10	4' 2" North	3:00	0.03 (1" X 4")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
11	5' 6" North	5:30	0.04 (3" X 2")	☒ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
12	2' 6"North	5:00	0.007 (1" X 1")	☐ Dislodged Area ☒ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area
				☐ Dislodged Area ☐ Deposit	☐ Holiday (bare metal) ☐ Disturbed Area

NB: insert table rows as necessary to identify all features observed. Feature numbering starts at top row (for detailed video images)		**Biota present:**	☒YES ☐ NO
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Lake floor location wrt pipe:**	In span 18" from lake floor

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Comments/Issues/Discussion	
	[redacted]
Contractor Signature	Enbridge Representative/ Inspector Signature

Coating Gauge Information			
Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	10/6/17	**Next Calibration Due:**	10/6/17
Gauge verified prior to use:	☒YES ☐ NO		

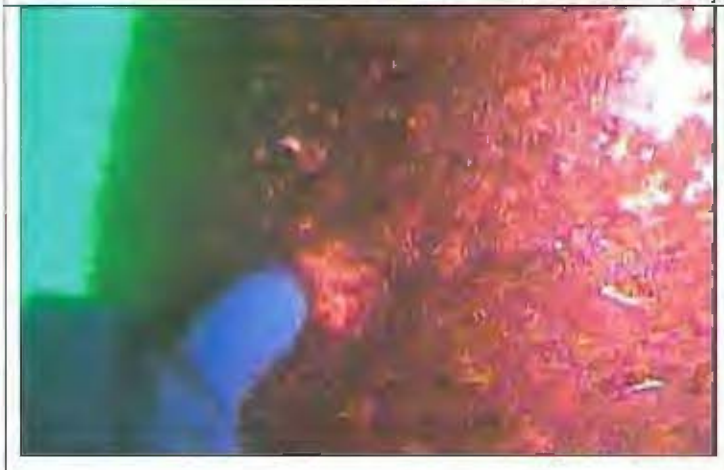
Coating Thickness Inspection Data (complete this table in the absence of any Features)			
Location	**Coating Thickness (mil)**	**Distance from Anchor (ft)**	**Location on Pipe (o'clock)**
North of Anchor #1	120	5	10:00
North of Anchor #2	90	5	2:00
South of Anchor #1	94	5	10:00
South of Anchor #2	96	5	2:00
Average Thickness	100		

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 1)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)		**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/10/17	Frame(HH:MM:SS)	00:17:23	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

ENBRIDGE

Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 2)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/10/17	Frame(HH:MM:SS)	00:19:50	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 3)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below;
Included the date and time stamps associated with video surveillance.



Date:	10/10/17	Frame(HH:MM:SS)	00:21:35	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 4)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/10/17	Frame(HH:MM:SS)	00:22:37	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 5)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/10/17	Frame(HH:MM:SS)	00:23:34	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for LS Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 6)					
CP Reading #1 (mV) (north end of feature)	N/R	**CP Reading #2 (mV)** (center of feature)	N/R	**CP Reading #3 (mV)** (south end of feature)	N/R
DFT #1 (mil) (north end of feature)	N/R	**DFT #2 (mil)** (center of feature)	N/R	**DFT #3 (mil)** (south end of feature)	N/R
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	56°	**DFT Adjacent to Feature (mil)** (~2" away from edge)	N/R N/R N/R N/R	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	N/R N/R N/R N/R

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/10/17	Frame(HH:MM:SS)	00:24.27	Date:		Frame(HH:MM:SS)	

Note: CP readings will not be taken at features classified as disturbed areas or dislodged areas.

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 7)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stomps associated with video surveillance.



Date:	10/10/17	Frame(HH:MM:SS)	00:25:16	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 8)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/10/17	Frame(HH:MM:SS)	00:27:44	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 9)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/10/17	Frame(HH:MM:SS)	00:28:15	Date:		Frame(HH:MM:SS)	

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ENBRIDGE	Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 10)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R**
			N/R		**N/R**
			N/R		**N/R**
			N/R		**N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/10/17	Frame(HH:MM:SS)	00:30:09	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 11)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**125**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**115**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**70**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**115**
			170		**200**
			190		**83**
			245		**115**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/10/17	Frame(HH:MM:SS)	00:42:02	Date:		Frame(HH:MM:SS)	

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Diver Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (for Feature # 12)					
CP Reading #1 (mV) (north end of feature)	**N/R**	**CP Reading #2 (mV)** (center of feature)	**N/R**	**CP Reading #3 (mV)** (south end of feature)	**N/R**
DFT #1 (mil) (north end of feature)	**N/R**	**DFT #2 (mil)** (center of feature)	**N/R**	**DFT #3 (mil)** (south end of feature)	**N/R**
(record #2 for features < 2" long; record #1 and #3 for features 2 - 8" long; record #1, #2 and #3 for features >8" long)					
Temperature (°F)	**56°**	**DFT Adjacent to Feature (mil)** (~2" away from edge)	**N/R** **N/R** **N/R** **N/R**	**DFT Adjacent to Feature (mil)** (~8 - 12" away from edge)	**N/R** **N/R** **N/R** **N/R**

Provide 1 to 2 photos of feature, below:
Included the date and time stamps associated with video surveillance.



Date:	10/10/17	Frame(HH:MM:SS)	00:43:45	Date:		Frame(HH:MM:SS)	

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Appendix C – Coating Repairs Work Plan, Version 3

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Coating Repairs Work Plan
Line 5 Dual Pipelines

United States v. Enbridge Energy et al Case 1:16 –cv-914

Consent Decree	VII. Injunctive Measures, E. Measures To Prevent Spills In The Straits Of Mackinac, Paragraph 69c., Biota Investigation		
Version	3.0	Version date	September 13, 2017

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Introduction

Paragraph 69 of the Consent Decree entered in Case 1:16-cv-00914 (ECF No. 14, 05/23/17) requires the Enbridge defendants (collectively referred to as "Enbridge") to create and complete a Biota Investigation Work Plan ("BI Work Plan") on the Dual Pipelines that cross the Straits of Mackinac. On or about August 14, 2017, Enbridge initiated the field activities of the BI Work Plan at the Straits and as of September 13, 2017 the BI Work Plan field work has been completed.

Through the BI Work Plan activities there have been several locations identified as areas with bare or potentially bare metal.

Per Paragraph 69c. Enbridge is required to submit a final report to the EPA within 60 days of completion of the BI Work Plan investigation. In particular, in the event that evidence is developed that zebra mussels and other biota have impaired, or threaten to impair, the Dual Pipelines Enbridge shall supplement the final report with a proposed work plan to address such impairments. Enbridge however, is currently unaware of any evidence linking zebra mussels or other biota to the coating repairs identified above.

Enbridge is submitting this Coating Repairs Work Plan ("CR Work Plan") in advance of the final BI Work Plan Report with the intent of receiving EPA approval for implementing coating repairs in time to allow Enbridge to complete the work in 2017.

Objective

The objective of the CR Work Plan is to ensure that all repairs are completed safely and in accordance with the Enbridge's coating procedure and in compliance with federal regulations.

Background

On June 13, 2017 the EPA approved Enbridge's BI Work Plan. This plan included detailed steps to complete biota sampling at various locations along the Dual Pipelines. The BI Work Plan also highlighted 18 areas of interest that would be investigated by divers as per the BI Work Plan definition (partial) included below:

Area(s) of Interest: An Area of Interest is a part of the pipeline where, based on visual inspection, (i) the normal (local) Biota is unexpectedly absent or (ii) there is evidence of possible coating damage (e.g., Dislodged Coating and/or potential Holiday).

In addition to the 18 Areas of Interest, three (3) Additional Sites were identified by the Enbridge marine contractor as being appropriate to investigate further. These Additional Sites were identified on Figures 2 and 3 of the BI Work Plan.

Coating Repair Scope Of Work And Schedule

The following locations have been identified as areas with bare or potentially bare metal:

• Additional Site #1 (EAS-1): One area proposed for coating repair (bare metal). • Additional Site #2 (EAS-2): One area proposed for coating repair (potential bare metal). • Additional Site #3 (WAS-1): Four areas proposed for coating repair (bare metal).	Known at the time for inclusion in CR Work Plan - Version 1.0
• East Additional Sites (August Supplement): Three areas proposed for coating repair (bare metal) (North and South). Please refer to coating inspection reports titled EAS-3 and EAS-4.	Known at the time for inclusion in CR Work Plan - Version 2.0
• Area of Interest #1 (EAOI-1): Three areas proposed for coating repair (potential	Known at the time for inclusion

bare metal). • Area of Interest #5 (EAOI-5): One area proposed for coating repair (potential bare metal). • Area of Interest #7 (EAOI-7): One area proposed for coating repair (potential bare metal).	in CR Work Plan - Version 3.0 (current version)

Note: EAS and WAS represents East Additional Site and West Additional Site respectively. EAOI represents East Area of Interest.

The coating inspection reports are included in Appendix A. Thus far, there is no visual evidence or inspection data that suggests any material corrosion or impact on the integrity of the pipe at these locations as the redundant systems – external coating and the cathodic protection – continues to protect the pipelines.

Enbridge will be ready to begin the coating repair work as soon as September 14, 2017 pending approvals from the EPA and the State of Michigan. It is intended to complete the currently known coating repair scope of work in an expeditious manner however, the actual time required to complete the work is highly dependent upon the weather conditions at the Straits.

Coating Repair and Coating Application Procedure

Prior to implementing the coating repairs the following actions will be completed by the Diver:

- Visually inspect the exposed bare steel for corrosion. If deposits are present they will be removed and the underlying metal surface inspected for corrosion related impacts. Any bare metal exposed by the surface preparation (i.e. By removal of loose coating material) shall also be visually inspected for corrosion by the Diver.
- Measure the wall thickness of the pipe using a Cygnus Instruments, Dive-Underwater ultrasonic thickness gage. The Diver will be OQ trained for taking these measurements. At least five (5) pipe wall thickness measurements will be collected per area that is less than 0.25 square feet, while a total of at least eight (8) pipe wall thickness measurements taken at areas 0.25 square feet and greater.

Enbridge has determined an appropriate system and application procedure for the coating repairs on the Line 5 Straits. This procedure is based on the Manufacturer's history with underwater coating installation that dates back to 1989 and the successful full-scale application and testing of the coating repair technology at a third party laboratory (Stress Engineering Services (SES) in Waller, Texas). SES performed a series of tests in which repairs were applied to laboratory samples and a representative 20" diameter pipe from Line 5 that was supplied by Enbridge. Both patch and full 360° circumferential repairs were conducted on the samples, while they were submerged in 40°F water with a composition similar to that found in the Straits. The results of SES's testing program indicate that the coating repair system is an effective repair system. The report is included in Appendix B.

The proposed coating system for the coating repairs is as follows:

- BIO-DUR 563 epoxy filler followed by E-glass fabric impregnated with X-100 UW epoxy manufactured by Piping Repair Technology Incorporated (PRTI).

Coating repairs consist of two approved methods that include:

- Method 1 – Epoxy Filler/ X-100 Epoxy/Full Circumferential Composite Wrap Repair/Stricture Banding®
- Method 2 – Epoxy Filler/ X-100 Epoxy/Composite Patch Repair/Stricture Banding®

Both Method 1 (full circumferential wrap application of the epoxy impregnated fiber) and Method 2 (patch application of the epoxy impregnated fiber) are Enbridge approved methods when using the Stricture Banding® to seal the repair while it cures. SES testing showed that Method 2 without the Stricture Bandings is not acceptable.

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Method 1 is more likely to be chosen when the repair is located on the side of the pipe and the repair area is larger and runs axially along the pipe. Method 2 is more likely to be chosen in situations where dive time is limited, the repair area is smaller, and the repair is located on top of the pipe.

Enbridge is currently working with the coating manufacturer to investigate the suitability of using Method 2 with a pre-cast sleeve in place of the Stricture Bandings ("Modified Method 2"). Enbridge will approach the EPA for approval of Modified Method 2 if the investigation shows the approach is effective. The table below shows the coating repair locations and the currently proposed coating repair method.

Location	Identification	Coating Repair Method
Additional Site #1	EAS-1	Method 1
Additional Site #2	EAS-2	Method 1
Additional Site #3	WAS-1	Method 1
East Additional Site (August Supplement)	EAS-3	Method 1
	EAS-4	Method 1 or Modified Method 2 - if deemed acceptable through testing and subsequently approved by the EPA
Area of Interest #1	EAOI-1	Method 1
Area of Interest #5	EAOI-5	Method 1
Area of Interest #7	EAOI-7	Method 1

It is anticipated that permit(s) for lake floor excavation will be required for EAS-4 unless Modified Method 2 is acceptable and approved. Enbridge will provide the state of Michigan with the plan detailing the materials, methods, and procedures it will use to repair the coating areas.

The product data sheets for the BIO-DUR 563 epoxy filler and the X-100 UW epoxy are included in Appendix C. In addition, Appendix D includes a letter from the Manufacturer confirming that the materials comply with 49CFR195.559 and highlighting underwater installations that have been performed using their products since 1989.

Based on the full scale application and testing at SES, Enbridge has also developed a procedure for the application of the coating repair to the Dual Pipelines. The Enbridge procedure "Application Of Underwater Repair Coatings For Line 5 Straits" – Version 2.0 is found in Appendix E. The procedure was developed in consultation with PRTI.

The cure time for the coating system will be verified using a field trial to confirm the SES testing results that are incorporated into the coating procedure. A pipe sample will be prepared and coated concurrently with the coating repairs at WAS-1. This site represents the deepest water depth (201 feet) and therefore the location with the most challenging environment for successful coating repair. The sample will be allowed to cure at depth and retrieved to the barge after 7 days of cure. While on the barge, Shore D measurements will be completed to confirm a value of 60 or greater. Should the field trial not confirm a Shore D measurement of 60 or greater Enbridge will inform the EPA and the Independent Third Party to discuss next steps relative to the CR Work Plan.

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Diver Training and Certification

In order to support the successful implementation of the coating repairs, the divers will be Operator Qualified (OQ) for the work to be completed. To meet 49CFR195.559 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. After completion of the OQ training, the results are uploaded to ISNET to verify compliance. A list of the OQ covered tasks are listed in Appendix F.

To supplement the OQ certification process, Enbridge will also have the coating manufacturer perform specific training for the materials and coating applications that will be used for the L5 Straits underwater coating repairs. Upon successful completion of the manufacturer's training, the crew members will be issued a certificate of completion.

PRTI training consists of verbal technical training and introduction to the products, their components, and the basic installation procedure. The manufacturer also utilizes audio visual presentations of various installations, wet out procedures and technical aspects of the uses of the products. This is followed by a "hands on" application of the filler, the composite, the stricture banding and the pre cast sleeve.

The marine contractor will also perform a simulated wet trial located close to the dock to test the coating repair plan prior to completing the coating repairs.

Coating Repair Work Plan Deviations

Enbridge has identified two different deviation procedures to ensure the appropriate approvals are received. The deviation procedure outlined in Enbridge's coating repair procedure (Section 2.4, Appendix E) is assigned to the Pipeline Integrity's technical subject matter expert (SME) to sign-off on any deviations as they relate to the Coating Repair procedure. The Pipeline Integrity SME is Enbridge's Coatings Specialist and they will be responsible for evaluating all deviations requested on the coating repair procedure to ensure such deviations are supported by the Manufacturer. This information or decisions made will be communicated to the Project Manager. The Coating Inspector and Manufacturer will be on the barge overseeing the work related to the surface preparation, application and confirming/verifying of the repair. The PI SME will not be on the barge but will be available by cell phone to ensure any deviation requests are addressed.

The deviation procedure for the CR Work Plan is assigned to the Project Manager (PM). The PM will be responsible for the overall work plan related to the plan and how it is executed. The PM will consult with the key stakeholders that include but are not limited to, Pipeline Integrity, Pipeline Compliance. Any deviations required as a result of its execution will require their acceptance. The PM will not be on the barge but will be available via cell phone to ensure any deviation requests are addressed.

Deviations from this work plan shall be brought to the Project Manager (PM) for resolution.

Deviations to this CR Work Plan will also be discussed with the Independent Third Party representative.

Monitoring of Coating Repair Locations

Enbridge understands that our pipeline system, particularly the section through the Straits of Mackinac, is both an important part of the region's energy infrastructure and a point of concern for many people. Enbridge continuously monitors, maintains and modernizes Line 5 to ensure its continued safe operation.

The completed repairs related to this Line 5 CR Work Plan will be captured in Enbridge's OneSource database as part of the L5 Straits section. As such, these sites will continue to be monitored for active external corrosion using inline inspection over the life of the asset. In addition, Enbridge will also visually inspect any exposed coating repairs using a remoted operated vehicle during the scheduled underwater inspection that are completed biannually.

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Reporting

Per Paragraph 69c. Enbridge is required to submit a final report to the EPA within 60 days of completion of the BI Work Plan investigation. In particular, in the event that evidence is developed that zebra mussels and other biota have impaired, or threaten to impair, the Dual Pipelines Enbridge shall supplement the final report with a proposed work plan to address such impairments. Enbridge however, is currently unaware of any evidence linking zebra mussels or other biota to the coating repairs identified above.

In addition to the above mentioned report, Enbridge will submit a report to the EPA within 30 days of completion of the CR Work Plan. This report will include a summary of the work completed, any CR Work Plan deviations with justification, and other pertinent information.

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Appendix A:
Coating Inspection Reports at the Additional Sites

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External Pipeline Inspection Form for L5 Straits of Mackinac

General Information			
Date:	08/15/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**Company Rep / Inspector:**	REDACTED
Segment:	EAS-1	**Water Depth (ft):**	R
Longitude:	REDACTED	**Latitude:**	REDACTED

External Pipe Coating Inspection Results			
General Area	☒ Disturbed Area ☐Dislodged Coating ☐Holiday	**Size of anomaly (ft^2):**	48.84 (46'x 1.74')
Holiday 1	☐ Disturbed Area ☐Dislodged Coating ☒Holiday	**Size of anomaly (ft^2):**	0.01 (3.0"x0.5")
	☐ Disturbed Area ☐Dislodged Coating ☐Holiday	**Size of anomaly (ft^2):**	
	☐ Disturbed Area ☐Dislodged Coating ☐Holiday	**Size of anomaly (ft^2):**	
	☐ Disturbed Area ☐Dislodged Coating ☐Holiday	**Size of anomaly (ft^2):**	
Corrosion present:	☐YES ☒NO	**Biota present:**	☒YES ☐ NO
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Lake floor location wrt pipe:**	N/A (pipe is suspended)

Comments/Issues/Discussion

EAS-1 within span of E-72. Total span is 46' long, within the areas of 10:00 and 2:00.
South End Lat: REDACTED long REDACTED
North End Lat: REDACTED long REDACTED
Center Line listed in general information above.

One (1) feature with DFT measurements below the minimum resolvable thickness of gauge was found. The Polatrak CP gun was used to confirm the existence of bare metal:

Holiday 1 presented average CP reading of -1680mV CSE (holiday confirmed). Holiday found in coating at coordinates Lat: REDACTED Long: REDACTED

No external corrosion was detected by dive team.

	REDACTED
Contractor Signature	**Enbridge Representative/ Inspector Signature**

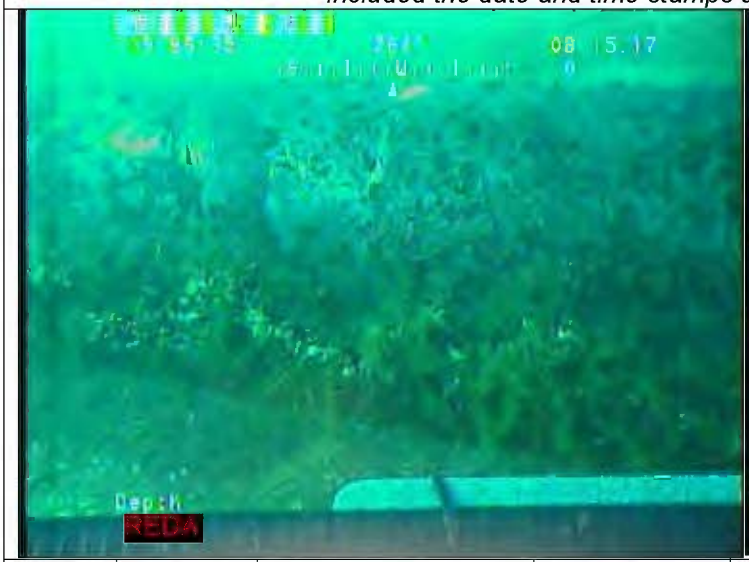
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External Pipeline Inspection Form for L5 Straits of Mackinac

Visual Inspection (General Coating Condition)

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	8/15/17	Frame(HH:MM:SS)	09:26:36	Date:	8/15/17	Frame(HH:MM:SS)	09:27:04

Coating Gauge Information

Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	08/09/2017	**Next Calibration Due:**	08/09/2018
Gauge verified prior to use:	☒YES ☐ NO		

Coating Thickness Inspection Data

Thickness Measure (mil)	Area of Interest	Undisturbed Area (< 2 in.)	Undisturbed Area (> 5 ft.)
North End #1	115	125	130
#2	109	135	130
#3	115	136	140
South End #4	120	145	140
#5	120	128	130
#6	101	130	134
Average Thickness	113	133	134

Additional Coating Thickness Inspection Data (A/R)

	Close as possible to 9 o'clock	Close as possible to 12 o'clock	Close as possible to 2 o'clock
North End	104	120	122
---	104	115	118
South End	130	130	140

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External Pipeline Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (if Holiday is found) - Holiday 1							
CP Reading #1 (mV)	-1676 -1683	CP Reading #2 (mV)	-1674 -1681	CP Reading #3 (mV)		-1690 -1674	
Temperature (°F)	NR	DFT at Holiday (mil)	≤ 25	DFT Adjacent to Holiday (mil)		96, 94, 95	
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							
							
Date:	8/15/17	Frame(HH:MM:SS)	13:02:03	Date:	8/15/17	Frame(HH:MM:SS)	13:05:42

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External Pipeline Inspection Form for L5 Straits of Mackinac

General Information			
Date:	08/24/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**Company Rep / Inspector:**	REDACTED
Segment:	EAS-2	**Water Depth (ft):**	R
Longitude:	REDACTED	**Latitude:**	REDACTED

External Pipe Coating Inspection Results			
Coating Condition	☐ Disturbed Area ☐Dislodged Coating ☐Holiday ☒Other	**Size of anomaly (ft^2):**	0.14 (2.5" x 8")
	☐ Disturbed Area ☐Dislodged Coating ☐Holiday	**Size of anomaly (ft^2):**	
	☐ Disturbed Area ☐Dislodged Coating ☐Holiday	**Size of anomaly (ft^2):**	
	☐ Disturbed Area ☐Dislodged Coating ☐Holiday	**Size of anomaly (ft^2):**	
	☐ Disturbed Area ☐Dislodged Coating ☐Holiday	**Size of anomaly (ft^2):**	
Corrosion present:	☐YES ☒NO	**Biota present:**	☒YES ☐ NO
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Lake floor location wrt pipe:**	N/A (pipe is suspended)

Comments/Issues/Discussion

EAS-2 is within span of E-74.

DFT measurements indicate normal coating thickness through majority of area, with one small area of slightly reduced thickness, which may indicate possible dislodgement of outer wrap. This could not be confirmed due to the presence of a white deposit.

The Polatrak CP gun was used to check for coating holiday through the white deposit. CP measurements could not be obtained, indicating the corrosion barrier coating is intact.

It is recommended to revisit this site to destructively remove the white deposit and inspect the coating condition beneath it. This should be performed during the recoating project so that any resulting coating damage can be repaired.

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Contractor Signature	**Enbridge Representative/ Inspector Signature**

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External Pipeline Inspection Form for L5 Straits of Mackinac

Visual Inspection (General Coating Condition)

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.





Date:	8/24/17	Frame(HH:MM:SS)	14:11:12	Date:	8/24/17	Frame(HH:MM:SS)	14:38:33

Coating Gauge Information

Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	08/09/2017	**Next Calibration Due:**	08/09/2018
Gauge verified prior to use:	☒YES ☐ NO		

Coating Thickness Inspection Data

Thickness Measure (mil)	Area of Interest	Undisturbed Area (< 2 in.)	Undisturbed Area (> 5 ft.)
North End #1	135	130	115
#2	140	130	115
#3	110	140	120
South End #4	117	119	125
#5	130	94	130
#6	70	150	135
Average Thickness	117	127	121

Additional Coating Thickness Inspection Data (A/R)

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External Pipeline Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (if Holiday is found) (note: holiday could not be confirmed)									
CP Reading #1 (mV) See note (below)	-261 -291	CP Reading #2 (mV)	N/R	CP Reading #3 (mV)	N/R				
Temperature (°F)	NR	DFT at Feature (mil)	≥ 70 avg.117	DFT Adjacent to Feature (mil)	≥ 94 avg.127				
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.									





Date:	8/24/17	Frame(HH:MM:SS)	14:11:12	Date:	8/24/17	Frame(HH:MM:SS)	14:38:33

Note: CP readings at this feature were recorded with the probe of Polatrak CP gun pressed firmly through the white substance covering the pipe. These readings were identical to 'open water' CP readings, which were recorded with the CP gun probe close to (but not touching) the pipe.

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External Pipeline Inspection Form for L5 Straits of Mackinac

General Information			
Date:	08/29/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**Company Rep / Inspector:**	REDACTED
Segment:	EAS-3	**Water Depth (ft):**	RE
Longitude:	REDACTED	**Latitude:**	REDACTED

External Pipe Coating Inspection Results			
Coating Condition	☐ Disturbed Area ☐Dislodged Coating ☒Holiday	**Size of anomaly (ft^2):**	0.93 (8"x1.4')
	☐ Disturbed Area ☐Dislodged Coating ☐Holiday	**Size of anomaly (ft^2):**	
	☐ Disturbed Area ☐Dislodged Coating ☐Holiday	**Size of anomaly (ft^2):**	
	☐ Disturbed Area ☐Dislodged Coating ☐Holiday	**Size of anomaly (ft^2):**	
	☐ Disturbed Area ☐Dislodged Coating ☐Holiday	**Size of anomaly (ft^2):**	
Corrosion present:	☐YES ☒NO	**Biota present:**	☒YES ☐ NO
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Lake floor location wrt pipe:**	Pipe suspended

Comments/Issues/Discussion

East Additional Site #3 (South of E-22).

DFT measurements at the feature are below the minimum resolvable thickness of gauge.
The Polatrak CP gun was used to confirm the existence of bare metal:

Holiday 1 presented average CP reading of -848mV CSE (holiday confirmed).

No external corrosion was detected by dive team.

Contractor Signature	REDACTED Enbridge Representative/ Inspector Signature

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External Pipeline Inspection Form for L5 Straits of Mackinac

Visual Inspection (General Coating Condition and Holiday 1)

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	8/29/17	Frame(HH:MM:SS)	10:35:09	Date:	8/29/17	Frame(HH:MM:SS)	10:35:44

Coating Gauge Information

Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	08/09/2017	**Next Calibration Due:**	08/09/2018
Gauge verified prior to use:	☒YES ☐ NO		

Coating Thickness Inspection Data

Thickness Measure (mil)	Area of Interest	Undisturbed Area (< 2 in.)	Undisturbed Area (> 5 ft.)
North End #1	105	85	130
#2	≤25	120	120
#3	115	115	130
South End #4	≤25	80	100
#5	≤25	80	100
#6	≤25	125	105
Average Thickness		101	114

Additional Coating Thickness Inspection Data (A/R)

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External Pipeline Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (if Holiday is found) - Holiday 1							
CP Reading #1 (mV)	-852 -886	CP Reading #2 (mV)	-804 -842	CP Reading #3 (mV)	-834 -875		
Temperature (°F)	44	DFT at Holiday (mil)	≤ 25	DFT Adjacent to Holiday (mil)	80, 80, 125		

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	8/29/17	Frame(HH:MM:SS)	10:35:09	Date:	8/29/17	Frame(HH:MM:SS)	10:35:44

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External Pipeline Inspection Form for L5 Straits of Mackinac

General Information			
Date:	08/30/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**Company Rep / Inspector:**	REDACTED
Segment:	EAS-4	**Water Depth (ft):**	RE
Longitude:	RREDACTE	**Latitude:**	REDACTE D

External Pipe Coating Inspection Results			
General Area	☒ Disturbed Area ☐Dislodged Coating ☐Holiday	**Size of anomaly (ft^2):**	3.0 (1'6" X 2')
Holiday 1	☐ Disturbed Area ☐Dislodged Coating ☒Holiday	**Size of anomaly (ft^2):**	0.53 (7" X 11")
Holiday 2	☐ Disturbed Area ☐Dislodged Coating ☒Holiday	**Size of anomaly (ft^2):**	1.11 (1'4" X 10")
	☐ Disturbed Area ☐Dislodged Coating ☐Holiday	**Size of anomaly (ft^2):**	
	☐ Disturbed Area ☐Dislodged Coating ☐Holiday	**Size of anomaly (ft^2):**	
Corrosion present:	☐YES ☒NO	**Biota present:**	☐YES ☒ NO
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Lake floor location wrt pipe:**	Pipe buried

Comments/Issues/Discussion

East Additional Site #4.

Two (2) features with DFT measurements below the minimum resolvable thickness of gauge were found. The Polatrak CP gun was used to confirm the existence of bare metal:
Holiday 1 presented average CP reading of -963mV CSE (holiday confirmed).
Holiday 2 presented average CP reading of -958mV CSE (holiday confirmed).

No external corrosion was detected by dive team.

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Contractor Signature	**Enbridge Representative/ Inspector Signature**

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External Pipeline Inspection Form for L5 Straits of Mackinac

Visual Inspection (General Coating Condition, Holidays 1 and 2)

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video sdurveillance.





Date:	8/30/17	Frame(HH:MM:SS)	09:17:44	Date:	8/30/17	Frame(HH:MM:SS)	08:55:25

Coating Gauge Information

Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	08/09/2017	**Next Calibration Due:**	08/09/2018
Gauge verified prior to use:	☒YES ☐ NO		

Coating Thickness Inspection Data

Thickness Measure (mil)	Area of Interest	Undisturbed Area (< 2 in.)	Undisturbed Area (> 5 ft.)
North End #1	≤25	N/R (see note, below)	N/R
#2	≤25	N/R	N/R
#3	≤25	N/R	N/R
South End #4	≤25	N/R	N/R
#5	≤25	N/R	N/R
#6	≤25	N/R	N/R
Average Thickness			

Additional Coating Thickness Inspection Data (A/R)

Note: coating thickness in undisturbed areas around the cable rub could not be obtained due to the presence of silt and soil (lake bed). The pipe is below the level of the lake bed. See Holiday 1 and Holiday 2 *'DFT thicknesses adjacent to the Holidays'* for representative coating thickness in the area.

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External Pipeline Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (if Holiday is found) - Holiday 1							
CP Reading #1 (mV)	-955 -991	CP Reading #2 (mV)	-938 -965	CP Reading #3 (mV)	-951 -979		
Temperature (°F)	44	DFT at Holiday (mil)	≤ 25	DFT Adjacent to Holiday (mil)	96, 84, 100, 135		

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.





Date:	8/30/17	Frame(HH:MM:SS)	8:58:31	Date:	8/30/17	Frame(HH:MM:SS)	9:17:40

Cathodic Protection and Coating Measurements (if Holiday is found) - Holiday 2							
CP Reading #1 (mV)	-981 -1012	CP Reading #2 (mV)	-907 -933	CP Reading #3 (mV)	-944 -974		
Temperature (°F)	44	DFT at Holiday (mil)	≤ 25	DFT Adjacent to Holiday (mil)	105, 140, 76, 95, 84		

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.





Date:	8/30/17	Frame(HH:MM:SS)	10:03:31	Date:	8/30/17	Frame(HH:MM:SS)	10:14:55

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External Pipeline Inspection Form for L5 Straits of Mackinac

General Information			
Date:	08/25/2017	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**Company Rep / Inspector:**	REDACTED
Segment:	WAS-1	**Water Depth (ft):**	RE
Longitude:	REDACTED	**Latitude:**	REDACTED

External Pipe Coating Inspection Results			
General Area	☐ Disturbed Area ☒Dislodged Coating ☐Holiday	**Size of anomaly (ft^2):**	20.8 (13' x 1.6')
Holiday 1	☐ Disturbed Area ☐Dislodged Coating ☒Holiday	**Size of anomaly (ft^2):**	0.06 (9" x 1")
Holiday 2	☐ Disturbed Area ☐Dislodged Coating ☒Holiday	**Size of anomaly (ft^2):**	0.24 (1'2" x 2.5")
Holiday 3	☐ Disturbed Area ☐Dislodged Coating ☒Holiday	**Size of anomaly (ft^2):**	0.07 (1'7" x ½")
Holiday 4	☐ Disturbed Area ☐Dislodged Coating ☒Holiday	**Size of anomaly (ft^2):**	0.01 (1'3" x 1/8")
Corrosion present:	☐YES ☒NO	**Biota present:**	☒YES ☐ NO
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Lake floor location wrt pipe:**	N/A (pipe is suspended)

Comments/Issues/Discussion

WAS-1 within span of W-68A. Four (4) features with DFT measurements below the minimum resolvable thickness of gauge were found. The Polatrak CP gun was used to confirm the existence of bare metal at the following features:

Holiday 1 presented average CP reading of -1312mV CSE (holiday confirmed).
Holiday 2 presented average CP reading of -1312mV CSE (holiday confirmed).
Holiday 3 presented average CP reading of -1365mV CSE (holiday confirmed).
Holiday 4 presented average CP reading of -1408mV CSE (holiday confirmed).

No external corrosion was detected by dive team. A white deposit was found at the holiday area.

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External Pipeline Inspection Form for L5 Straits of Mackinac

Visual Inspection (General Coating Condition)

For all sections of dislodged coating or holidays, provide pictures below.
Included the date and time stamps associated with video surveillance.





Date:	8/25/17	Frame(HH:MM:SS)	10:15:30	Date:	8/25/17	Frame(HH:MM:SS)	10:14:46

Coating Gauge Information

Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	08/09/2017	**Next Calibration Due:**	08/09/2018
Gauge verified prior to use:	☒YES ☐ NO		

Coating Thickness Inspection Data

Thickness Measure (mil)	Area of Interest	Undisturbed Area (< 2 in.)	Undisturbed Area (> 5 ft.)
North End #1	80	105	105
#2	66	110	110
#3	110	105	95
South End #4	110	94	90
#5	105	95	85
#6	105	100	85
Average Thickness	96	102	95

Additional Coating Thickness Inspection Data (A/R)

	Within AOI 5' from North	Within AOI 10' from North
North End	92	98
---	84	105
South End	80	110

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External Pipeline Inspection Form for L5 Straits of Mackinac

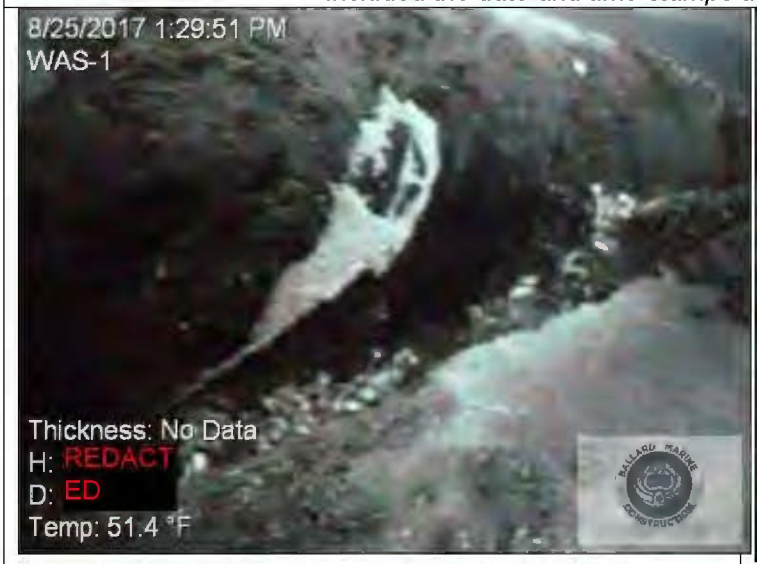
Cathodic Protection and Coating Measurements (if Holiday is found) - Holiday 1							
CP Reading #1 (mV)	-1300 -1362	CP Reading #2 (mV)	-1277 -1336	CP Reading #3 (mV)	-1277 -1322		
Temperature (°F)	43	DFT at Holiday (mil)	≤ 25	DFT Adjacent to Holiday (mil)	90, 93, 110		
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							





Date:	8/25/17	Frame(HH:MM:SS)	09:15:30	Date:	8/25/17	Frame(HH:MM:SS)	10:14:42

Cathodic Protection and Coating Measurements (if Holiday is found) - Holiday 2							
CP Reading #1 (mV)	-1274 -1328	CP Reading #2 (mV)	-1283 -1237	CP Reading #3 (mV)	-1375 -1372		
Temperature (°F)	43	DFT at Holiday (mil)	≤ 25	DFT Adjacent to Holiday (mil)	79, 94, 100		
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							





Date:	8/25/17	Frame(HH:MM:SS)	13:29:51	Date:	8/25/17	Frame(HH:MM:SS)	13:30:30

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External Pipeline Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (if Holiday is found) - Holiday 3								
CP Reading #1 (mV)	-1340 -1388	CP Reading #2 (mV)	-1342 -1389	CP Reading #3 (mV)	-1343 -1385			
Temperature (°F)	43	DFT at Holiday (mil)	≤ 25	DFT Adjacent to Holiday (mil)	95, 83, 89			
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.								





Date:	8/25/17	Frame(HH:MM:SS)	09:14:35	Date:	8/25/17	Frame(HH:MM:SS)	10:15:41

Cathodic Protection and Coating Measurements (if Holiday is found) - Holiday 4								
CP Reading #1 (mV)	-1384 -1433	CP Reading #2 (mV)	-1390 -1430	CP Reading #1 (mV)	-1380 -1430			
Temperature (°F)	43	DFT at Holiday (mil)	≤ 25	DFT Adjacent to Holiday (mil)	80, 80, 90			
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.								





Date:	8/25/17	Frame(HH:MM:SS)	09:14:19	Date:	8/25/17	Frame(HH:MM:SS)	09:14:26

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External Pipeline Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/08/17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**Company Rep / Inspector:**	REDACTED
Segment:	EAOI-1	**Water Depth (ft):**	194
Longitude:	REDACTED	**Latitude:**	REDACTED

External Pipe Coating Inspection Results			
Coating Condition	☒ Disturbed Area ☐Dislodged Coating ☐Holiday ☐Other	**Size of anomaly (ft^2):**	9.17 (3'4" X 2'9")
Feature 1	☐ Disturbed Area ☐Dislodged Coating ☐Holiday ☒Other	**Size of anomaly (ft^2):**	0.01 (1" X1")
Feature 2	☐ Disturbed Area ☐Dislodged Coating ☐Holiday ☒Other	**Size of anomaly (ft^2):**	0.01 (1" X1.5")
Feature 3	☐ Disturbed Area ☐Dislodged Coating ☐Holiday ☒Other	**Size of anomaly (ft^2):**	0.01 (1" X1")
	☐ Disturbed Area ☐Dislodged Coating ☐Holiday ☐Other	**Size of anomaly (ft^2):**	
Corrosion present:	☐YES ☒NO	**Biota present:**	☒YES ☐ NO
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Lake floor location wrt pipe:**	6 o'clock (pipe resting on lake bed)

Comments/Issues/Discussion

EAOI-1 E-01B-B is an area of disturbed biota and contains three areas of white deposit within a 6" X 1.5" area on the top of the pipe (12 o'clock).

DFT measurements indicate normal coating thickness through the entire area inspected.

CP measurements taken with the Polatrak CP gun through the white deposit areas deviated slightly from reference 'open water' measurements, but they were not sufficiently electronegative to indicate contact with Line 5 pipe metal.

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Contractor Signature	**Enbridge Representative/ Inspector Signature**

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External Pipeline Inspection Form for L5 Straits of Mackinac

Visual Inspection (General Coating Condition)

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.





Date:	09/08/17	Frame(HH:MM:SS)	9:01:01	Date:	09/08/17	Frame(HH:MM:SS)	12:07:06

Coating Gauge Information

Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	08/09/2017	**Next Calibration Due:**	08/09/2018
Gauge verified prior to use:	☒YES ☐ NO		

Coating Thickness Inspection Data

Thickness Measure (mil)	Area of Interest	Undisturbed Area (< 2 in.)	Undisturbed Area (> 5 ft.)
North End #1	115	105	110
#2	150	125	110
#3	105	98	90
South End #4	105	95	100
#5	105	95	100
#6	110	100	100
Average Thickness	115	103	101

Additional Coating Thickness Inspection Data (A/R)

	Centerline of AOI at 12, 3, and 9 o'clock	
Top	105	
West	125	
East	110	

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External Pipeline Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (if Holiday is found) (note: holiday could not be confirmed)									
CP Reading #1 (mV) (feature 1)	-234 -281	CP Reading #2 (mV) (feature 2)	-440 -316	CP Reading #3 (mV) (feature 3)	-320 -260				
Temperature (°F)	45	DFT at Feature (mil)	N/R	DFT Adjacent to Features (mil) (features 1, 2, and 3 respectively)	130, 145, 140				
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.									



Date:	09/08/17	Frame(HH:MM:SS)	12:07:06	Date:		Frame(HH:MM:SS)	

Note: CP readings at this feature were recorded with the probe of Polatrak CP gun pressed firmly into the white substance coating the pipe. These readings were more electronegative than the 'open water' CP readings (-198mV / -170mV), but are not consistent with Line 5 pipe metal contact – indicating that the presence of a resistive coating on the pipe surface.

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External Pipeline Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/06/17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**Company Rep / Inspector:**	REDACTED
Segment:	EAOI-5	**Water Depth (ft):**	103
Longitude:	REDACTED	**Latitude:**	REDACTED

External Pipe Coating Inspection Results			
Coating Condition	☒ Disturbed Area ☐Dislodged Coating ☐Holiday ☐Other	**Size of anomaly (ft^2):**	23.29 (6'6"x3'7")
Feature 1	☐ Disturbed Area ☐Dislodged Coating ☐Holiday ☒Other	**Size of anomaly (ft^2):**	0.01 (1" X1")
Feature 2	☐ Disturbed Area ☒Dislodged Coating ☐Holiday ☐Other	**Size of anomaly (ft^2):**	0.01 (1" x 2")
	☐ Disturbed Area ☐Dislodged Coating ☐Holiday ☐Other	**Size of anomaly (ft^2):**	
	☐ Disturbed Area ☐Dislodged Coating ☐Holiday ☐Other	**Size of anomaly (ft^2):**	
Corrosion present:	☐YES ☒NO	**Biota present:**	☒YES ☐ NO
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Lake floor location wrt pipe:**	N/A (pipe is suspended)

Comments/Issues/Discussion

EAOI-5 E-39 is an area of disturbed biota and contains one area of white deposit approximately the size of a quarter located near the top of the pipe (at 12 o'clock). The white deposit is located adjacent to a coated circumferential seam weld in the pipe.

DFT measurements indicate normal coating thickness through the entire area inspected, with slightly thinner coating adjacent to the white deposit.

CP measurements taken with the Polatrak CP gun through the white deposit areas deviated slightly from reference 'open water' measurements, but they were not sufficiently electronegative to indicate contact with Line 5 pipe metal.

Part of the white deposit broke away during the CP readings without exposing bare metal.

	REDACTED
Contractor Signature	**Enbridge Representative/ Inspector Signature**

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External Pipeline Inspection Form for L5 Straits of Mackinac

Visual Inspection (General Coating Condition)

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.





Date:	09/06/17	Frame(HH:MM:SS)	14:45:12	Date:	09/06/17	Frame(HH:MM:SS)	14:47:47

Coating Gauge Information

Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	08/09/2017	**Next Calibration Due:**	08/09/2018
Gauge verified prior to use:	☒YES ☐ NO		

Coating Thickness Inspection Data

Thickness Measure (mil)	Area of Interest	Undisturbed Area (< 2 in.)	Undisturbed Area (> 5 ft.)
North End #1	145	72	130
#2	94	115	130
#3	105	100	110
South End #4	130	130	135
#5	110	120	105
#6	105	100	105
Average Thickness	119	106	119

Additional Coating Thickness Inspection Data (A/R)* (see note below)

	16" from South End	34" from South End	52" from South End
West	135	145	145
Top	105	105	120
East	105	125	105

Note: An area of dislodged outer wrap was identified 2.5' from the south end of the AOI. Coating thickness in this area was 100 mil.

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External Pipeline Inspection Form for L5 Straits of Mackinac

Cathodic Protection and Coating Measurements (if Holiday is found) (note: holiday could not be confirmed)							
CP Reading #1 (mV) (feature 1)	-391 -326	CP Reading #2 (mV)	N/R	CP Reading #3 (mV)	N/R		
Temperature (°F)	50	DFT at Feature (mil)	N/R	DFT Adjacent to Features (mil)	82,72,78,78		
For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.							



Date:	09/06/17	Frame(HH:MM:SS)	14:47:47	Date:		Frame(HH:MM:SS)	

Note: CP readings at this feature were recorded with the probe of Polatrak CP gun pressed firmly into the white substance coating the pipe. These readings were more electronegative than the 'open water' CP readings (-101mV / -061mV), but are not consistent with Line 5 pipe metal contact – indicating that the presence of a resistive coating on the pipe surface.

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External Pipeline Inspection Form for L5 Straits of Mackinac

General Information			
Date:	09/05/17	**Contractor:**	Ballard Marine Co
AFE / W.O.#:	20008990	**Company Rep / Inspector:**	REDACTED
Segment:	EAOI-7	**Water Depth (ft):**	81
Longitude:	REDACTED	**Latitude:**	REDACTED

External Pipe Coating Inspection Results			
Coating Condition	☒ Disturbed Area ☐Dislodged Coating ☐Holiday ☐Other	**Size of anomaly (ft^2):**	7.08 (2'5" X 2'10")
Feature 1	☐ Disturbed Area ☐Dislodged Coating ☐Holiday ☒Other	**Size of anomaly (ft^2):**	0.04 (3" X2")
	☐ Disturbed Area ☐Dislodged Coating ☐Holiday ☐Other	**Size of anomaly (ft^2):**	
	☐ Disturbed Area ☐Dislodged Coating ☐Holiday ☐Other	**Size of anomaly (ft^2):**	
	☐ Disturbed Area ☐Dislodged Coating ☐Holiday ☐Other	**Size of anomaly (ft^2):**	
Corrosion present:	☐YES ☒NO	**Biota present:**	☒YES ☐ NO
Dislodged coating observed on the lake floor: ☐YES ☒NO		**Lake floor location wrt pipe:**	N/A (pipe is suspended)

Comments/Issues/Discussion

EAOI-7 is located in Span E-35. This area of disturbed biota contains one area of white deposit.

DFT measurements indicate normal coating thickness through the entire area inspected, with slightly thinner coating adjacent to the white deposit.

The Polatrak CP gun was used to test for coating holiday through the white deposit, but valid CP measurements could not be obtained. This indicates the presence of a resistive or isolating coating on the pipe surface.

	REDACTED
Contractor Signature	**Enbridge Representative/ Inspector Signature**

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External Pipeline Inspection Form for L5 Straits of Mackinac

Visual Inspection (General Coating Condition)

For all sections of dislodged coating or holidays, provide pictures below. Included the date and time stamps associated with video surveillance.





Date:	09/05/17	Frame(HH:MM:SS)	12:24:13	Date:	09/05/17	Frame(HH:MM:SS)	12:23:58

Coating Gauge Information

Manufacturer:	Elcometer Inspection Equip	**Product:**	211 Coating Thickness Gauge
Last Calibrated:	08/09/2017	**Next Calibration Due:**	08/09/2018
Gauge verified prior to use:	☒YES ☐ NO		

Coating Thickness Inspection Data

Thickness Measure (mil)	Area of Interest	Undisturbed Area (< 2 in.)	Undisturbed Area (> 5 ft.)
South End #1	111	106	114
#2	104	109	100
#3	135	113	126
North End #4	159	160	160
#5	166	200	190
#6	190	120	110
Average Thickness	144	134	133

Additional Coating Thickness Inspection Data (A/R)* (see note below)

	Centerline of AOI	Adjacent to white substance	
	134	63	
	104	75	
	119	95	

CP gun was pressed firmly into the white deposit, but valid CP readings could not be obtained.

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Appendix B:
Report from Stress Engineering Services

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STRESS ENGINEERING SERVICES INC.

an employee-owned company

Evaluation of Underwater Coating Repairs for Enbridge Line 5

Final Report

SES Document No.: 1254493-PL-RP-01 (Rev 0)

8 September 2017

Prepared for:

Enbridge Pipeline

Edmonton, Alberta, Canada

Contact: REDACTED

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Web: www.stress.com

Texas Registered Engineering Firm F-195

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Limitations of This Report

This report is prepared for the sole benefit of the Client, and the scope is limited to matters expressly covered within the text. In preparing this report, SES has relied on information provided by the Client and, if requested by the Client, third parties. SES may not have made an independent investigation as to the accuracy or completeness of such information unless specifically requested by the Client or otherwise required. Any inaccuracy, omission, or change in the information or circumstances on which this report is based may affect the recommendations, findings, and conclusions expressed in this report. SES has prepared this report in accordance with the standard of care appropriate for competent professionals in the relevant discipline and the generally applicable industry standards. However, SES is not able to direct or control operation or maintenance of the Client's equipment or processes.

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Executive Summary

Stress Engineering Services, Inc. (SES) was contracted by Enbridge Pipeline to evaluate an epoxy coating repair system that is being considered for use on a section of Enbridge's Line 5, which runs through the Straits of Mackinac in Northern Michigan. The coating repair system being evaluated is a product of Piping Repair Technologies (PRT) Incorporated of Hempstead, Texas, and consists of:

- Bio-Dur™ 563 SW epoxy filler used to fill any missing or removed sections of the original coating;
- Four layers of E-glass fabric saturated with a two-part X-100 UW epoxy resin, which is a mixture of X100-UW Epoxy Base – Blue and BIO-SEAL™ X-100 Curing Agent – Clear. The epoxy repair fabric can be applied as either a patch or a full circumferential wrap over either bare steel or the original inner coal-tar coating; and
- Stricture Banding® film wrapped around the repair to compress the fabric layers and hold the repair in place as it cures.

SES performed a series of tests in which repairs were applied to laboratory samples and a representative 20" diameter pipe from Line 5 that was supplied by Enbridge. Both patch and full 360° circumferential repairs were applied to the samples while they were submerged in 40°F water with a composition similar to that found in the Straits.

All repairs cured in approximately 5 to 6 days, and were found to achieve a Shore D hardness of greater than 70.

The relative adhesion of the repairs to the pipe surface was tested using ASTM 4541 methods ("Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers"). Both patch and full repairs exhibited greater adhesion to the pipe surface than the original coal-tar coating.

The effect of the Stricture Banding® film was evaluated by performing repairs both with and without its use during the repair procedure. One patch repair was not wrapped with Stricture Banding®; post-test inspection revealed that this repair was well adhered at its center, but was not fully attached around the perimeter of the fabric. The resulting crevice created at the perimeter indicated that the patch may be susceptible to erosion and/or crevice corrosion during service; therefore, use of the Stricture Banding®, or some other compression method, is recommended during the curing cycle. The remaining repairs that incorporated the Stricture Banding® during installation appeared to be well suited for underwater pipeline coating repair, if they are properly applied.

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1. Introduction

Stress Engineering Services, Inc. (SES) was contracted by Enbridge Pipeline to evaluate the application of an epoxy repair system that is being considered for use on a submerged length of Line 5, located in the Mackinac Straits of northern Michigan (the "Straits"). Throughout this report, the term "Pipeline #5" is intended to refer to this underwater section of the pipeline.

The proposed repair system—X-100 UW Heavy Duty Epoxy—was applied to representative pipe samples by the supplier, PLT of Hempstead, Texas. The simulated repairs were applied while the pipe was submerged in 40°F water with a mineral composition similar to that of the Straits. The hardness of the repaired areas was then tested using a Shore D durometer over 7+ days to document the curing characteristics of the epoxy. The configuration of each repair area was examined using standard metallographic techniques. Additionally, adhesion testing per ASTM D4541, "Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers," was conducted in both the original and repaired areas of the coating to determine their relative adhesion after full curing.

This report documents the results of SES's testing and evaluation.

2. Original Coating Material

A 7 ft section of 20" diameter pipe was provided to SES for the repair system evaluation. The sample pipe section (Figure 1) had a wall thickness of 0.810" and was reportedly the same construction and vintage as Pipeline #5. The pipe section provided had reportedly been in prior service, although not underwater.

The original coating reportedly consists of an inner layer of coal tar or asphalt epoxy with an outer fiber-glass wrap. SES removed a section of the original coating from the pipe and analyzed its composition using Fourier transform infrared spectroscopy (FTIR). The results (Figure 2) indicate that the inner layer is a coal-tar based coating. The outer layer is similar in composition but contains excessive dissolved phase and bound water.

A cross-section through the original coating in Figure 3 shows the two layers[1] of the coating. Visual inspection indicated that the coating is well adhered to the pipe surface with no visible corrosion or delamination.

[1] The top white-colored layer is a mounting resin that was applied to encase the coating to maintain its integrity during metallographic preparation.

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Figure 1: Photograph showing as-received 20" diameter pipe sample used for full-scale repair testing.

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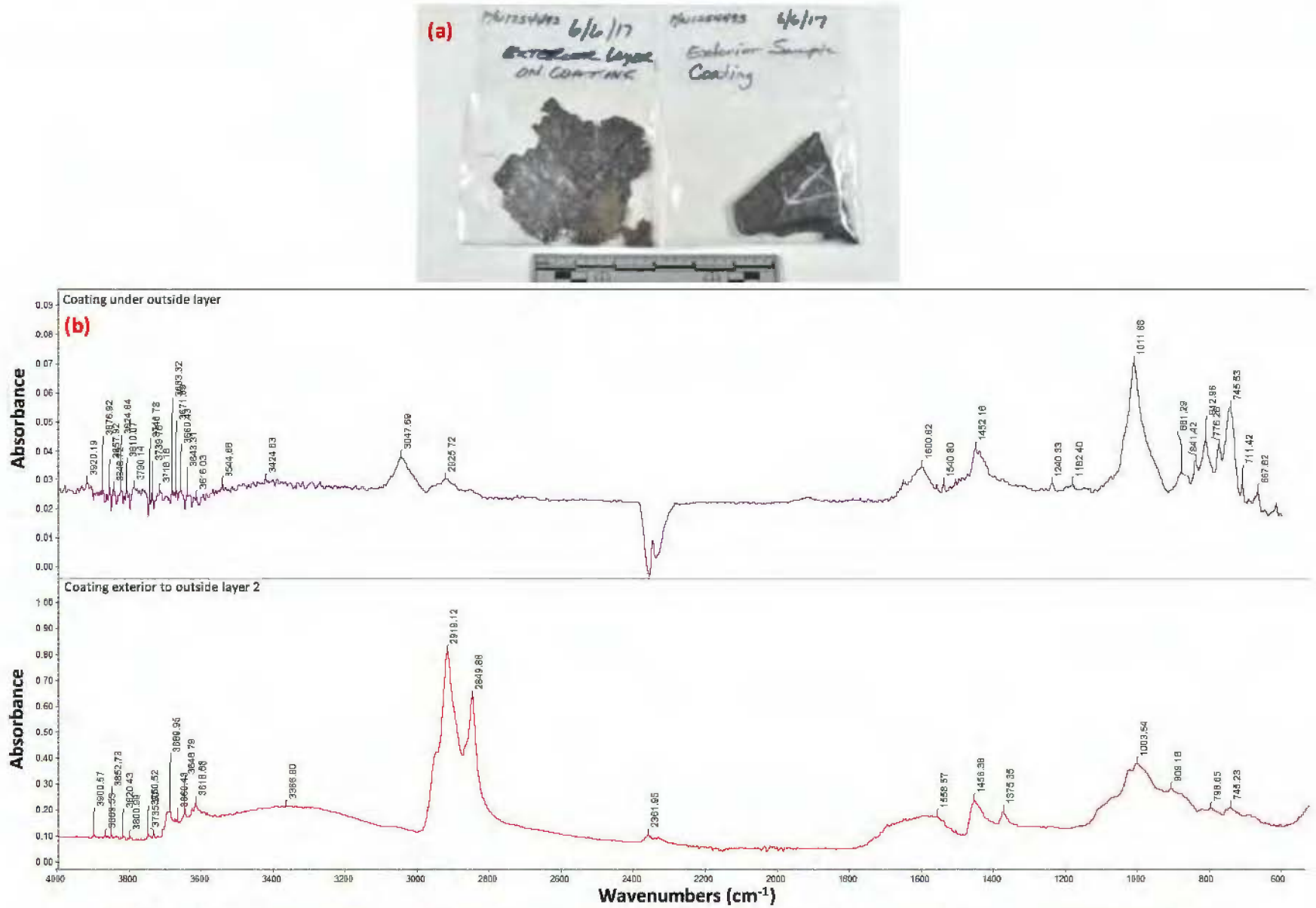


Figure 2: (a) Photograph of coating samples removed for FTIR analysis; (b) FTIR analysis results for original coating of 20" pipe sample.

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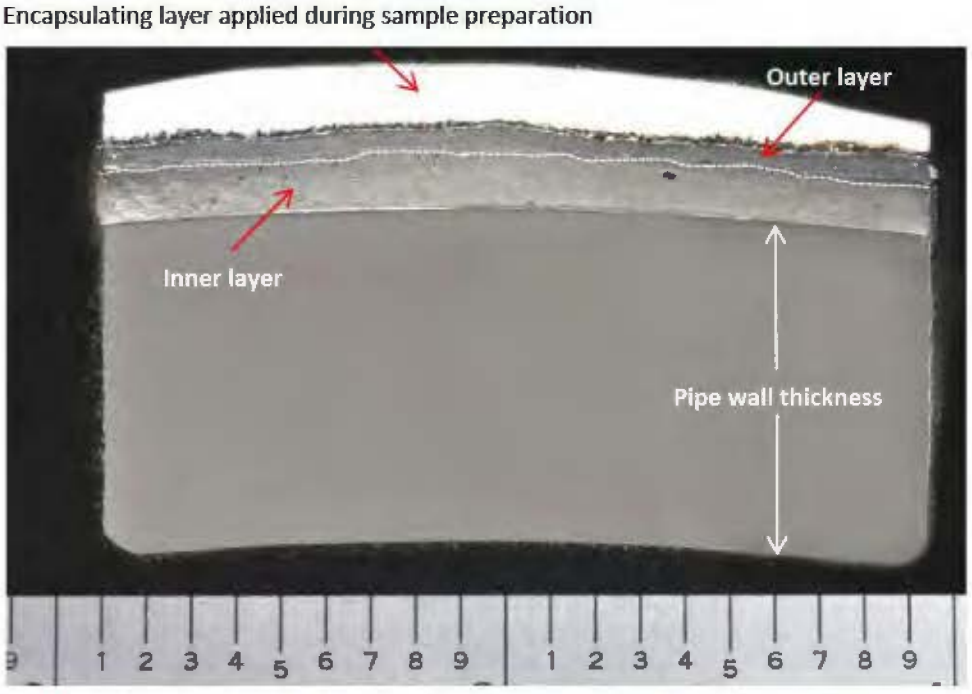


Figure 3: Metallographic cross-section through original coating. Dashed line indicates approximate boundary between inner and outer layers of coating. Numbered scale divisions are 0.1".

3. Laboratory Tests of Repair Coating System

Prior to conducting any repairs on the 20" diameter pipe section, SES performed small-scale tests on scrap pieces of carbon steel pipe. The outer surfaces of two 3-ft lengths of 6" diameter pipe were prepared to a NACE 2[2] finish.

The cure rate of an epoxy (and possibly its ability to cure) is largely a function of temperature. In general, the lower the temperature, the longer it will take for an epoxy to cure. An internet survey of Great Lakes water temperatures, including dive company websites, indicated that the temperature at the bottom of the Straits can be near 40°F, even in summer months. It is also known that 40°F is a standard test temperature for offshore oil & gas applications in the Gulf of Mexico. Thus, 40°F was selected as the coating application temperature for this test program.

Two modified chest freezers were filled with prepared water and chilled to 40°F using a combination of the freezer's compressor and dry ice (Figure 4). The water bath was maintained at 40°F throughout testing.

The repair coating system under evaluation (Figure 5) is a two-part epoxy system. First, the epoxy base (X100 – UW Epoxy Base – Blue) was mixed with curing agent (Bio-Seal X-100 Curing Agent – Clear) and applied to the surface of the pipe as a preparation layer (Figure 6(a)). The mixed epoxy was then saturated into a 12" wide, E-glass fabric that was wrapped around the pipe in at least four layers (Figure

[2] Near-white metal abrasive blast cleaning.

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6(a)–(d)). Each layer is approximately 30 mils thick. The repair was held in place for curing using Stricture Banding™ (stricture), which is a thin film of transparent plastic that was wrapped around the repair and circumference of the pipe (Figure 6(e)). After curing, the stricture can be removed.

Full 360° wrap repairs were applied to the center of both sample pipes, and the repairs were allowed to cure for over one week. During the curing cycle, after an initial 72 hr waiting period, the pipe was briefly lifted from the water bath every 24 hr and the hardness of the repair was measured using a Shore D durometer. The location of the hardness tests and the cure curves for the test repairs are shown in Figure 7. Results indicated that coating hardness reached a plateau hardness after approximately 8 days. Hardness continued to increase slightly over the next few days, with a maximum reading of 85 Shore D after 9 days when the testing was suspended.



Figure 4: One of two laboratory test samples used for initial tests of repair material. A 6" pipe section is shown submerged in 40°F water prior to application of repair coating.



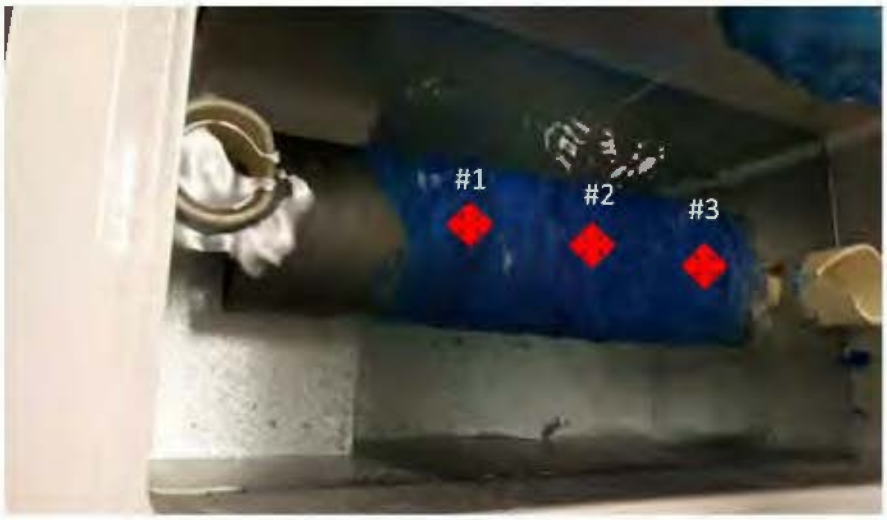
Figure 5: Two-part epoxy repair system provided by PRT Incorporated, Hempstead, Texas.

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Figure 6: Photographs showing application of laboratory epoxy repair wrap: (a) epoxy applied to bare steel; (b) and (c) fabric impregnated with two-part epoxy; (d) fiber mesh repair wrapped around pipe in four layers; and (e) stricture banding applied over repair.

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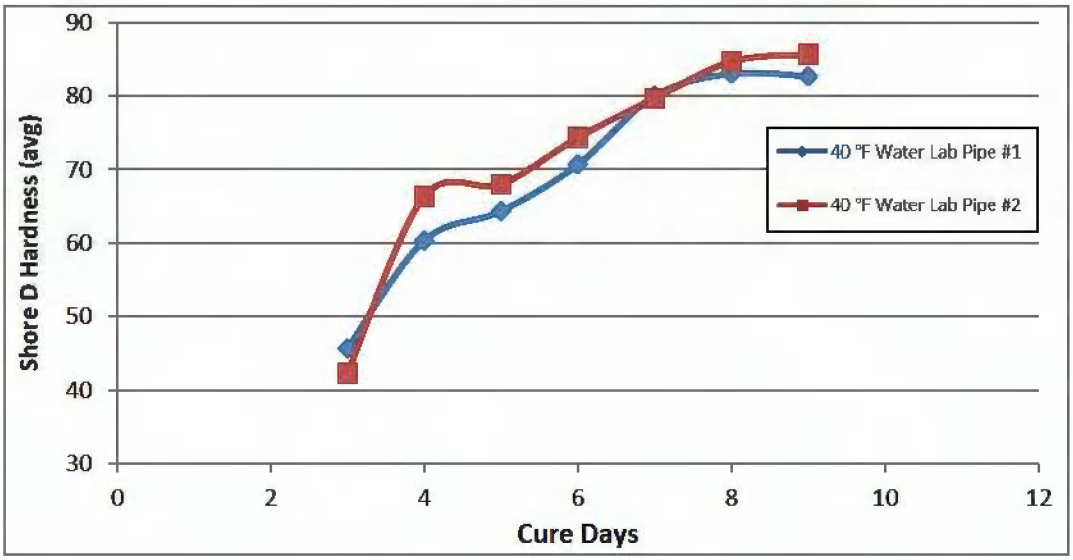


Figure 7: (a) Photograph showing locations of coating hardness measurements and (b) graph of coating hardness results during curing at 40°F.

4. Full-Scale Repairs of 20" Diameter Pipe

4.1 Sample Preparation

The 20" pipe sample provided for this test program is shown in Figure 8 prior to repair or water exposure. To prepare the sample for testing, plastic end plates were affixed to each open end of the pipe, sealed around the circumference using expanding foam insulation, and held in place by a metal dowel running the length of the pipe. The plates were intended to limit water flow through the pipe during testing in order to minimize contamination of the test water from internal surface corrosion and

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debris already present in the sample pipe[3]. Prior to affixing the end plates, SES attached two thermocouples to the inside surface of the pipe to monitor metal temperature during the test (Figure 9(a)).

A 2,700 gallon, insulated tank (see Figure 8 background) was filled with water obtained by reverse osmosis. Chemicals were added to simulate the Straits' water composition. The water was pumped continuously through a 10 ton water chiller and circulation pump with a 50 micron sediment filter until a temperature of 40°F was obtained. The water temperature was monitored via two temperature probes submerged in the tank, in addition to the thermocouples attached to the pipe. The temperature at the four probes was continuously recorded throughout the test procedure (Figure 9(b)).

Five separate areas on the 20" diameter pipe were prepared for repair. The schematic in Figure 10 shows the locations and variables of the different repairs. This information is also summarized below and in Table 1. Compass directions refer to the relative orientation of the pipe sample in the laboratory during testing. Clock/circumferential positions are viewed from the west end of the sample, with top dead center at 0°.

- A 16" square section of the (original) outer coating was removed from each end of the pipe along the top surface using a hand grinder and wire wheel. In the center of these squares, a 2" x 4" section of the inner coating was also removed, exposing bare steel. These areas were labeled "A" and "C" and designated as patch repairs.
- A 16" wide area of the outer coating was removed around the circumference of the pipe near the center of the sample length to provide space to apply a full 360° repair.
    - A 4" x 4" area of the inner coating was removed at the top of the pipe from this 16" wide area, exposing bare steel. This location was designated as Area "B."
    - Two 4" x 4" patches of the inner coating were removed at the north (Area "D") and south (Area "E") sides of the sample aligned with Area "B."

Figure 11 shows these prepared areas of the pipe prior to repair.

[3] The interior of the pipe was allowed to fill with water, however, to avoid excessive buoyancy during the test.

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Figure 8: Photographs showing 20" diameter pipe used for full-scale testing of epoxy repair material. Note insulated yellow water tank shown in background.

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Figure 9: Photograph showing (a) thermocouple attached to inside surface of pipe and (b) temperature readout for water tank and pipe.

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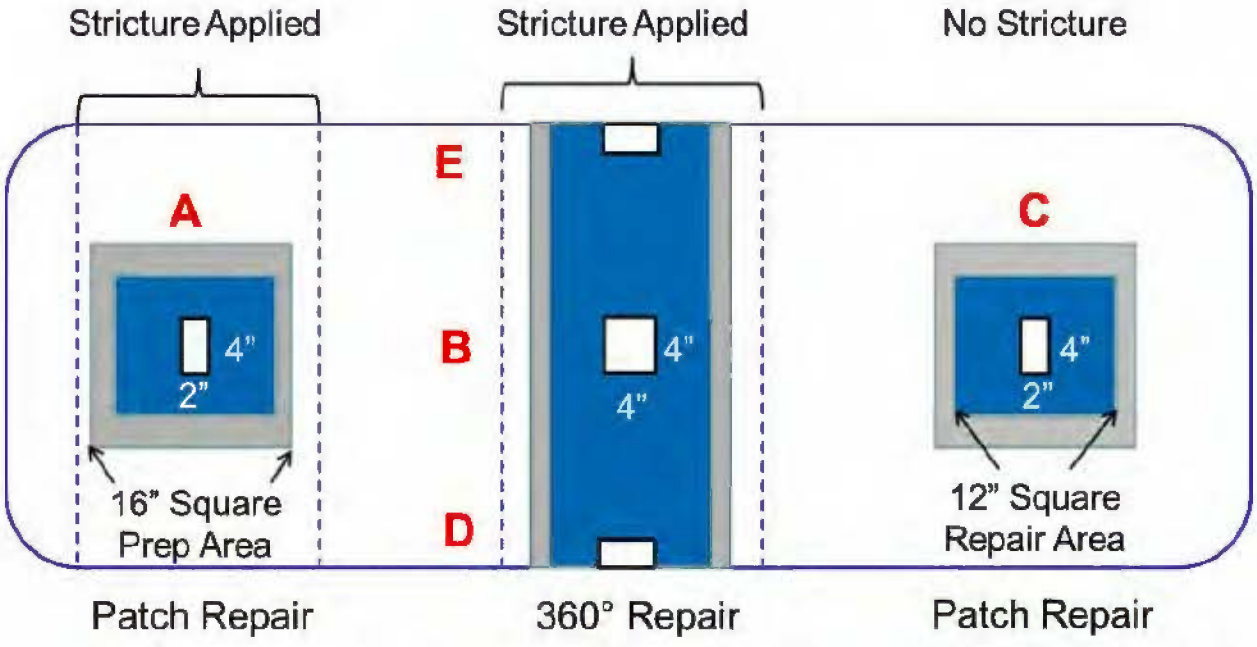


Figure 10: Schematic showing repair locations on 20" diameter full-scale pipe. Table 1 summarizes details of each repair location. (Note: Gray- and blue-shaded areas represent prepared and repaired areas, respectively. Plan view, not to scale.)

Table 1: Summary of Repairs Applied to 20" Pipe.

Repair Location	Axial Position	Circumferential Position	Patch/360°	Stricture?
A	West end	0°	Patch	Yes
B	Center	0°	360°	Yes
C	East end	0°	Patch	No
D	Center	90°	360°	Yes
E	Center	270°	360°	Yes

4.2 Patch Repairs

The pipe sample was submerged in the insulated tank and allowed to stabilize at temperature (Figure 11). Flash rust formed in the five exposed areas during the temperature equilibration; this was removed with a wire brush prior to repair.

The exposed steel at Areas "A" and "C" was covered with a high-density epoxy filler (BIO-DUR™ 563 SW) so that the repair area was flush with the adjacent coal-tar coating. Four layers of a 12" x 12" section of X-100 UW epoxy impregnated E-glass fiber wrap were then applied over these areas. In Area "A," stricture was then wrapped around the circumference of the pipe and over the repair. In Area "C," no stricture was applied. The patch repair application at Area "A" is shown in Figure 12.

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Figure 11: Photograph showing 20" pipe in 40°F water prior to application of epoxy repairs. Repair areas are labeled per Table 1 and Figure 10. Flash rust on exposed areas was removed prior to repair.

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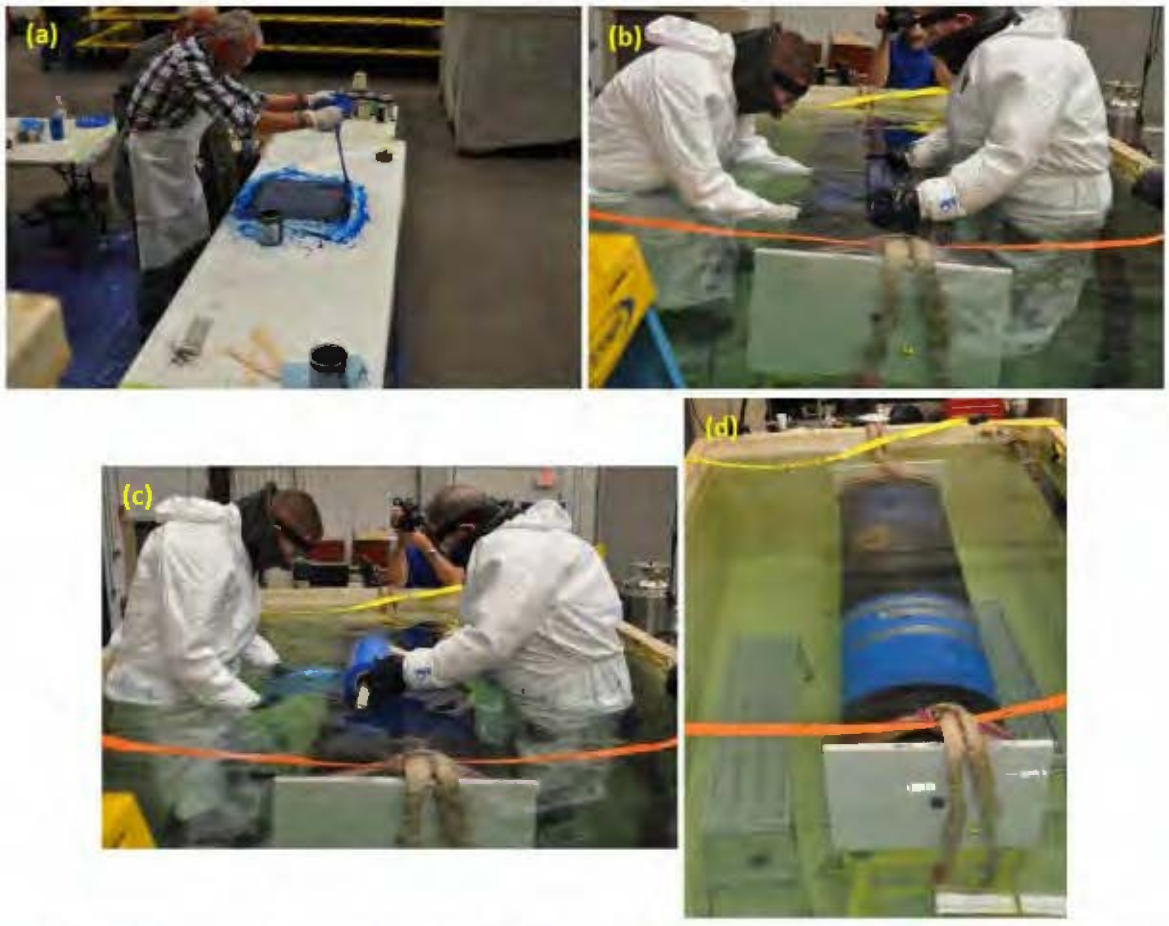


Figure 12: Application of patch repair at Area "A." Photographs show (a) impregnation of 12" x 12" fabric with epoxy; (b) application of repair on pipe in water tank; (c) wrapping repair with stricture; and (d) completed repair.

4.3 Full Circumferential Repair

For the next full-scale repair test, the exposed steel at Areas "B," "D," and "E" was covered with the BIO-DUR™ 563 SW epoxy filler to the approximate thickness of the original inner coal-tar coating. Four layers of a full 360° wrap repair were then applied to the pipe, covering all three test areas. A layer of stricture plastic was applied over the full circumferential repair to hold it in place during the curing cycle. The circumferential repair process is shown in Figure 13. Temperature data measured during the repair are shown in Figure 14.

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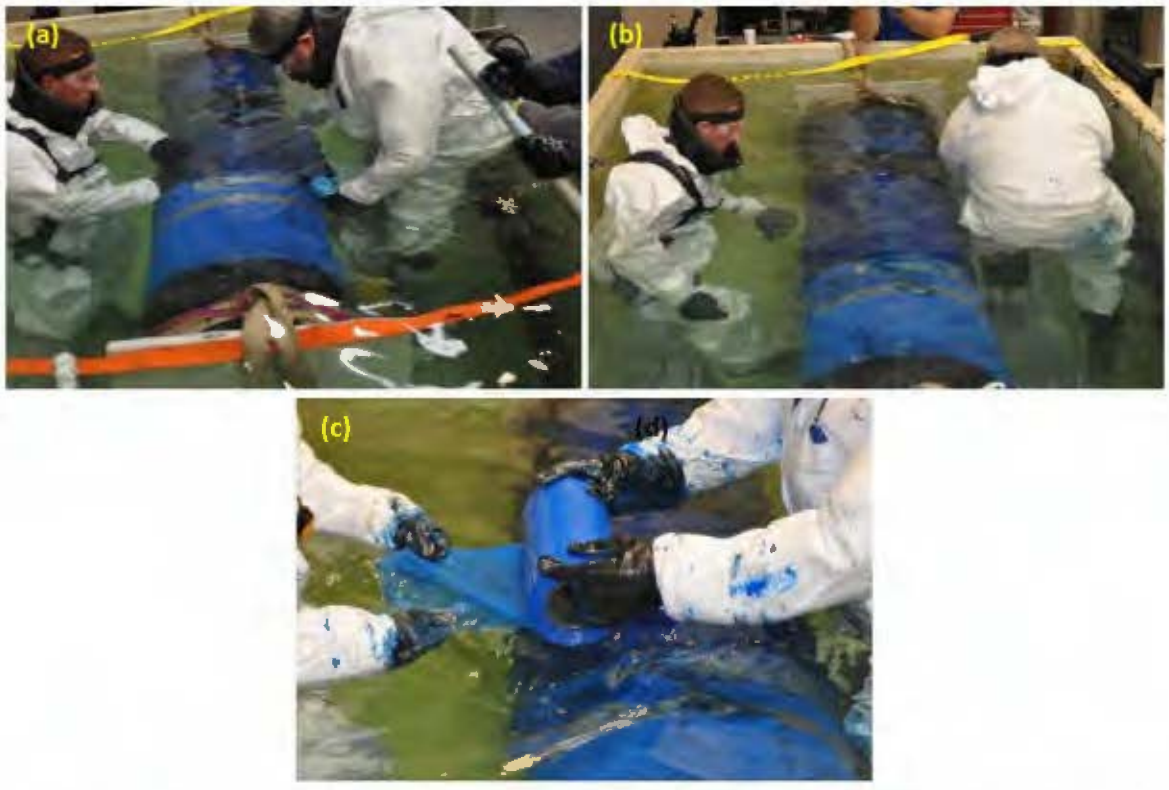


Figure 13: Application of full circumferential repair at Areas "B," "D," and "E." Photographs (a) and (b) show application of impregnated fabric around the circumference of pipe; (c) shows application of stricture.

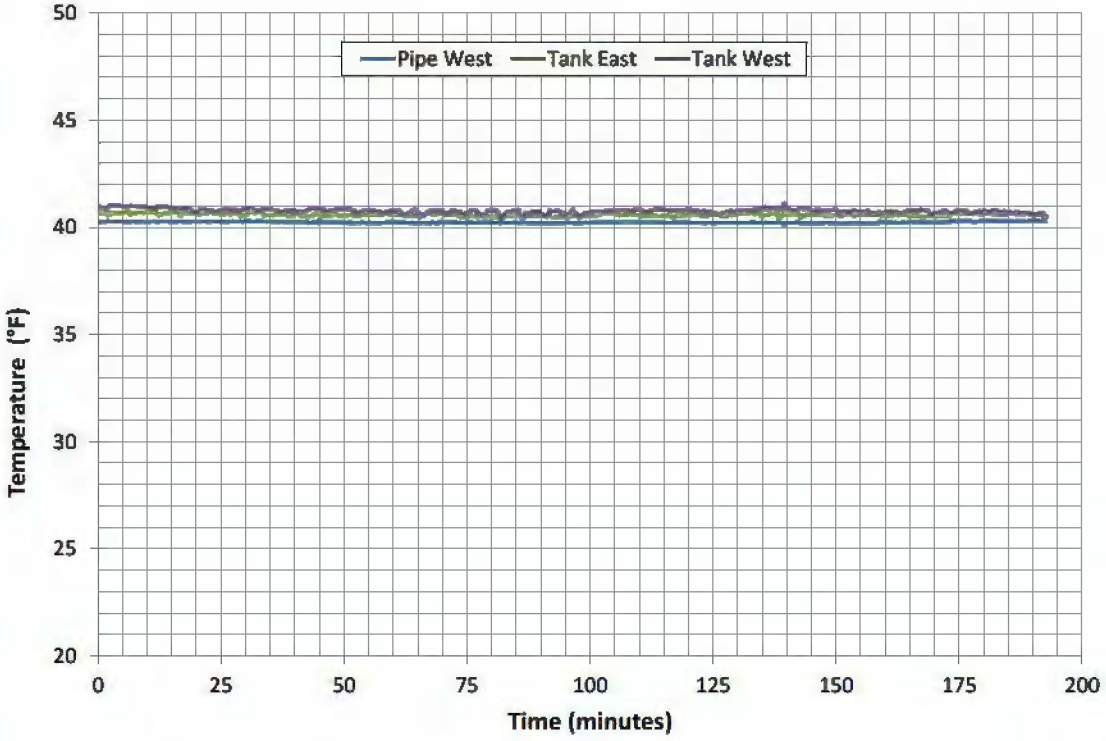


Figure 14: Graph of temperature data during application of full circumferential repair at Areas "B," "D," and "E" (see Figure 13). Water temperature remained near 40°F during installation of all repairs.

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4.4 Curing Cycle

As with the laboratory repairs (see Section 3), the 20" diameter pipe was allowed to cure in the 40°F bath for 48 hours before initial durometer hardness testing. Figure 15 shows the water tank closed for testing and a plot of the temperature data, which remained steady at 40°F throughout the curing cycle.

Three durometer hardness readings were taken at each repair area located at the top of the pipe every 24 hours by temporarily lifting the pipe out of the water bath (Figure 16(a)). In Areas "A" and "B," the readings were made through the thin stricture banding. In Area "C," the durometer hardness was measured directly on the fiber wrap. The average hardness results are presented in Figure 16(b) and Table 2. The durometer hardness data from the laboratory test (Section 3) are included in the graph along with air curing data supplied by PRT Incorporated.

The durometer hardness data from the full-scale test plateaued in the mid-70s Shore D after approximately 5 to 6 days at temperature. No significant change in hardness was observed after 6 days, and the measurements were suspended after 8 days in the water bath. According to PRT Incorporated, a Shore D hardness of 70 is considered to reflect a full cure.

PRT Incorporated provided hardness data of repairs cured in air using both a standard and an accelerated resin. This data is included in Table 2 and Figure 15b. The accelerated resin reportedly cured more rapidly during the first few days; however, both samples were measuring in the mid-70s by day 7. The repair tests conducted at SES used only a standard resin. No accelerator was included in the epoxy.

Table 2: Average Durometer Shore D Hardness Results from Test Repairs.

Days After Repair	Lab 40°F Water		Full-Scale 40°F Water			Lab 40°F Air*	
	Pipe #1	Pipe #2	Area "A" Patch-Stricture	Area "B" Full Wrap	Area "C" Patch-No Stricture	Standard Resin	Accelerated Resin
2			43	41	53	47	55
3	46	42	54	58	60	50	69
4	60	66	66	67	66		
5	64	68	73	76	72		
6	71	74	73	75	76		
7	80	80	72	74	77	73	74
8	83	85	75	76	75	73	73
9	83	86				74	72
10						75	72
11						74	71
12						76	75

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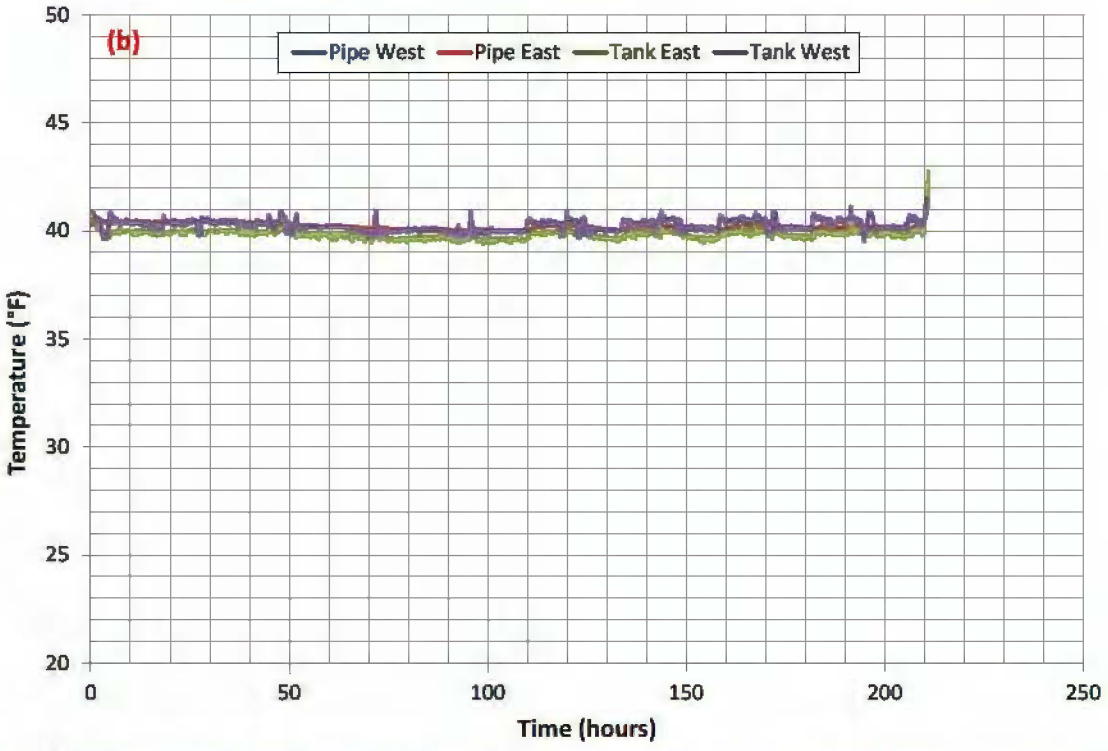
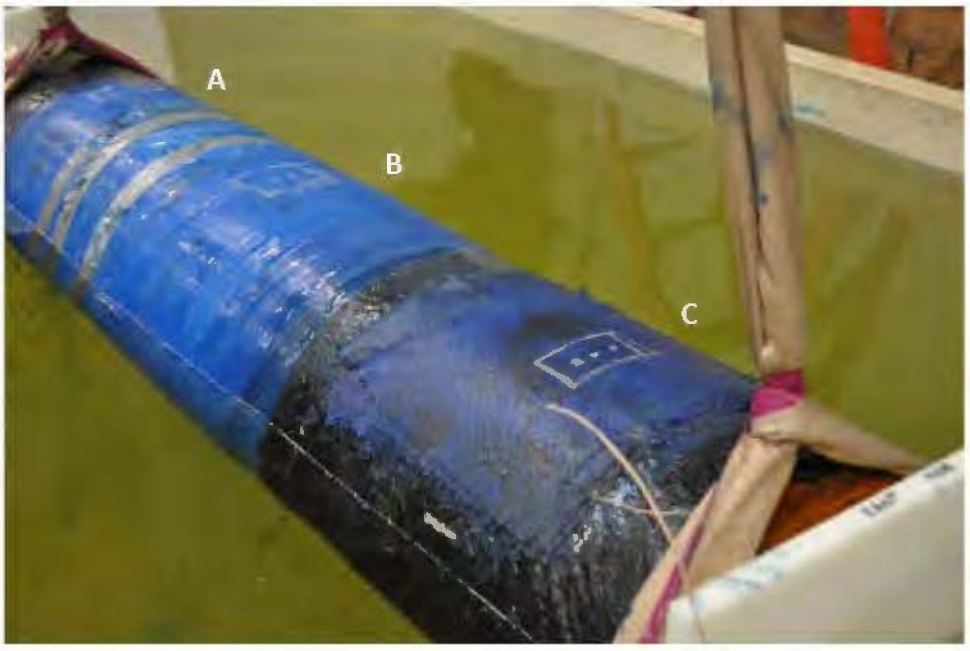


Figure 15: (a) Photograph showing water tank and (b) graph of water-bath temperature during curing period of full-scale repairs.

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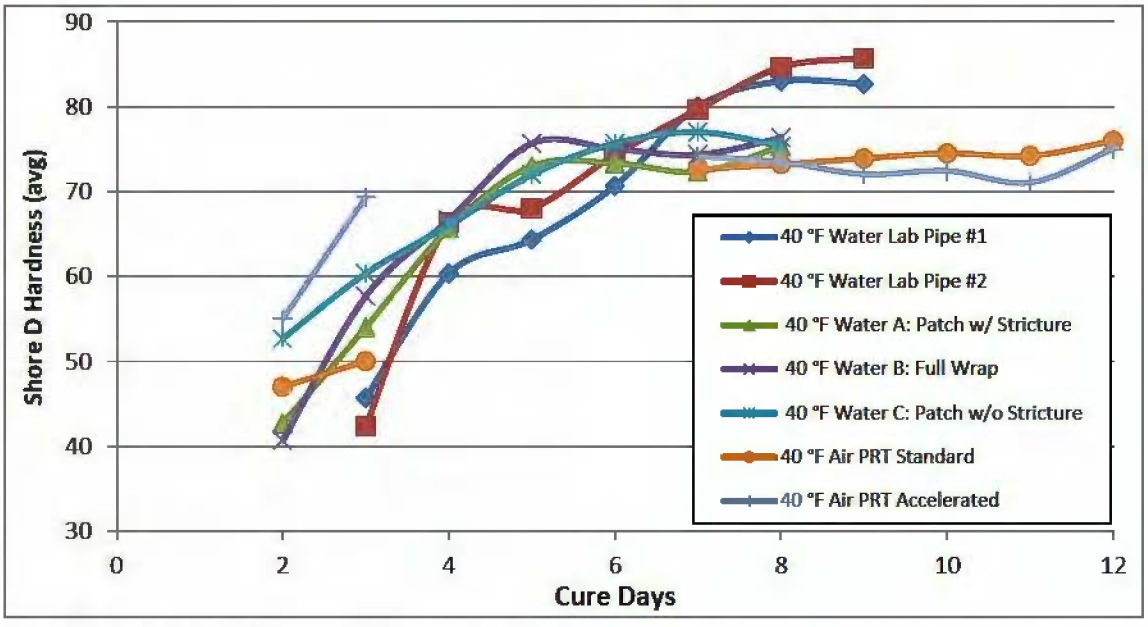


Figure 16: (a) Photograph showing 20" pipe lifted from water tank to allow durometer hardness testing. Areas "A," "B," and "C" were tested every 24 hours after an initial waiting period of 48 hours. (b) Graph of Shore D Hardness as a function of cure time.

5. Evaluation of Full-Scale Repairs

5.1 Overall Appearance

The 20" diameter pipe sample is shown in Figure 17 after it was removed from the water bath and allowed to drain. The locations of the repairs are noted in the photograph. Repair areas "A," "B," "D,"

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and "E" are obscured by the stricture banding. Patch repair area "C" exhibits only the repair fiber wrap since no stricture was used in this area.

The full circumferential repair at the center of the pipe is shown in Figure 18(a) after the stricture was removed. The patch repair at Area "A" is shown in Figure 18(b). Both repairs appear to be well attached to the pipe, including along the perimeter of the repair patch and the edges of the circumferential wrap.

The patch repair at Area "C" is shown in Figure 19. While the majority of Area "C" appears well attached to the pipe sample, the edges of the fiber wrap layers were not completely bonded to the pipe, creating a crevice along the perimeter of the patch.



Figure 17: (a) Photograph of 20" pipe sample after removal from water bath; (b) photograph showing stricture still applied to Areas "A" and "B/D/E." Area "C" (patch repair with no stricture) is on right end. Numbered scale divisions are 0.1 feet.

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Figure 18: Full circumferential repair (Areas "B/D/E") is shown in upper photograph after stricture was removed. Patch repair Area "A" is shown in lower photograph after stricture was removed.

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Figure 19: Photographs showing patch repair at Area "C" where no stricture was applied.

5.2 Cross-Sections of Full-Scale Repairs

SES removed transverse sections through each of the repair areas to document the overall configuration of the repair. Additionally, smaller sections were removed from these cross-sections, mounted, and prepared using standard metallographic techniques. In order to maintain the integrity of the coatings during sample preparation, a large diameter diamond wafer saw was used to cut through the pipe wall thickness, original coating, and repair materials. It was found to not be necessary to encapsulate the samples prior to metallography; the coating layers remained intact using normal mounting and preparation techniques.

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5.2.1 *Patch Repair Area "A"*

A cross-section through Area "A" is shown in Figure 20. As mentioned, a stricture wrap was used in this area. The resulting repair appeared to be well bonded to the pipe, including at the outer edges of the wrap. Metallographic cross-sections through the repair (Figure 21(a)) and over the original coal-tar inner coating at the perimeter of the 4" x 4" bare steel area (Figure 21(b)) showed a uniform repair thickness and good adhesion to the pipe wall surface and the original coating. There was no discernable difference in appearance between the repair epoxy filler and original coating.



Figure 20: Photographs of rough cut cross-section through repair Area "A" (a patch repair with stricture banding).

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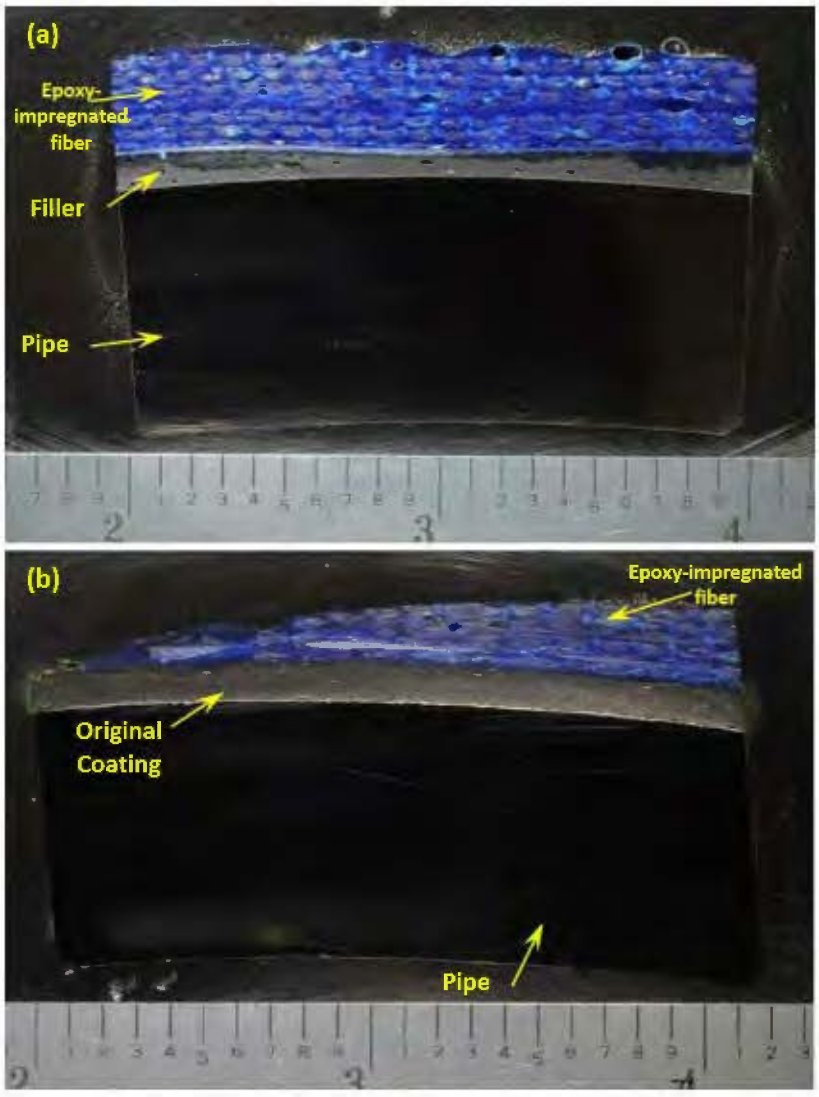


Figure 21: Metallographic cross-sections through repair Area "A." Section in upper photograph was removed through center of repair where original coating was completely removed down to bare metal. Lower photograph shows edge of repair where fiber wrap covers original coating.

5.2.2 Circumferential Repair Areas "B," "D," and "E"

A cross-section through the three areas repaired with a full 360° wrap is shown in Figure 22. Closer views of each area are shown in Figure 23 to Figure 25. As with the patch repair in Area A, the full repairs appeared to be well bonded to the pipe, including at the outer edges of the wrap. Metallographic cross-sections through each area are shown in the lower photographs in Figure 23 to Figure 25, respectively. Again, the repairs were found to be relatively uniform and appeared to have good adhesion to the pipe wall, though areas of porosity were evident in the cross sections. The porosity is not extensive and does not appear to compromise the integrity of the repair.

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Figure 22: Photograph of cross-sectional ring cut from center of 20" pipe sample containing repair Areas "B/D/E."

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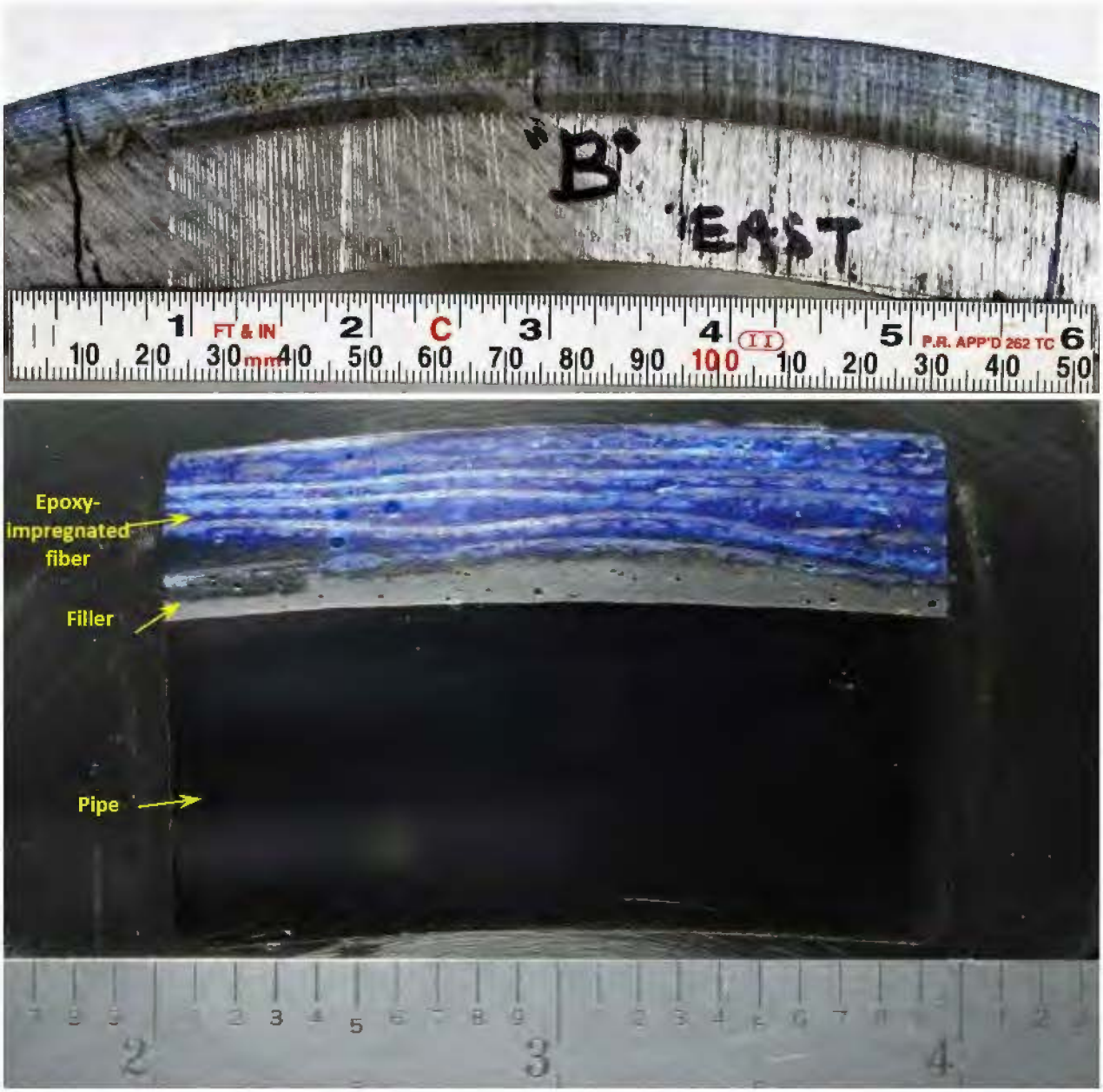


Figure 23: Metallographic cross-section of repair Area "B" located at top of pipe. A full 360° wrap and stricture was used in this repair.

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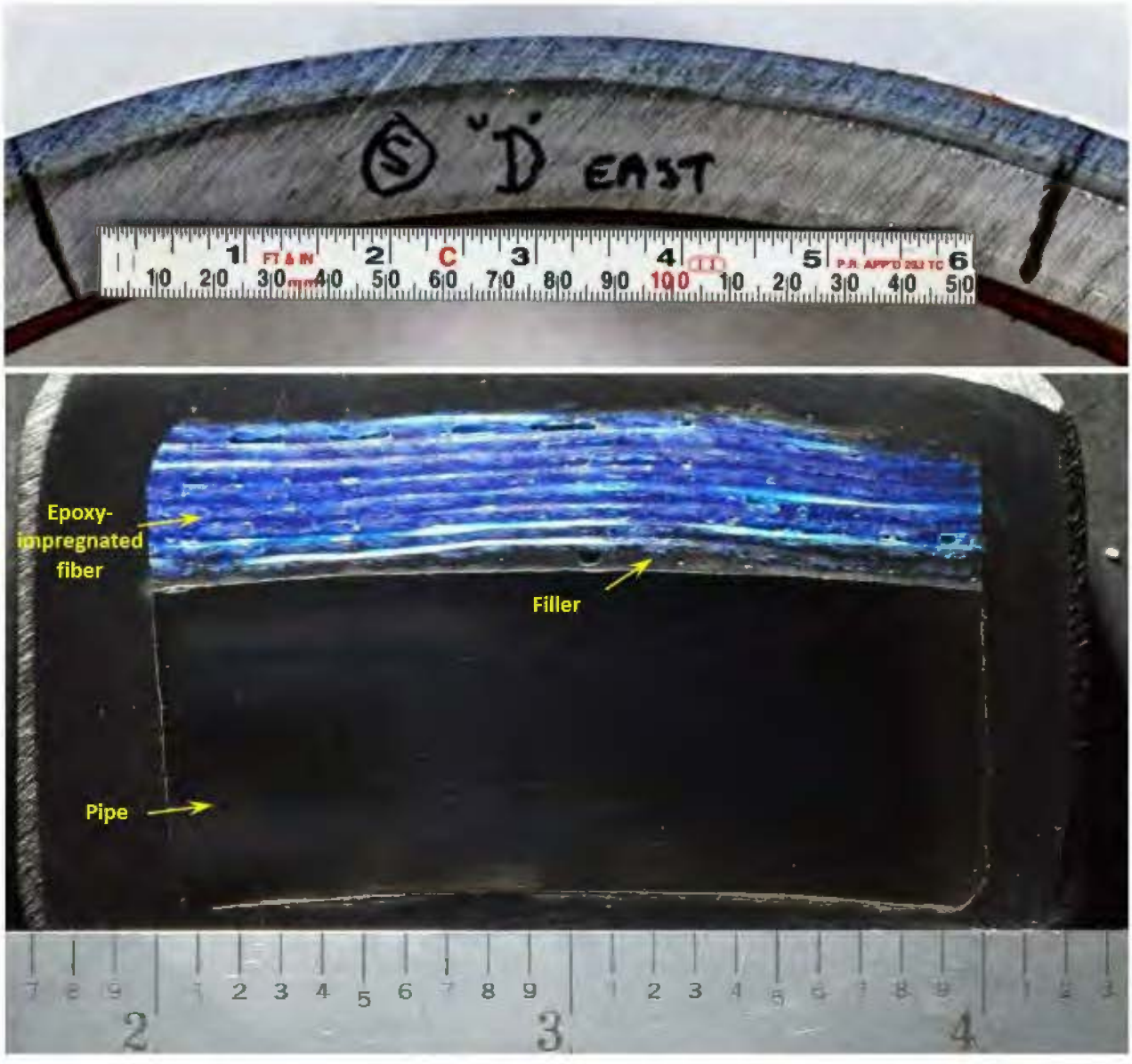


Figure 24: Metallographic cross-section of repair Area "D" located on south side (90°) of pipe. A full 360° wrap and stricture was used in this repair.

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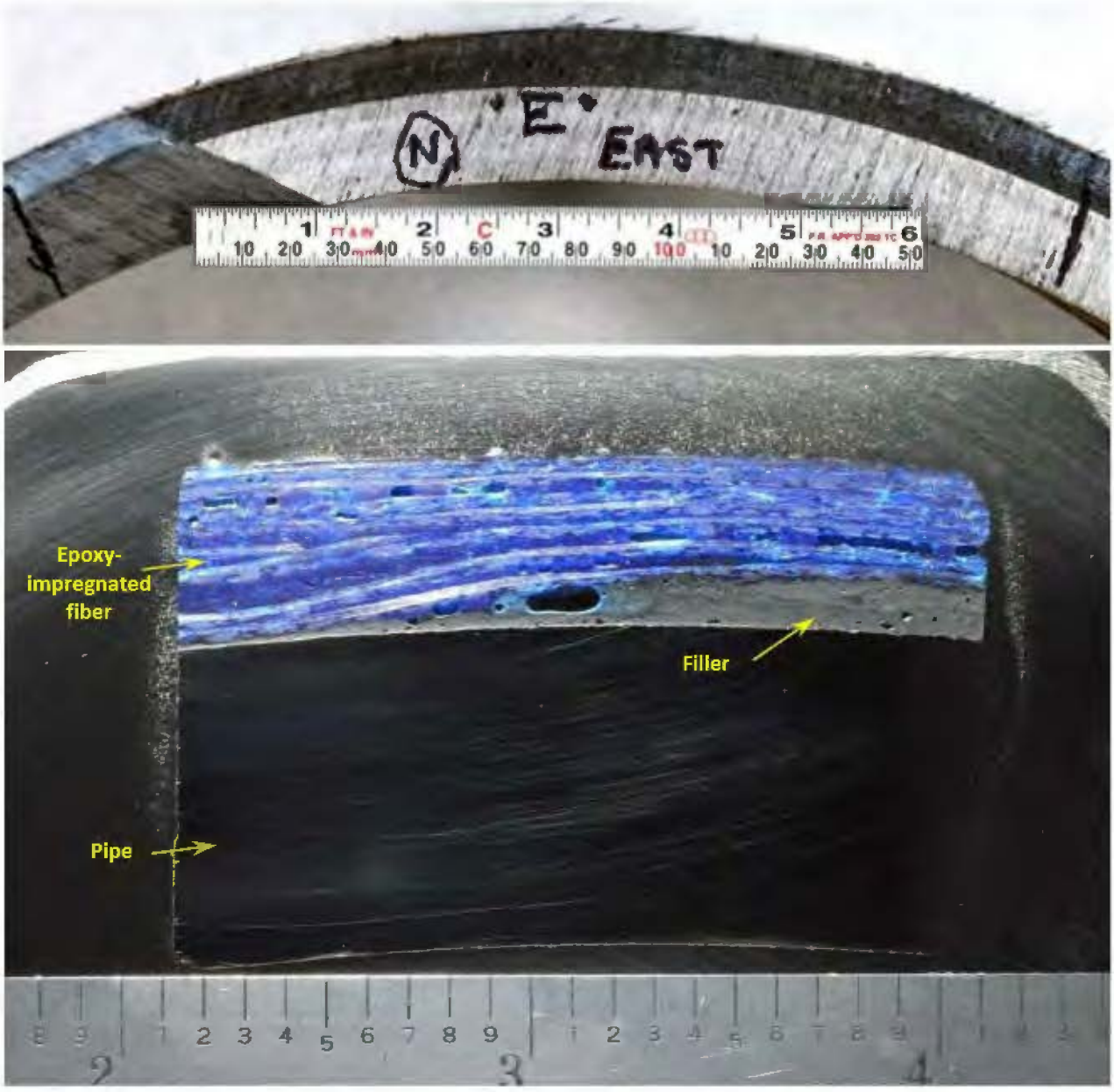


Figure 25: Metallographic cross-section of repair Area "E" located on north side (270°) of pipe. A full 360° wrap and stricture was used in this repair. (Reduction in thickness of filler material at left side of section is due to this section's being taken near edge of repair.)

5.2.3 Patch Repair Area "C"

A cross-section taken through Area "C" is shown in Figure 26 along with closer views at the perimeter of the repair. A stricture wrap was not applied to this repair site. The center of the repair (where the repair was applied over bare steel) was relatively uniform and appeared to have good adhesion to the pipe wall. At the perimeter of repair, however, the wrap layers were found to be cured, but not adhered to the pipe wall. An approximately 1" length of the wrap was not bonded to the surface, which created a small crevice around the perimeter.

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A metallographic cross-section was taken through the center of Area "C" (Figure 27); this section was similar to the other repaired areas, exhibiting a relatively uniform thickness, some minor porosity, and good adhesion.



Figure 26: Rough cut cross-section through repair Area "C," a patch repair where no stricture banding was used. While center of repair was well adhered to pipe wall, perimeter of patch was disbonded from pipe.

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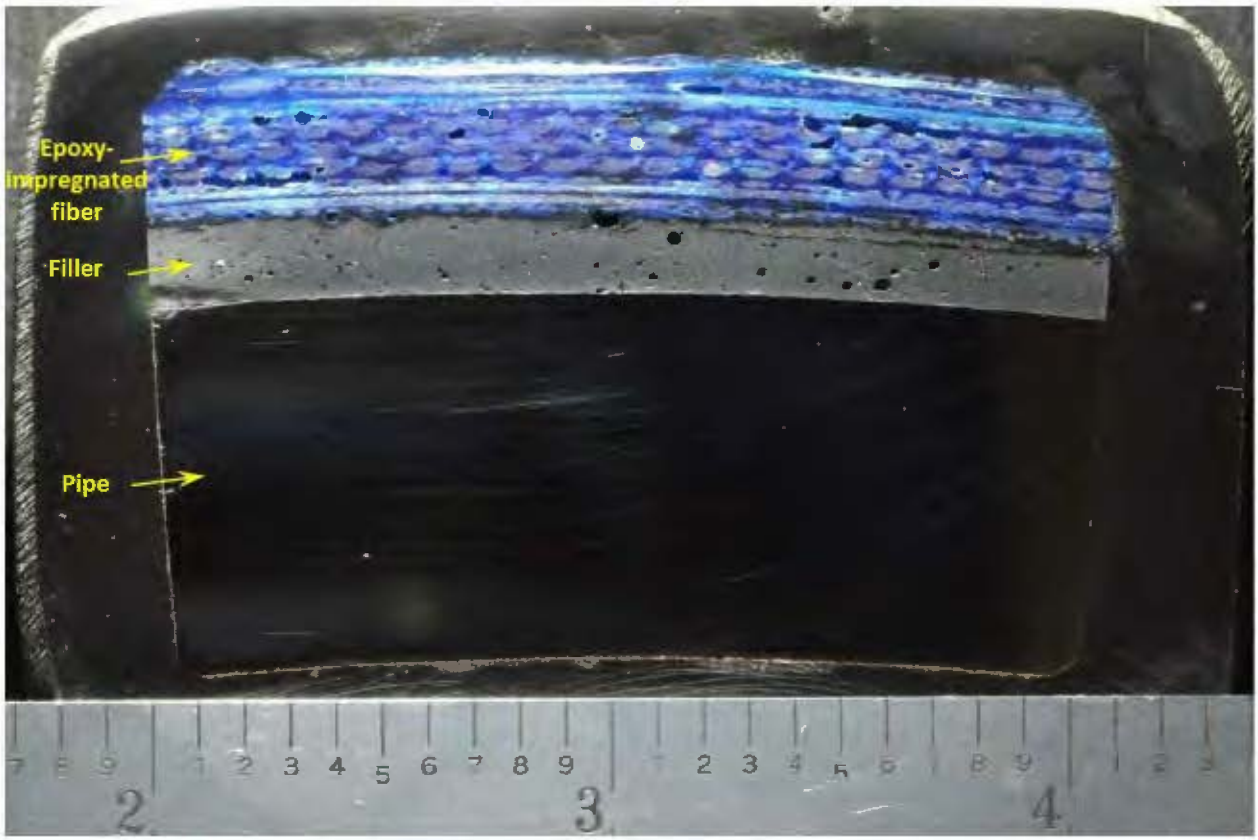


Figure 27: Metallographic cross-section through repair Area "C," a patch repair where no stricture banding was used.

6. ASTM D4541 Coating Adhesion Tests

Following the laboratory and full-scale repair tests, coating adhesion testing per ASTM D4541, "Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers," was conducted in both the original and repaired areas of the coating to determine their relative adhesion after full curing. The results of these tests are summarized in Table 3. Because minimal repair area was available for testing after the cross-sections were removed from the pipe, only three tests could be conducted at each repair location. Additionally, no minimum specified adhesion strength was provided for comparison for the repair material or original coating.

The data show that the fiber-wrap repairs were, in general, more highly adhered than the original coal-tar coating on the sample pipe and that the full 360° repair areas exhibited a higher adhesion than the patch repairs. However, it should be noted that the 20" sample pipe was not exposed to the same operational environment as Pipeline #5. This fact, along with the limited number of data points that could be obtained at each repair location, indicates that these results should be used for general comparison only.

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Table 3: Results of ASTM D4541 Coating Pull-Off Strength Tests.

Sample Location	Readings (psi)	Average (psi)
A – Patch repair, stricture	--/61*/553	307
B – Full repair, stricture	395/573/--	484
C – Patch repair, no stricture	195/394/323	304
D – Full repair, stricture	25*/599/1,044	556
E – Full repair, stricture	816/772/629	739
Original, inner & outer layer	--/208/--	208
Original, inner layer only	339/290/271	300

-- No valid result
* Sample broke or cracked

7. Conclusions

Based on the analyses completed during this project, SES concludes the following:

- The original inner coating on the 20" pipe provided for testing was a coal-tar based coating.
- The X-100 UW epoxy fiber repairs applied to both laboratory and full-scale pipe samples bonded well to bare steel and the original coal tar coating. The repairs were able to cure in 5 to 8 days in 40°F water.
- While all repair areas exhibited good adhesion at the center of the repairs, those wrapped with stricture plastic during the cure cycle exhibited good adhesion throughout the width of the repair fabric. The patch repair that cured without a stricture wrap in place was not completely bonded around the perimeter of the patch. The crevice created at the edges of the patch indicates that the repair could be compromised by erosion and/or corrosion during service.
- The results of SES's testing program indicate that X-100 UW is an effective repair system for Pipeline #5. Patches, when secured during the curing cycle; as well as full circumferential wraps; are suitable repair options.

8. Sample Disposition

If metal or other types of samples were obtained by SES to complete services in this matter, these samples will be discarded in 60 days. If the Client wishes that the sample remnants be returned, the SES project manager should be contacted as soon as possible. Otherwise, samples will be disposed of at SES's discretion. Depending on space availability, samples can be stored at a designated SES facility beyond the 60 day period. Storage rates will be quoted on an individual basis.

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Appendix C:
Product Data Sheets

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BIO-DUR® 563 SW

REINFORCED EPOXY COATING FOR APPLICATION ABOVE OR BELOW WATER

Piping Repair Technologies

PRODUCT DATA SHEET

BIO-DUR® 563 SW is based on a unique blend of liquid epoxy polymer and aliphatic polyamine curing agents, which is able to displace water from wet surfaces in order to make a permanent bond. The formulation is solvent free to ensure safety and maximum technical performance. Kevlar™* fibers are incorporated for reinforcement and viscosity management to achieve high application rates even underwater.

BIO-DUR® 563 SW provides permanent protection under the most adverse conditions. The formula is uniquely field-friendly and uses advanced low toxicity ingredients in a high build brushable/rollable product. One of the active CP compatible products of the BIO-DUR® line where a shorter curing time is required. All colors including white are available and can be shipped "Non-Regulated" by USDOT, IATA and IMO.

**Kevlar is a trademark of E. I. Dupont de Nemours Co.*

RECOMMENDED USES

ANTICORROSIVE COATING: Splash zone, excellent abrasion resistance above or below water.
REPAIR COMPOUND: Patching, leak sealing etc. above and below water.
FIELD JOINT COMPOUND: Rapid curing, surface tolerant and excellent cathodic disbondment properties.
ENCAPSULATING COATING: Smooth, dense, easily decontaminated coating for steel and concrete.
WASTEWATER: Reinforces, smooths and protects concrete exposed to chemical or municipal waste.
CATHODIC PROTECTION: Suitable for application on lines protected by active CP.

TECHNICAL INFORMATION

VEHICLE TYPE	Epoxy/Aliphatic amines
PIGMENTATION	Color/Inert/fibrous reinforcement
COLORS	Standard White, Black, Gray; other available
FINISH	Slight texture
THINNER	Not normally required
CLEANER	MEK or acetone
MIXING RATIO	1.0/1.0 v/v
INDUCTION TIME	Not required
POT LIFE	Approx. 20 min./ 77°F
FLASH POINT	Over 200°F
SOLIDS BY VOLUME	100%
SPREADING RATE/GAL	1604 mil/sq.ft./gal; 53.5 sq.ft./gal @ 30 mils
DRY TIME, (Dust free)	2 hours at 77°F
DRY TIME, (Service)	3 hours light, 24 hours heavy service at 77°F
APPLICATION METHOD	Brush, roller, heated plural airless spray
STORAGE CONDITIONS	Normal, freezing ok
VOC.	Essentially zero
DENSITY	Base 9.6 lb/gal; Cure 13.0 lb/gal, Mix 11.3 lb/gal

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APPLICATION NOTES

SURFACE PREPARATION: Remove marine biological settlement and corrosion by >5,000 psi water jetting with or without abrasive. Conventional air/abrasive blasting works well at shallow depths however efficiency falls off sharply below 10 feet. Hand held power tools such as needle guns or grinders can give good results if applied conscientiously in small areas but will be inadequate in large areas. Plan to apply the BIO-DUR®563 SW within 45 minutes maximum after surface preparation to minimize rerusting or initial settlement of fouling slime, which interferes with initial adhesion.

Application above water requires similar high-pressure water blasting or dry abrasive blasting to yield a firm, granular surface free of loose contamination.

MIXING PROCEDURE: BIO-DUR® 563 SW is supplied in 2 gallon kits of 2 x 1 gallon containers each of epoxy base and curing agent. These components are formulated in contrasting colors to facilitate complete mixing. Visible streaks of either component seen during the course of mixing indicate "hotspots" of unmixed components. It is imperative to properly mix the components since unmixed "hotspots" of either base or curing agent will never cure.

Remove equal quantities of base and curing agent from their cans and place them in a clean plastic or steel container. Mixing is accomplished by stirring with a "Jiffy" type mixer in a geared down, (high torque), 1/2" electric drill. Once mixing begins, there will be about 20 minutes of working time available at 77°F. This time may be extended by keeping the components and mixture cool, rather than leaving it in a hot area.

APPLICATION:

1) Using a stiff brush or roller apply mixed components from a tray aiming for a coverage rate of about 50 sq.ft. per gallon.
2) Apply by heated plural component airless spray using the following equipment setup:

Spray Unit:	Graco "King" or similar with heated hoses.
Mix ratio:	1/1 by volume
Fluid pressure:	2,500 psi
Fluid temp:	140°F
Filters:	Remove all filters
Tip size:	.031" -.039" orifice

CURING BEFORE SERVICE: BIO-DUR® 563 SW may be immersed in fresh or salt water immediately after application. It will cure to a hard film within about 3 hours and is suitable for traffic after this time. Allow at least 24 hours at 77°F before subjecting to aggressive chemical service from industrial solvents and similar materials.

TYPICAL PHYSICAL PROPERTIES OF THE CURED FILM:

Compressive strength:	7,380 psi (50.9 N/mm2)
Tensile strength:	6,000 psi (est.)
Flexural strength:	4,550 psi (31.4 M/mm2)
Abrasion resistance:	34.0 mg/1,000 cycles (CS17 wheels with 1,000 gram weights)
Tensile adhesion:	>2,000 psi (“Near White” SA2.5 abrasive blasted dry steel)
Tensile adhesion:	>1,000 psi (>5,000 psi water jetted steel applied/cured underwater)
Tensile adhesion:	>1,000 psi (power tool cleaned then >2,500 psi water jetted dry steel)

Piping Repair Technologies
HEMPSTEAD, TEXAS USA
979-826-0075
mail to: info@pipingrepairtechnologies.com
www.pipingrepairtechnologies.com

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Piping Repair Technologies

X-100 UW Field Applied Composite Reinforcement for Dry Surface, Wet Surface or Underwater Piping Repair



- Corrosion Remediation
- Structural Reinforcement
- Leak Containment
- Abrasion Protection



An ISO 9001:2008 Certified Manufacturer

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X-100 UW RESIN SYSTEM:

The X-100 UW resin is based on pure liquid epoxy polymers and proprietary polyamine curing agents. The X-100 UW resin system is designed for use on wet surfaces or underwater applications. It is a two-component, ambient temperature epoxy matrix, and is suitable for use with a variety of reinforcement fabrics. The X-100 UW resin wets out easily and is relatively fast setting, approximately 30 minutes at 77°F (25°C). No VOC and is a 100% solids epoxy resin.

SURFACE PREPARATION:

Remove marine biological settlement and corrosion by >5,000 psi water jetting with or without abrasive. Conventional air/abrasive blasting works well at shallow depths however efficiency falls off sharply below 10 feet. Hand held power tools such as needle guns or grinders can give good results if applied conscientiously in small areas but will be inadequate in large areas. Plan to apply the X-100 UW within 45 minutes maximum after surface preparation to minimize re-rusting or initial settlement of fouling slime, which interferes with initial adhesion.

Application above water requires similar high-pressure water blasting or dry abrasive blasting to yield a firm, granular surface free of loose contamination.

MIXING PROCEDURE:

X-100 UW is supplied in size specific, factory pre-measured kits with corresponding reinforcement fabric lengths depending upon application. Kits are comprised of a Part A epoxy base in a partially filled container and a Part B curing agent to be poured into Part A container to assure proper mix ratio. After pouring the curing agent into the base, mix thoroughly for approximately 2 minutes taking care to stir in all base material from the edges and base of the container; *unmixed material will never properly cure.* No induction or "sweat-in" time is required and the mixed material may be used immediately. Pot life and reaction time is heavily dependent on temperature, as a general guide figure that each 18°F, (10°C), variation in temperature above or below 77°F, (25°C), will respectively halve or double the pot life and cure times.

APPLICATION:

When saturating the reinforcement fabric, a roller or flexible spreader should be used to evenly distribute the X-100 UW material throughout the fabric. The material will thicken in cold weather and will be noticeably thicker at temperatures of 50°F and below.

CURING BEFORE SERVICE at 77°F (25°C):

Dry time, dust free, 8 hours; light service, 12 hours; heavy service. Low temperature curing at approximately 40°F (5°C) will require approximately 7 days. Post cured Shore D scale hardness 70+.

- **CAN BE APPLIED AT FULL PRESSURE**
- **FACTORY PRE-MEASURED FOR FAST INSTALLATON**
- **EGLASS AND CARBON FIBER FABRICS AVAILABLE**
- **CAN BE USED ON STRAIGHT RUN PIPING, ELBOWS, TEES AND FLAT SURFACES**
- **ISO 9001:2008 CERTIFIED MANUFACTURER**

Industries Served

- Refining
- Power Generation
- Chemical Plants
- Mining
- Industrial
- Pulp and Paper
- Liquid and Gas Transportation
- Production Facilities
- Water and Wastewater Treatment

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AVAILABLE PRT PRODUCT SUPPORT SERVICES

- Project assessment
- Engineering consultation
- Repair design, calculation and documentation
- Project supervision, domestic and international
- Supporting installation supplies

#

#

TECHNICAL SUPPORT ASSISTANCE CONTACT:

Jesse R. Sanders or Chris Sanders
Piping Repair Technologies, Inc.
Office: 979-826-0075
Jesse cell: 713-906-8650
Chris cell: 281-840-1260

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40164 FM 2979 Hempstead, Texas, USA
979-826-0075 office 979-826-9498 fax
Email: info@pipingrepairtechnologies.com
www.pipingrepairtechnologies.com

We urge you to read the safety data sheet (SDS) before using and to call Piping Repair Technologies, Inc., as necessary for advice or information before any actual or contemplated application.
WARRANTY DISCLAIMER: The technical data given herein has been compiled for your help and guidance and is based upon our experience and knowledge. However, as we have no control over the use to which this information is put, no warranty, express or implied, is intended or given. We assume no responsibility whatsoever for coverage, performance or damages, including injuries resulting from use of this information or of products recommended herein.

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Appendix D:
Letter from Manufacturer

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Piping Repair Technologies

06 September, 2017

Re: PHMSA Regulations, 49 CFR 195.559
BIO-DUR 563SW and X-100UW Epoxy Coatings

To whom it may concern,

Further to the request for information regarding our coatings compliance with the requirements of subject regulations we are pleased to respond that individually and/or the combination of BIO-DUR 563SW and X-100 UW resins may be described as follows:

a) Individually or in combination they are designed to mitigate corrosion on buried or submerged pipelines.
b) Individually or in combination has sufficient adhesion to the metal or coated substrate to exclude and resist under film moisture.
c) Individually or in combination, the products are sufficiently flexible to resist cracking.
d) Individually or in combination the products have sufficient strength to resist damage due to handling, moderate impact and soil stress.
e) Individually and in combination the products will support any supplemental protective cathodic protection system when used properly.

The family of underwater capable epoxy coating materials being employed on this project have been in use since 1989. Variations have been created to suit specific requirements over the years, but all are 100% solids epoxies with proprietary additives to displace water from the surface. This enables these coatings to obtain high levels of adhesion to bond with the substrate. Many underwater installations have been performed all over the world by us, by our customers and by third party, end users; below is a brief summary:

- Power station pier rehabilitation, Mexico, 1998
- Nuclear installation by ROV, WA, USA, 1999
- Underwater tank installation, Australia, 2001
- Structural steel rehabilitation, U.K., 2002
- Municipal repairs, FL, USA, 2004
- Hydro Dam repairs, Wales, 2005, 2007
- Nuclear storage pool sealing, USA, 2005
- Offshore platform structural recoating, China, 2008
- Nuclear submarine repair, USA, 2008
- Reservoir penstock repairs, USA, 2009
- Municipal rehabilitation, USA, 2010
- Offshore platform riser, UAE, 2011
- Subsea pipeline reinforcement, UAE, ongoing 2014-current

Please do not hesitate to contact us if we may supply any additional information to support the statements above.

With thanks for your interest in our products,

Sincerely,

Jesse R. Sanders
President and Technical Director
Piping Repair Technologies, Inc.

40164 FM 2979 Hempstead, Texas 77445 / office (979) 826-0075 / Cell (713 906-8650

Email: jsanders@pipingrepairtechnologies.com

Website: www.pipingrepairtechnologies.com

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Appendix E:
Application of Underwater Repair Coatings for Line 5 Straits

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APPLICATION OF UNDERWATER REPAIR COATINGS FOR LINE 5 STRAITS

Version #: 2.0

Version Date: 09/08/2017

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1.0 Scope

This procedure defines the requirements for application of repair coatings to pipe previously coated with coal tar enamel (parent coating) that are located underwater (e.g., lake bottom, straits crossing). Coating repairs consist of two approved methods that include:

- Method 1 – Epoxy Filler/ X-100 Epoxy/Full Circumferential Composite Wrap Repair/Stricture Banding®
- Method 2 – Epoxy Filler/ X-100 epoxy/Composite Patch Repair/Stricture Banding®

2.0 General

2.1 Manufacturer Support

This procedure was developed with support of the product Manufacturer (Piping Repair Technologies Incorporated). The Manufacturer's instructions and technical datasheet form an integral part of this procedure and have been incorporated herein.

2.2 Operator Qualifications and Training

Any contractor that is performing an OQ task is required to complete training modules and hands-on training to demonstrate qualifications. This training process is designed to deliver the basic skills required for each task. After completion of the OQ training, the results are uploaded to ISNET to verify compliance.

To supplement the OQ certification process, the coating manufacturer shall perform specific training for the materials and coating applications that will be used for the L5 Straits underwater coating repairs. Upon successful completion of the manufacturer's training, the Manufacturer shall issue a certificate of training or other documentation that supports the competency of the individual divers with application of the product.

Note: At its discretion, the coating Manufacturer may designate in writing a representative to conduct this training on its behalf.

The marine contractor will also perform a simulated wet trial located close to the dock to test the coating repair plan prior to completing the repairs.

2.3 Pipe Excavation

If pipe is buried in the lake floor, full circumferential access at the repair area may be accomplished by water blasting or other appropriate excavation methods to allow the circumferential application of the composite wrap and/or the Stricture Banding®.

2.4 Deviations

Any deviations from this procedure shall be brought to the Pipeline Integrity (PI) Coating Specialists for resolution. The PI Coating Specialist will consult with the key stakeholders that

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include, but are not limited to, the onsite Company Inspector, the Diver, and the coating Manufacturer. If the deviation is accepted, the requested deviation, key stakeholder inputs and risk assessment associated with the deviation will be uploaded into the Company's Business Information Management (BIM) system.

Note: No deviations will be accepted if they are not supported by the coating Manufacturer.

3.0 Surface Preparation

3.1 Pre-Preparation

The steel surface shall be cleaned using scarpers, hydroblasting cleaning, wet abrasive blasting, or pneumatic power wire wheel brush. The repair area shall be abraded using either wet abrasive blasting or pneumatic power wire wheel brush. The method shall be capable of providing a surface profile of 2.5 – 5 mils.

3.2 Parent Coating

3.2.1

Feathering shall remove the sharp edge at the transition from the parent coating.

3.2.2

The parent coating shall be roughened (abraded) using a cup disk brush to remove the loosely adherent biota, coating and provide a surface for overcoating.

3.2.3

For full circumferential composite wrap repairs (Method 1), the roughening shall extend at least 6 inches from the upstream and downstream edge of the repair area and around the entire circumference of the pipe.

For composite patch repairs (Method 2), the roughening shall extend onto the parent coating at least 6 inches from the edge of the repair area.

4.0 Coating Application

4.1 Surface Condition for Coating

Immediately prior to coating application, the Diver shall remove any flash rust and/or accumulated debris (silt, clay, etc.) using a wire brush or other method approved by the Manufacturer.

Note: The surface of the pipe shall meet all preparation requirements listed in Section 3.0 before the coating application.

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4.2 Preparation and Application of the Epoxy Filler

4.2.1

The BIO-DUR epoxy filler shall be prepared by thoroughly mixing the BIO- DUR™ 563 SW Epoxy Base – Black and the BIO – DUR ™ 563SW Curing Agent – White.

4.2.2

The diver shall apply the BIO-DUR epoxy filler so that the bare steel is completely covered and the repair area is flush with the adjacent parent coating.

4.2.3

The diver shall confirm that the thickness of the BIO-DUR epoxy filler is sufficient using a straight edge tool that bridges the adjacent parent coating on each side of the repair. If the BIO-DUR epoxy filler is below the straight edge tool, additional filler shall be added to ensure the repair area is flush with the adjacent parent coating.

4.3 Preparation and Application of Full Circumferential Wrap Repairs (Method 1)

4.3.1

The X-100 epoxy shall be prepared by thoroughly mixing the X100 – UW Epoxy Base – Blue and the BIO-SEAL ™ X-100 Curing Agent – Clear.

4.3.2

The E-glass fabric shall be cut into approximately 12 inch wide x 12 feet long strips and impregnated with the X-100 epoxy to form the composite wraps.

4.3.3

Prior to application of the composite wrap, the X-100 epoxy shall be applied to the surface of the epoxy filler and abraded adjacent parent coating.

4.3.4

The composite wrap shall be applied 360 degrees around the pipe to a minimum thickness of 4 full layers and shall extend over the epoxy filler and abraded adjacent parent coating. Wider repairs will require additional side by side layups that are each 12 inches wide with a minimum two inch overlap at the seams.

4.3.5

Blue Stricture Banding® will be tightly applied in the same direction as the composite wrap to a minimum of three (3) layers to assure the radial compression and retention of the repair in place during cure.

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Note: alternative protective wraps or encasements are allowed if approved by the coating Manufacturer.

4.3.6

The Stricture Bandings® shall extend at least 4 inches upstream and downstream of the repair.

Note: the Stricture Banding is applied in the same direction of the composite wrap and shall have tension in order to secure the composite wrap.

4.4 Preparation and Application of Composite Repairs (Method 2)

4.4.1

The X-100 epoxy shall be prepared by thoroughly mixing the X100 – UW Epoxy Base – Blue and the BIO-SEAL ™ X-100 Curing Agent – Clear.

4.4.2

The E-glass fabric shall be cut into approximately 12 inch x 12 inch patches and impregnated with the X-100 epoxy to form the composite patches.

4.4.3

Composite patch repairs shall consist of a minimum of 4 layers of the patch applied directly over the epoxy filler and abraded adjacent parent coating. The patches shall be applied in 4 layer patches until the entire repair area (filler and abraded adjacent parent coating) is coated.

4.4.4

Blue Stricture Banding® will be tightly applied 360 degrees around the pipe over the composite patch repairs to a minimum of three (3) layers to assure the radial compression and retention of the repair in place during cure.

Note: alternative protective wraps or encasements are allowed if approved by the coating Manufacturer.

4.4.5

The Stricture Bandings® shall extend at least 4 inches upstream and downstream of the edge of the coating repairs.

4.5 Cure Time

4.5.1

After application, the coating system will be allowed to cure in place for a minimum of 7 days at 40 °F.

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Note: full scale testing has shown that the coating repair will reach a Shore D greater than 60 in less than 5 days at 40 °F. The Manufacturer requires a Shore D value of 60 or greater before removal of the Stricture Banding®.

4.5.2

Prior to removing the Stricture Banding®, the diver shall ensure the coating repair does not indent when pressed with a thumbnail or other device approved by the Manufacturer with moderate pressure.

5.0 Quality Control

5.1 Diver

The Diver shall be responsible for the quality of the coating repair work.

5.2 Company Inspector

5.2.1

The Company Inspector shall have access to and shall be allowed to witness or audit the Divers' work, equipment, and records.

5.2.2

The competency requirements for the Company Inspector are as follows:

a) Minimum NACE-certified CIP Level 2 (or equivalent certification such as SSPC)
b) Trained and knowledgeable with regard to the application techniques, materials, and product data sheets covered by this specification

5.2.3

The Company Inspector reserves the right to stop any or all work at any time for non-compliance with the stated requirements of this procedure, during emergency situations, or for other justifiable reasons.

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Appendix F:
OQ Checklist

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APPENDIX E: CONTRACTOR REQUIREMENTS
E.02 OQ Covered Task Checklist Assignment

ENBRIDGE

Contractor Name:	Location:	Date:	Project Name & Tracking Project Number:	Project Manager:
		[redacted]	20008990	

Individual responsible for verifying Contractor OQs: _____

Individual responsible for verifying Enbridge Employee OQs: _____

PROJECT MANAGER/DESIGNEE: Place an **X** in the appropriate **Check Person Responsible** column for covered task(s) to be performed during this project by Company or Contract personnel.

NOTE: *This OQ Checklist Assignment form is not all inclusive, as it may be subject to change due to project scope changes. The Project Manager/Designee is responsible for adding, deleting or modifying this list.*

CONTRACTOR: For each covered task with **X** in the **Check Person Responsible - Contractor** column, the Contractor is responsible for submitting contractor OQ information to ISNetworld.
Project Manager/Designee **MUST** receive Contractor-required OQ covered task information at least **two full working days** prior to work commencement (See **Appendix E.03 Contractor OQ Responsibilities**, **Appendix E.04 ISN Verification of Contractor OQ Records** and, if required, **Appendix E.05 Covered Task Worker ID/Contractor Report**.)

API #	Covered Task Name	CHECK PERSON RESPONSIBLE (Put X in box if person needs to be qualified on the covered task)				Enbridge OQ Covered Task Name
		Contractor	Span of control ratio	[illegible] of control ratio	Enbridge Employee	
1.0	Abnormal Operating Conditions (AOC)	x				
1	**Conduct Annual Surveys to Electrically Inspect Unprotected Bare Pipe**	**Group Heading Only**				
1.1	Measurement of structure-to-soil potentials	x	1:1	1:1		#1.1: Measure structure-to-soil (electrolyte) potentials
1.2	Conduct close interval survey		1:1	1:1		#1: Cathodic protection survey
1.3	Test to detect interference		1:1	1:1		#2: Interference testing
1.4	Inspect and perform electrical test of bonds		1:1	1:1		#3: Inspect and electrically test bonds
1.5	Inspect and test electrical isolation	x	1:1	1:1		#5: Inspect and test isolation devices
2	**Maintain Test Leads**	**Group Heading Only**				
2.1	Verify test lead continuity		1:1	1:1		#4: Maintain test leads
2.2	Repair damaged test leads		1:1	1:1		#4: Maintain test leads
2.3	Install test leads by non-exothermic welding methods		1:1	1:1		#4: Maintain test leads
2.4	Install test leads by exothermic welding methods		1:1	1:1		#4: Maintain test leads
3	**Inspect Rectifier**	**Group Heading Only**				
3.0	Obtain a voltage and current output reading from a rectifier to verify proper performance		1:1	1:1		#6: Inspect and test rectifier
4	**Maintain Rectifier**	**Group Heading Only**				
4.1	Troubleshoot rectifier		1:1	1:1		#7: Rectifier maintenance and repair
4.2	Repair or replace defective rectifier components		1:1	1:1		#7: Rectifier maintenance and repair
4.3	Adjustment of rectifier		1:1	1:1		#9: Rectifier adjustment

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API #	Covered Task Name	CHECK PERSON RESPONSIBLE (Put X in box if person needs to be qualified on the covered task)				Enbridge OQ Covered Task Name
		Contractor	Span of control ratio	Span of control ratio	Enbridge Employee	
5	**Inspect Buried Pipe When Exposed**	**Group Heading Only**				
5.1	Examine for mechanical damage on buried or submerged pipe	x	1:1	1:2 1:1		#15: External defect investigation #21: Inspect/examine buried pipe when exposed
5.2	Examine for external corrosion on buried or submerged pipe	x	1:1	1:1		#21: Inspect/examine buried pipe when exposed
5.3	Inspect the condition of external coating on buried or submerged pipe	x	1:1	1:2 1:1		#19: Pipe and valve coating #21: Inspect/examine buried pipe when exposed
7	**Application and Repair of External Coatings**	**Group Heading Only**				
7.1	Visual inspection of atmospheric coatings	x	1:1	1:1		#18: Atmospheric corrosion inspection
7.2	Prepare surface for atmospheric coating using hand and power tools	x	1:2	1:2		#20: Corrosion prevention methods
7.3	Prepare surface for coating by abrasive water blasting	x	1:2	1:2		#20: Corrosion prevention methods
7.4	Prepare surface for coating by abrasive blasting methods other than water	x	1:2	1:2		#20: Corrosion prevention methods
7.5	Apply coating using hand application methods	x	1:2	1:2		#20: Corrosion prevention methods
7.6	Apply coating using spray applications		1:2	1:2		#20: Corrosion prevention methods
7.7	Perform coating inspection	x	1:2	1:2		#20: Corrosion prevention methods
8	**Measure Wall Thickness of Pipe**	**Group Heading Only**				
8.1	Measure pit depth with pit gauge	x	1:1	1:1		#22: Measure wall thickness of pipe
8.2	Measure wall thickness with ultrasonic meter	x	1:1	1:1		#22: Measure wall thickness of pipe
8.3	Measure corroded area	x	1:1	1:1		#22: Measure wall thickness of pipe
9	**Cathodic Protection Remediation**	**Group Heading Only**				
9.1	Install bonds		1:1	1:1		#10.1: Install bonds
9.2	Install galvanic anodes		1:1	1:1		#10.1: Install bonds
9.3	Install rectifiers		1:1	1:1		#8: Rectifier installation
9.4	Install impressed current groundbeds		1:1	1:1		#10: Groundbed installation and repair
9.5	Repair shorted casings	x	1:3	1:3		#11: Shorted casing inspection #12: Shorted casing clearing/repair
9.6	Install electrical insulating device		1:1	1:1		**Under Development**
10	**Monitoring for Internal Corrosion**	**Group Heading Only**				
10.1	Insert and remove coupons		1:1	1:1		#13: Insert and remove coupons
10.2	Monitor probes (on-line)		1:1	1:1		#14: Hydrogen foil inspection
11	**Internal Corrosion Remediation**	**Group Heading Only**				
11.0	Monitoring and controlling the injection rate of the corrosion inhibitor		1:2	1:2		#17: Corrosion inhibitor injection
12	**Inspect Internal Pipe Surfaces**	**Group Heading Only**				
12.0	Visually Inspect internal pipe surface		1:2	1:2		#16: Defect investigation- internal corrosion

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API #	Covered Task Name	CHECK PERSON RESPONSIBLE (Put X in box if person needs to be qualified on the covered task)				Enbridge OQ Covered Task Name
		Contractor	Span of control ratio	Span of control ratio	Enbridge Employee	
14	Place and Maintain Line Markers	Group Heading Only				
14.1	Locate line	x	1:0	1:0		#46: Foreign line crossing during excavation activities #47: Line locate
14.2	Install, inspect and maintain permanent marker		1:2	1:2		#48: Install and maintain line markers
14.5	Install, inspect and maintain temporary marker		1:2	1:2		#48: Install and maintain line markers
15	Inspect Surface Conditions of Right of Way	Group Heading Only				
15.1	Visually inspect surface conditions of right-of-way	x	1:2	1:2 1:1		#49: Right-of-way inspections #85: Leak survey following excavation activities using explosives
16	Inspect Navigable Waterway Crossing	Group Heading Only				
16.1	Inspect navigable waterway crossing	x	1:0			Performed Only by Contractor
19	Maintain Valves	Group Heading Only				
19.1	Valve body winterization or corrosion inhibition		1:1	1:2 1:1		#50: Local operation of valves #51: Valves and actuators
19.2	Valve lubrication		1:1	1:1		#50: Local operation of valves #51: Valves and actuators
19.3	Valve seat sealing		1:1	1:1		#50: Local operation of valves #51:Valves and actuators
19.4	Valve stem packing maintenance		1:1	1:1		#50: Local operation of valves #51: Valves and actuators
19.5	Adjust actuator/operator, electric		1:1	1:1		#87: Inspect and test valve and operator
19.6	Adjust actuator/operator, pneumatic		1:1	1:1		#87: Inspect and test valve and operator
19.7	Adjust actuator/operator, hydraulic		1:1	1:1		#87: Inspect and test valve and operator
20	Inspect Valves	Group Heading Only				
20.0	Inspect mainline valves		1:1	1:1 1:1 1:2		#51: Valves and actuators #86: Remote communicated valve check #88: In-service valve repair
21	Repair Valves	Group Heading Only				
21.1	Repair valve actuator/operator, pneumatic		1:2	1:2		#87: Inspect and test valve and operator #88: In-service valve repair
21.2	Disassembly/re-assembly of valve		1:2	1:2		#87: Inspect and test valve and operator #88: In-service valve repair
21.3	Internal inspection of valve and components		1:2	1:2		#87: Inspect and test valve and operator #88: In-service valve repair
21.4	Repair valve actuator/operator, hydraulic		1:2	1:2		#87: Inspect and test valve and operator #88: In-service valve repair
21.5	Repair valve actuator/operator, electric		1:2	1:2		#87: Inspect and test valve and operator #88: In-service valve repair

API #	Covered Task Name	CHECK PERSON RESPONSIBLE (Put X in box if person needs to be qualified on the covered task)				Enbridge OQ Covered Task Name
		Contractor	Team of control ratio	Team of control ratio	Enbridge Employee	
22	**Inspect, Maintain and Calibrate Relief Valves**	Group Heading Only				
22.1	Inspect tank pressure/vacuum breakers		1:1	1:1		#[illegible] Inspect, test and calibrate overfill protection devices #67: Pressure relief valve test
22.2	Inspect, test and calibrate HVL tank pressure relief valves		1:1	1:1		#[illegible] Inspect, test and calibrate overfill protection devices #67: Pressure relief valve test #CCC: Control Center: Monitor tank levels
23	**Maintain/Repair Relief Valves**	Group Heading Only				
23.1	Maintain/repair relief valves		1:2	1:2		#68: In-service valve repair
23.2	Inspect, test and calibrate relief valves		1:2	1:2		#67: Pressure relief valve test
24	**Inspect, test and calibrate pressure limiting devices**	Group Heading Only				
24.1	Maintain/repair pressure limiting devices		1:1	1:1		#69: Pressure relief valve test
24.2	Inspect, test and calibrate pressure limiting devices		1:1	1:1		#69: Pressure control Valve (PCV) maintenance
25	**Inspect, test and calibrate pressure limiting devices**	Group Heading Only				
25.1	Inspect, test and calibrate pressure switches		1:1	1:1		#82: Pressure switch calibration
25.2	Inspect, test and calibrate pressure transmitters		1:1	1:1		#83: Inspect and test pressure transmitter
26	**Verify or Set Protection Parameters for Programmable Controllers and/or Instrumentation Control Loops**	Group Heading Only				
26.1	Verify or set protection parameters for programmable controllers and/or other instrumentation control loops		1:1	1:1		#60: Pressure allowable set points
27	**Inspect and Repair Breakout Tanks**	Group Heading Only				
27.1	Routine inspection of breakout tanks (API 653 monthly or OCT Annual)		1:0	1:1		#[illegible] Tank inspection
[illegible]	[illegible]					Performed Only by Contractor
27.3	510 inspection of in-service breakout tanks		1:0			Performed Only by Contractor
29	**Protect Breakout Tanks from Static Electricity, Lightning, and Stray Electrical Currents**	Group Heading Only				
29.1	Launching in-line inspection devices		1:2	1:2		#64: Launching tool (pig) in scraper trap
29.2	Receiving in-line inspection devices		1:2	1:2		#65: Receiving tool (pig) in scraper trap
30	**Test Overfill Protective Devices**	Group Heading Only				
30.1	Test overfill protective devices		1:1	1:1		#63: Inspect, test and calibrate overfill protection devices
31	**Inspect and Calibrate Overfill Protective Devices**	Group Heading Only				

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API #	Covered Task Name	CHECK PERSON RESPONSIBLE (Put X in box if person needs to be qualified on the covered task)				Enbridge OQ Covered Task Name
		Contractor	Span of control ratio	Span of control ratio	Enbridge Employee	
31.0	Inspect and calibrate overfill protective devices		1:1	1:1		#83: Inspect, test and calibrate overfill protection devices

API #	Covered Task Name	CHECK PERSON RESPONSIBLE (Put X in box if person needs to be qualified on the covered task)				Enbridge OQ Covered Task Name
		Contractor	Num of control ratio	Span of control ratio	Enbridge Employee	
32	Monitoring Excavation Activities	Group Heading Only				
32.0	Observation of excavation activities		1:1	1:1		#65: Damage prevention during excavation activities
33	Moving In-Service Pipe	Group Heading Only				
33.1	Determine allowable line pressure in section to be moved		1:2	1:2		#56: Line lowering
33.2	Preparation for movement activities		1:2	1:2		#56: Line lowering
33.3	Moving in-service pipeline		1:2	1:2		#56: Line lowering
34	Inspect Existing Pipe Following Movement	Group Heading Only				
34.0	Inspect existing pipe following movement	x	1:2	1:2		#49: Right-of-way inspections
36	Abandoning, Safe Disconnect, Purging, and Sealing of Pipeline Facilities	Group Heading Only				
36.1	Safe disconnect of pipeline facilities		1:2	1:2		#69: Line deactivation
36.2	Purging of pipeline facilities		1:2	1:2		#69: Line deactivation
36.3	Sealing a disconnected portion of pipeline		1:2	1:2		#69: Line deactivation
37	Installation or Repair of Support Structures on Existing Aboveground Components	x				
37.0	Install or repair support structures on existing above ground components		1:2	1:2		#62: Install or repair support structures on existing or above ground components
38	Inspection Activities for Tie-Ins, Pipe Replacement, or Other Components Connecting to an Existing Pipeline	Group Heading Only				
38.1	Visually inspect pipeline pipe components prior to installation		1:2	1:2		#15: External defect investigation
38.2	[illegible] inspect that welds meet DOT requirements (in accordance with API 1104)		1:0			[illegible] Only by Certified Weld Inspectors (API 1104 Certification)
38.4	[illegible] - radiographic testing		1:0			[illegible] Only by Contractor
38.5	[illegible] - liquid penetrant testing		1:0			[illegible] Only by Contractor
38.6	[illegible] - magnetic particle testing		1:0			[illegible] Only by Contractor
38.7	[illegible] - [illegible]		1:0			[illegible] Only by Contractor
39	Backfilling a Trench Following Maintenance	Group Heading Only				
39.0	Backfilling a trench following maintenance		1:1	1:1		#67: Backfilling activities

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API #	Covered Task Name	CHECK PERSON RESPONSIBLE (Put X in box if person needs to be qualified on the covered task) Contractor	Span of control ratio	Span of control ratio	Enbridge Employee	Enbridge OQ Covered Task Name
40	**Perform General Pipeline Repair Activities**	**Group Heading Only**				
40.1	Fit full encirclement welded split sleeve (oversleeve, tight fitting sleeve, etc.)		1:2	1:2		#66: Pipeline repair: Oversleeve #67: Pipeline repair: Tight fitting sleeve
40.3	Apply composite sleeve		1:2	1:2		#69: Pipeline repair: Composite sleeve
40.4	Install mechanical bolt-on split repair sleeve		1:2	1:2		#68: Pipeline repair: Plidco split repair
40.5	Install weldable compression coupling		1:2	1:2		#70: Pipeline repair: Weld + ends coupling
40.6	Install and remove plugging machine		1:0	1:2		#71: Installation of tapping or plugging tees #74.1: Plugging a pipeline 2" and under #74.2: Plugging a pipeline 2 1/2" and larger
40.7	Installing a tap 2 inches and under on a pipeline system		1:0	1:2		#72: Pipeline repair: Tapping
40.8	Installing a tap larger than 2 inches on a pipeline system		1:0	1:2		#72: Pipeline repair: Tapping
40.9	Install and remove completion plug on pipelines larger than 2 inches		1:2	1:2		#73: Plugging
41	**Conduct Pressure Tests**	**Group Heading Only**				
41.0	Conduct pressure test		1:2	1:2		#76: Pressure testing of pipe
42	**Welding on Existing Pipeline Systems**	**Group Heading Only**				
42.7	Welding		1:0	1:0		API 1104 Code Book OMM Book 4: 02-02-04 (page 1 and page 3) #77: Welding: Side Seam Weld #78: Welding: Circumferential Fillet Weld #79: Welding: Butt weld API 1104 Code Book #80: Welding: Defective weld repair #81: Welding: Nozzle Weld
43	**Operations of Pipeline Systems**	**Group Heading Only**				
43.1	Start-up of a liquid pipeline (control center)			1:1		#CC3: Control Center: Operation of remote pumps #CC6: Control Center: Start-up of a liquid pipeline system
43.2	Shutdown of a liquid pipeline (control center)			1:1		#CC3: Control Center: Operation of remote pumps #CC7: Control Center: Shutdown of a liquid pipeline system
43.3	Monitor pressures, flows, communications, and line integrity and maintain them within allowable limits on a liquid pipeline			1:1		#CC1: Control Center: Monitor and control pressure and/or flows
43.4	Remotely operate valves on a liquid pipeline system			1:1		#CC2: Control Center: Operation of remote valves #86: Remote communicated valve check

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API #	Covered Task Name	CHECK PERSON RESPONSIBLE (Put X in box if person needs to be qualified on the covered task)				Enbridge OQ Covered Task Name
		Contractor	Span of control ratio	Span of control ratio	Enbridge Employee	
44	**CPM Leak Detection**	**Group Heading Only**				
44.3	Inspect, test and maintain flow computer for hazardous liquid leak detection			1:1		#CC4: Control Center: Monitor leak detection - Computational Pipeline Monitoring (CPM) (**Liquid Pipelines only) #CC5: Control Center: Monitor tank levels
44.4	Inspection, testing, corrective and preventative maintenance of tank gauging for hazardous liquid leak detection		1:1			**Under Development**
44.5	Prove flow meters for hazardous liquid leak detection			1:1		#CC8: Control Center: Prove Flow Meters for Hazardous Liquid Leak Detection
44.6	Maintain flow meters for hazardous liquid leak detection		1:1			**Under Development**
44.7	Inspect, test and maintain gravitometers/densitometers for hazardous liquid leak detection		1:1			**Under Development**
44.8	Inspect, test and maintain temperature transmitters for hazardous liquid leak detection		1:1			**Under Development**
52	**Leakage Survey (retained from previous version)**	**Group Heading Only**				
52.1	Conduct vegetation survey		1:1	1:1		#84 Gas leakage survey
52.2	Conduct a leak survey with a CGD		1:1	1:1		#84 Gas leakage survey
52.3	Conduct a leak survey with a flame ionization unit		1:1	1:1		#84 Gas leakage survey
55	**Fixed Gas Detection (retained from previous version)**	**Group Heading Only**				
55.0	Maintain fixed gas detection equipment		1:1	1:1		#94: Station gas detection calibration
63	**Operation of a Pipeline System**	**Group Heading Only**				
63.1	Start-up of a liquid pipeline (field)		1:1	1:1		#95: Local operation of pumps (start up/shut down of a pump)
63.2	Shutdown of a liquid pipeline (field)		1:1	1:1		#95: Local operation of pumps (start up/shut down of a pump)
63.3	Monitor pressure, flows, communications and line integrity and maintain them within allowable limits on a liquid pipeline system (field)		1:1	1:1		#89: Pressure Control Valve (PCV) maintenance #96: Pressures, flows and communications monitoring - field ops
63.4	Locally operate valves on a liquid pipeline system		1:1	1:1		#50: Local operation of valves #86: Remote communicated valve check

Enbridge LP Representative (Print Name):

ENBDNR0004531

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API #	Covered Task Name	CHECK PERSON RESPONSIBLE (Put X in box if person needs to be qualified on the covered task)				Enbridge OQ Covered Task Name
		Contractor	Span of control ratio	Span of control ratio	Enbridge Employee	
	Date:	Signature:				

ENBDNR0004532

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Appendix D - Close-Interval-Survey of Dual Pipelines

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Job # 03130

Hanson
Survey & Design, Ltd.
6401 Bingle, Suite 123
Houston TX 77092
Tel 713 690-2116 Fax: 713 690-6025
Email murray@hansonsurvey.com

10 September 2003

Enbridge Energy
119 North 25th Street
Superior, WN 54880

Attn [redacted]

Interrupted Close Interval Pipeline Survey

Straits of MacKinac Crossing

Dear Mr [redacted]

This letter is to report on our findings and recommendations of the review of the interrupted close interval survey plots for the cathodic protection system on the pipelines at the Straits of MacKinac Crossing.

INTRODUCTION

An interrupted close interval survey was performed on the two pipelines by Hanson Survey & Design in September 2003.

The West Line was surveyed from North to South over a total distance of approximately 18,460 ft from a point 1500 feet off the north bank to a point 1000 ft from the South bank.

The East Line was surveyed from South to North over a total distance of approximately 18,170 ft over similar distances form the banks.

The survey was conducted to determine if the pipelines were protected according to the requirements of the -850 mV OFF potential criterion as defined in Section 6.2.2.1.2 of NACE Recommended Practice RP 0169 (2002 Revision) entitled

"Control of External Corrosion on Underground or Submerged Buried Piping Systems"

attached.

The survey plots indicate that both pipes meet the requirement of this criterion full length.

A brief analysis of the plots show reveals the following information

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Pipeline	Average Potentials negative millivolt		% of Pipe Length meeting -850 mV OFF potential
West	>2000 ON	>1100 OFF	100 %
East	>2000 ON	>1100 OFF	100 %

Both pipelines are well protected and have very consistent ON and OFF potential readings full length of the portions surveyed. There is no evidence of any coating anomalies on either pipeline.

SUMMARY

In summary, the interrupted close interval survey plots show that the pipelines are full cathodically protected full length.

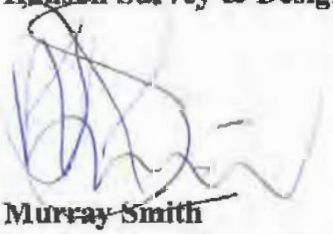
No further work is recommended at this time.

We trust this letter provides the information you require in the form you desire.

May we provide any further information please do not hesitate to contact the undersigned or Scott Dauzat, our Sales Manger at the telephone, fax or email above. We than you for this opportunity to be of service to Enbridge Energy,

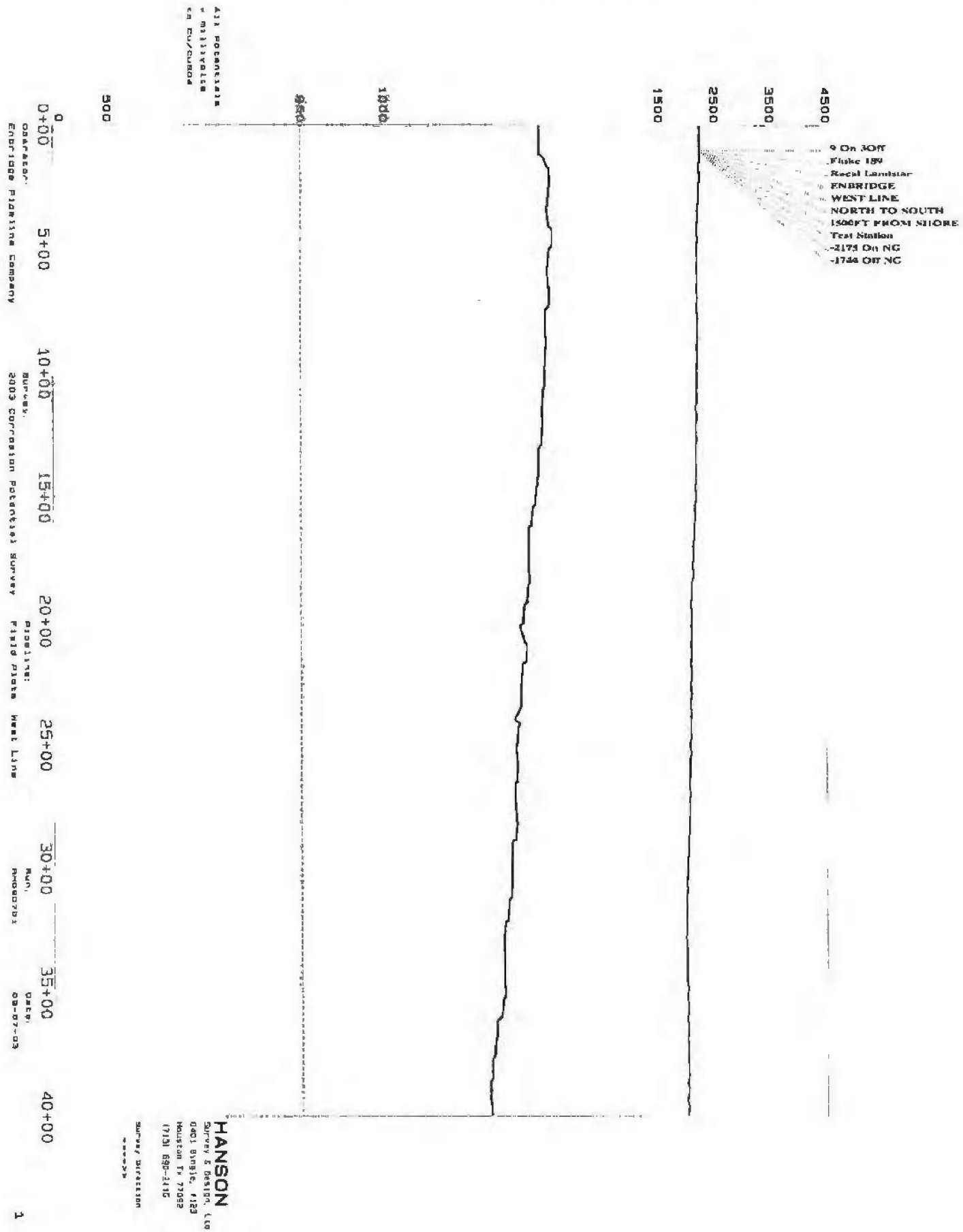
Yours sincerely

Hanson Survey & Design

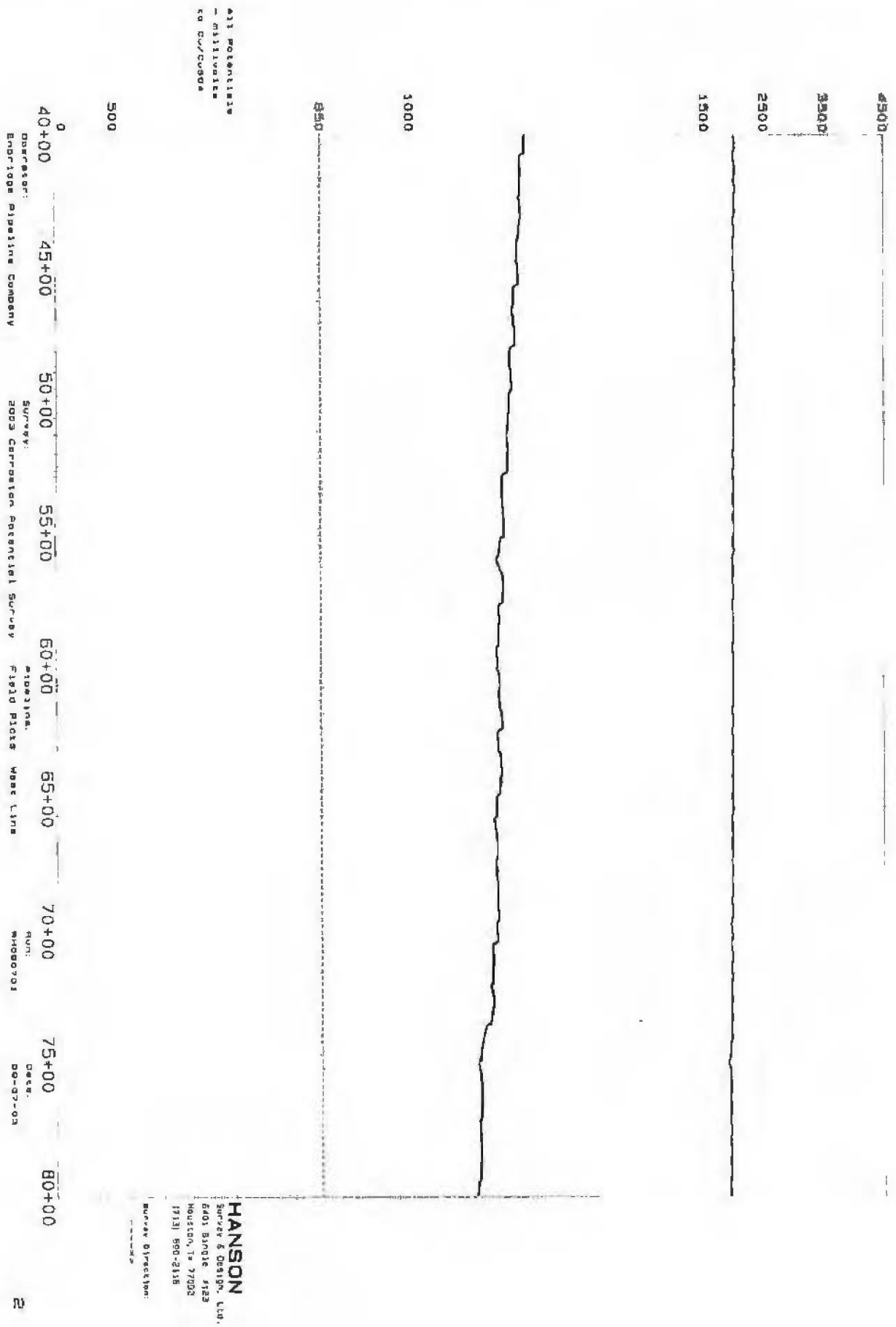


Murray Smith
Engineering Manager
NACE CP Specialist #5009

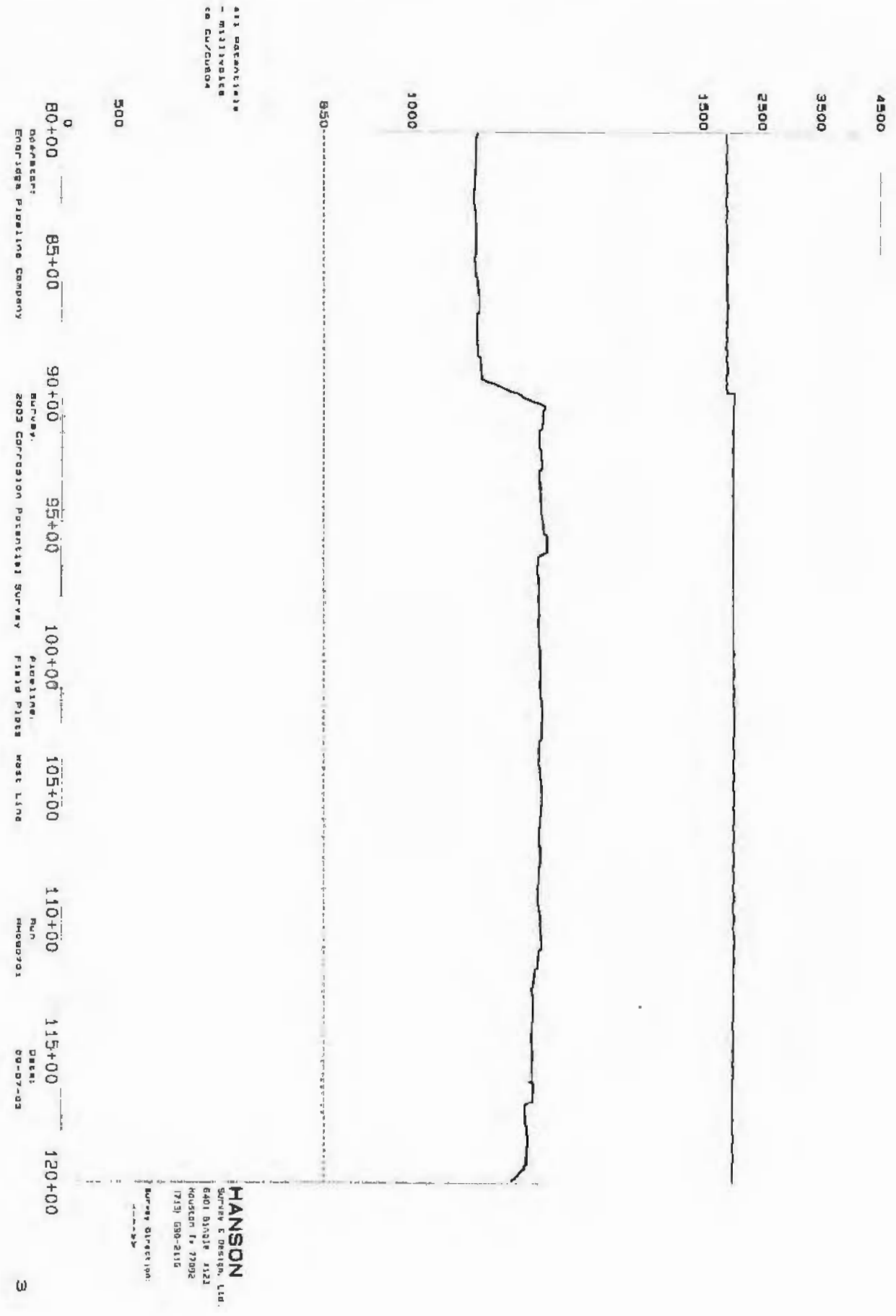
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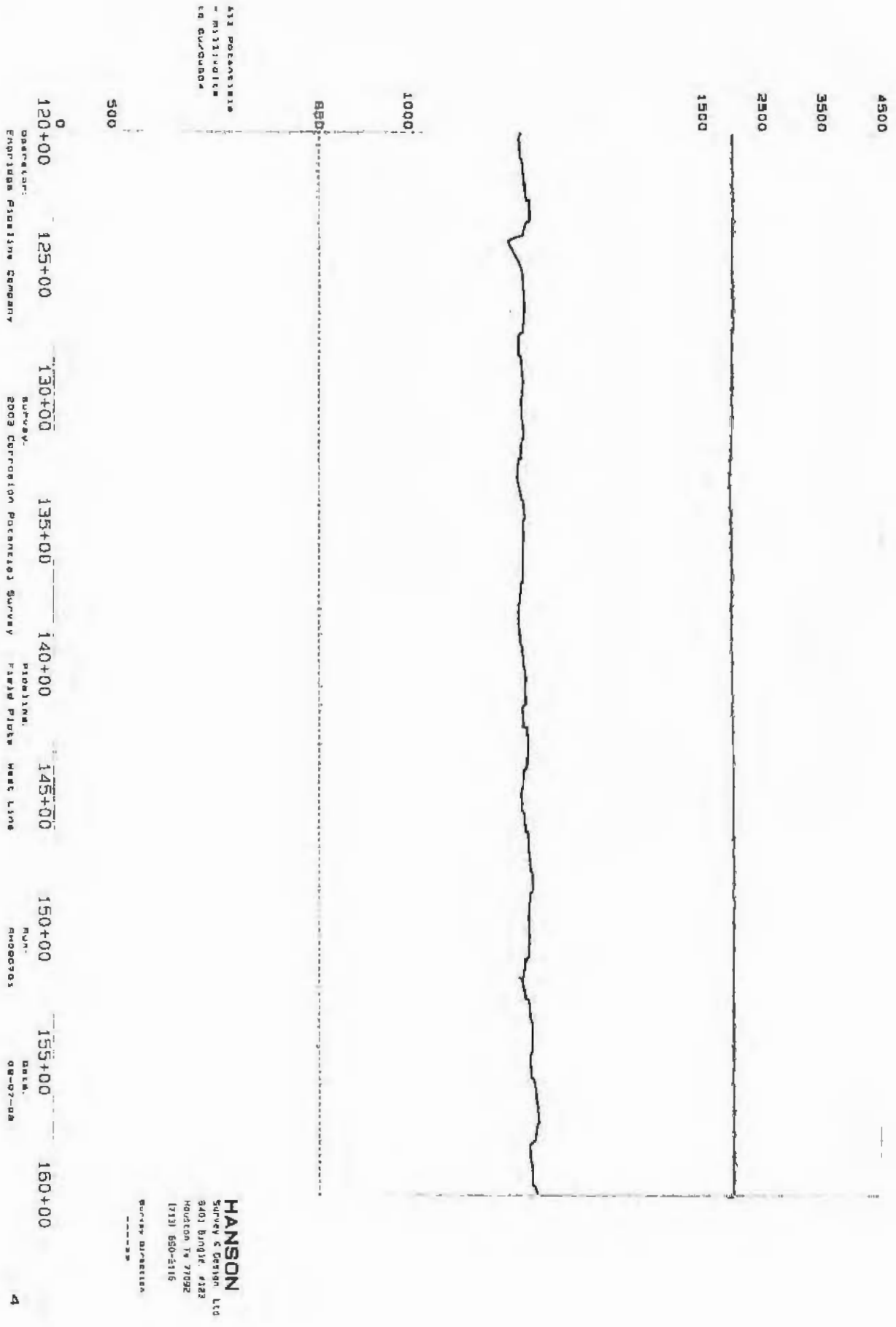
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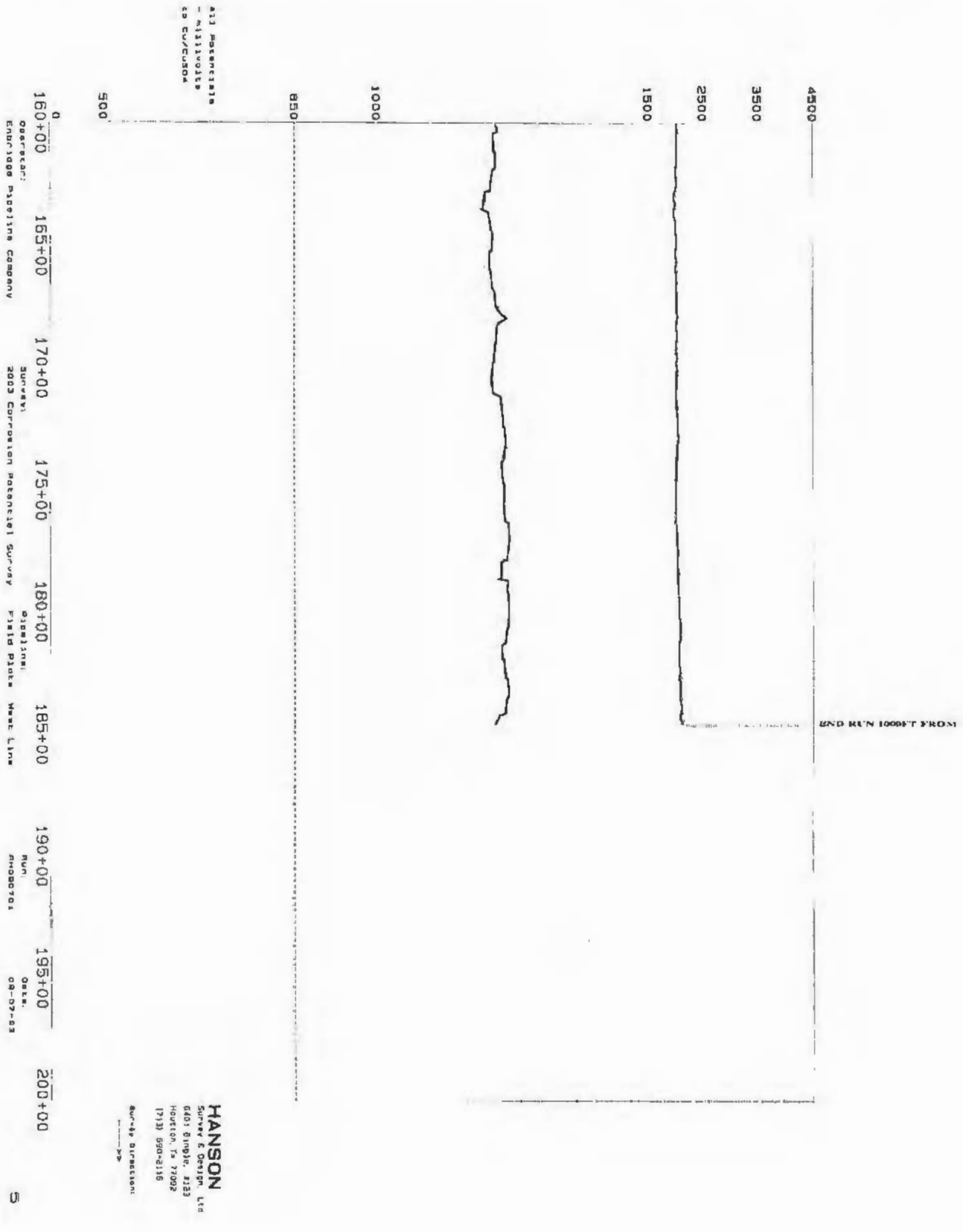
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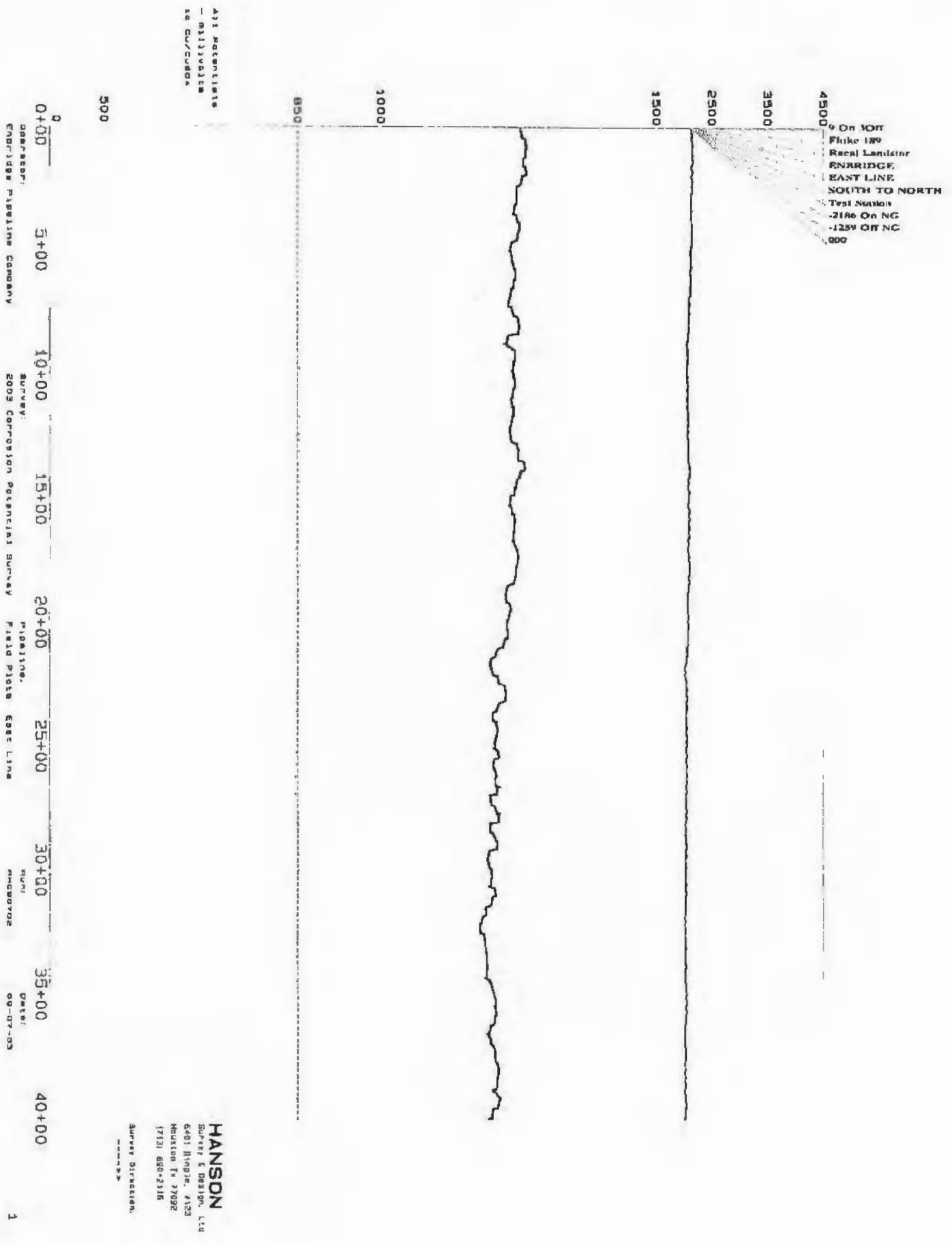
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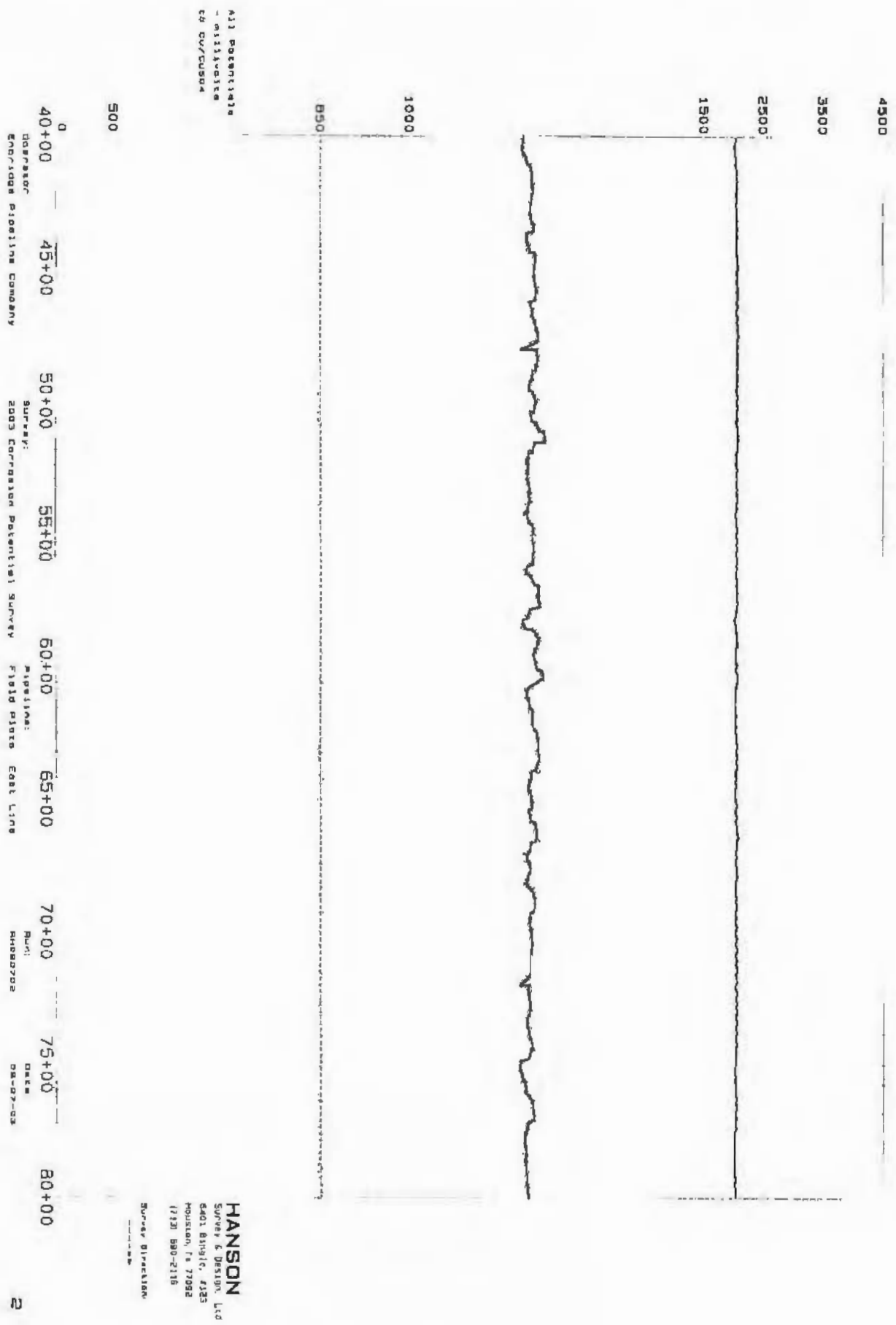
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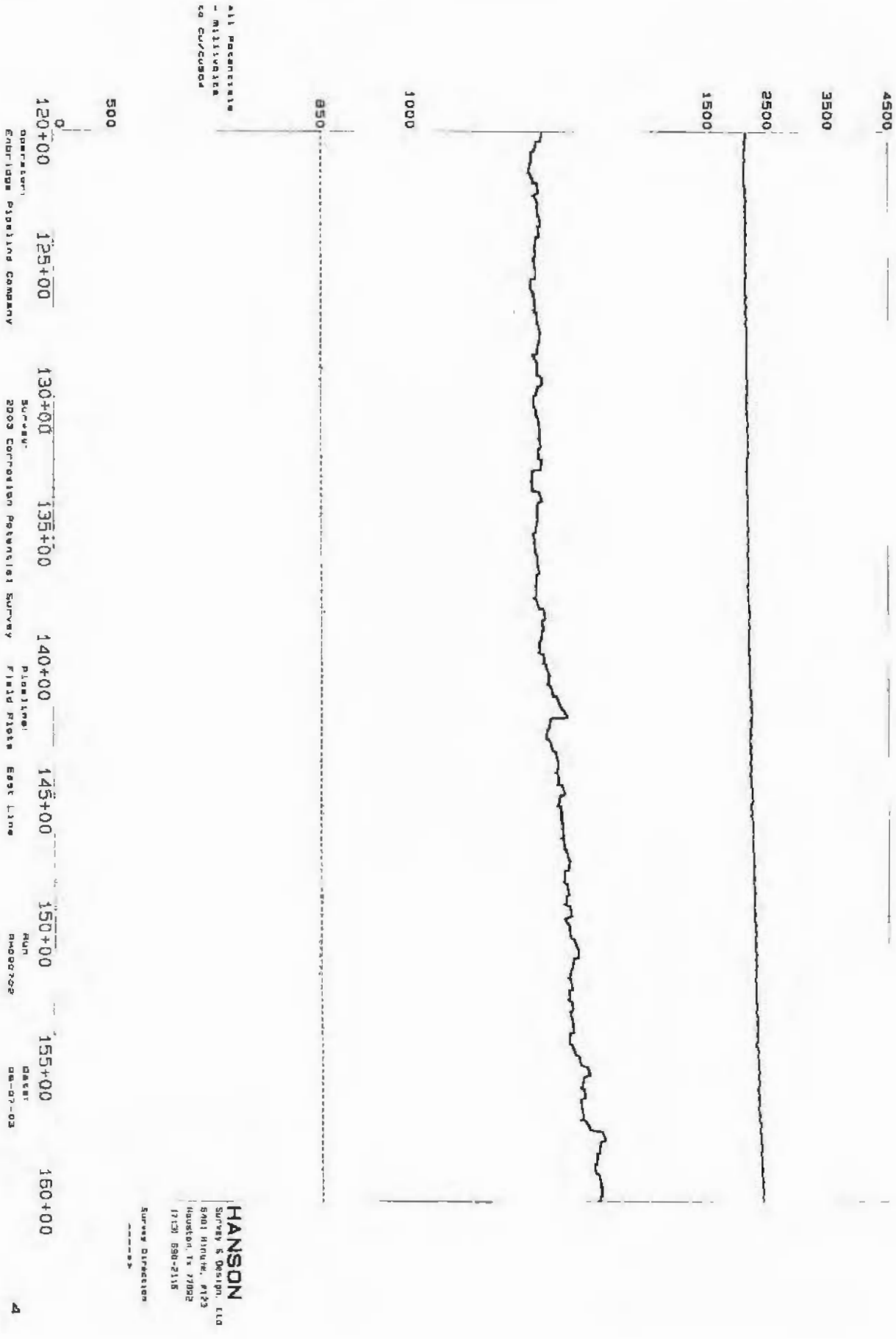


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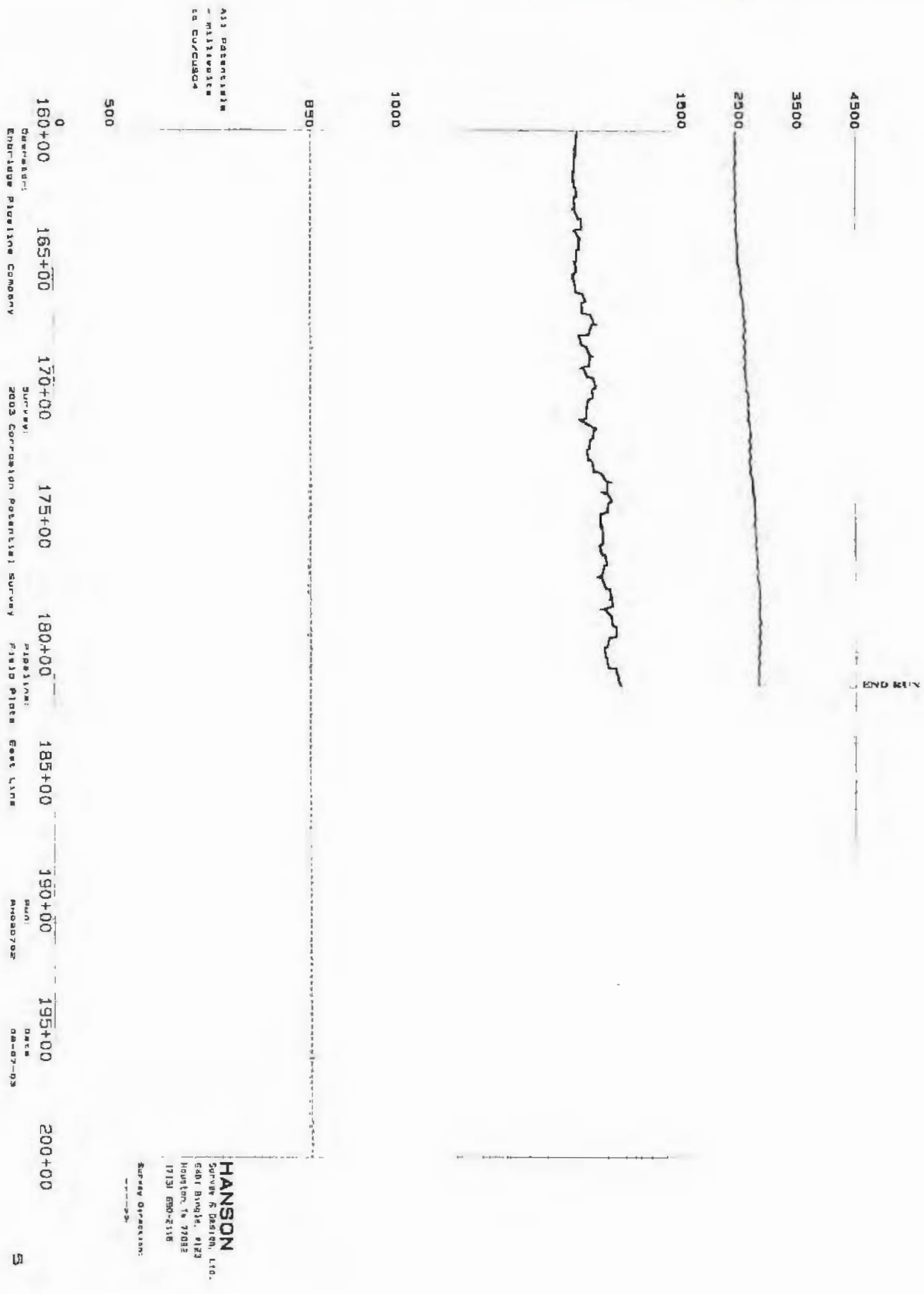


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ENBRIDGE

Appendix E – 2017 CP Surveys During Hydrotest

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LAKE SUPERIOR CONSULTING

Final Report: Enbridge Line 5 – Mackinac Straits Cathodic Protection Testing

Job #: 00917200474

Submitted: October 31, 2017

Prepared for:

Enbridge Energy

Attention:

[redacted] **Corrosion Prevention Analyst II**

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SIGNATURE PAGE

WRITTEN BY:

RYAN SWOR

DIRECTOR OF INTEGRITY MANAGEMENT

LAKE SUPERIOR CONSULTING, LLC



SIGNATURE

OCTOBER 31, 2017

DATE

1 Executive Summary

Enbridge requested that LSC test the effectiveness of the CP systems protecting the Line 5 pipeline across the Mackinac Straits. Line 5 is divided into two 20" pipelines between the North Straits Station and Mackinaw Station; these segments are depicted as the West Leg and East Leg. The request initiated from the opportunity to test during hydrotesting activity, where the East Leg and West Leg would be electrically isolated from both stations and the 30" Line 5 Pipeline.

LSC installed temporary low resistance bonds across the hydrotesting break points and measured the amount of DC current returning through the upstream and downstream sides of both legs, performed rectifier influence testing, performed close interval survey with all current sources and temporary bonds interrupting, and performed current requirement testing with the temporary bonds removed to determine the adequacy of protection.

The West Leg and East Leg are predominantly polarized by the Mackinaw Station Rectifier. The lowest IR-Free P/S potential encountered during testing was -1.106 VDC. Current supplied to each leg was directly measured at hydrotest break points, and exceeded current required for achieving 100 mVDC of polarization, indicating that at as-found output values, existing CP systems are adequate and functional.

2 Background

Enbridge requested that LSC test the effectiveness of the CP systems protecting the Line 5 pipeline across the Mackinac Straits. Line 5 is divided into two 20" pipelines between the North Straits Station and Mackinaw Station; these segments are depicted as the West Leg and East Leg. The request initiated from the opportunity to test during hydrotesting activity, where the East Leg and West Leg would be electrically isolated from both stations and the 30" Line 5 Pipeline. Electrical isolation allows for more accurate data collection and interpretation. Testing of each leg was performed approximately 1 week apart, during the water stabilization period of hydrotesting.



Figure 2.1 – Overview



Figure 2.2 – North Side



Figure 2.3 – South Side

While on site, LSC:

- installed temporary low-resistance bonds across the hydrotesting break points and measured the amount of DC current returning through the upstream and downstream sides of both legs;
- performed rectifier influence testing;
- performed close interval survey with all current sources and temporary bonds interrupting; and
- performed current requirement testing with the temporary bonds removed to determine the adequacy of protection.

Additional forms of testing were discussed, such as coating conductance, however it was determined that project schedule and pipeline accessibility would be restrictive to testing effectiveness.

3 Objectives and Approach

LSC performed numerous indirect testing methods to determine the effectiveness of the CP systems protecting the East Leg and West Leg of Line 5 traversing the Mackinac Straits. Concurrent hydrotesting activities afforded the unique opportunity to test the segments while isolated from mainline Line 5 piping. The employed methods are described below, with detailed summaries included in ***Appendix G—Daily Reporting***. Technician Operator Qualification and equipment calibration records are included in ***Appendix H—OQs and Calibration Certifications***.

3.1 West Leg

LSC technicians mobilized to Mackinaw City, MI, to commence testing activities of the West Leg on June 5, 2017, first collaborating with on-site leadership to determine testing logistics and ensure the avoidance of a delay to the principal hydrotesting schedule.

Following site safety training, a temporary bond was immediately placed across the pipeline break point within the North Straits Station to maintain the integrity of polarization (normal operating conditions of CP). Minimal current flow was measured to be returning through the bond (14 mADC), however this was anticipated, as there were other points of electrical continuity with station piping and grounding through the launcher valve, pressure transmitter, and DRA injection wiring. Local foreign operators were then contacted to plan rectifier influence testing and synchronous interruption.

Stationary Dataloggers (SDLs) with calibrated $Cu/CuSO_4$ reference electrodes were placed at multiple locations on the north and south sides of the Mackinac Straits, outside of the stations. Rectifier influence testing was completed, and current interrupters were placed at all influencing sources on an 8 second on, 2 second off cycle. Current interrupters, shunts, and SDLs were also placed at break point bonds at the North Straits Station and Mackinaw Station. After Enbridge electricians removed equipment power grounds, LSC performed fixed-cell moving-ground testing at both stations with a reference electrode placed at remote earth to ensure effective isolation from station piping, facility grounding, power grounding, and hydrotesting equipment.

LSC technicians then conducted CIS on each side of the Straits to the water's edge. Following CIS, LSC cycled the North Straits Station and Mackinaw Station rectifiers separately on a 4 second on, 1 second off cycle to determine current returning through the temporary bonds and specific amount of influence on the West Leg. Soil resistivity data was collected on each side of the straits, and both temporary continuity bonds were disconnected to allow for current requirement testing.

LSC de-energized influencing permanent current sources affecting the West Leg, set up a temporary ground bed, performed testing to ensure remote earth from the West Leg was attained for ground bed placement (voltage rise equations to determine adequate distance and then field survey to verify), disconnected station temporary bonds at the break points, and energized the temporary source at increasing current output values to determine span requirements based upon effect to the West Leg pipe-to-soil (P/S) potentials.

Prior to de-mobilization, the system was returned to as-found conditions, except for the temporary bonds across the West Leg break points, which were left in place to allow for continued CP being applied during hydrotesting activities.

3.1.1 Isolation Testing

LSC performed isolation testing numerous times throughout testing, to ensure the efficacy of collected information. Drawings and isolation strategy are depicted in ***Appendix F—Hydrotest Setup Schematic and Electrical Continuity Markup***. LSC upheld contact with project and operations personnel throughout testing activities, and verified isolation daily via fixed-cell moving-ground testing with a reference electrode placed at remote earth.

3.1.2 Placement of Stationary Dataloggers

LSC installed a total of 12 Mobiltex UDL1 SDLs, 10 of which measured P/S potential values, and 2 of which measured current flow through temporary bonds. These were placed at equidistant intervals across the West Leg, with structure connections run from the nearest available connection point. Locations of SDLs measuring P/S potentials are depicted in ***Appendix A—Cathodic Protection Testing Map***. There were several wire breaks during testing, and LSC technicians verified functionality at the beginning of, and intermittently throughout each day. The quantity of placed P/S SDLs allowed for redundancy in the event of a wire break during CP testing (e.g., from pig tracking and/or operations personnel traversing the ROW), and further validated testing results by yielding comparable results. Data was retrieved after each critical testing activity and thoroughly reviewed by LSC engineering staff prior to moving to the subsequent steps in the testing procedure.

3.1.3 Rectifier Influence Testing

LSC technicians manually cycled individual area rectifiers and recorded the start/stop times after placing SDLs. SDL information was retrieved and analyzed at corresponding times to determine the influence of each source at each of the 10 SDL locations. This information was then graphed, summarized in a table, and depicted on a map, with rings of influence representing mVDC centered around CP components. A summary of findings, along with pertinent rectifier data, is collectively assembled in ***Appendix C—Rectifier Influence Testing***. All tested rectifiers were interrupted for testing purposes, as Enbridge and TransCanada have remote monitoring units with interruption capabilities, and ATC permitted LSC technicians supervised access into its substation to place a portable current interrupter.

3.1.4 Temporary Bond Measurements

During normal operating conditions (with facility grounding removed from the West Leg and polarization maintained), current was measured across both temporary bonds placed at piping break points in each station. North Straits Station was found to be 1.4 mADC flowing from upstream to downstream, and Mackinaw Station was found to be 2.5 ADC flowing from upstream to downstream. Total current pickup across the test span was therefore measured to be 2.49 ADC. Equipment utilized to collect the data was Mobiltex UDL1 dataloggers and 0.01-ohm shunts. A summary of the findings is in ***Appendix B—Current Response Testing***.

3.1.5 Close Interval Survey

LSC technicians completed CIS on both sides of the straits, from each station fence to the water's edge, with all tested current sources and temporary bonds interrupting. Interrupted (IR-Free) P/S

potentials averaged -1.284 VDC on the north side, and -1.242 VDC on the south side of the straits. These values were relatively consistent with readings obtained from the placed SDLs. Waveforms were collected before and after survey to ensure synchronous interruption was maintained. Data was collected using Allegro dataloggers and Trimble submeter-capable GPS equipment. Graphs of collected data are in ***Appendix D—Close Interval Survey***.

3.1.6 Soil Resistivity Testing

Soil resistivity data was collected at two separate locations on each side of the straits, at pin spacings of 150 cm, 230 cm, 350 cm, 700 cm, and 1400 cm. Results are included in ***Appendix E—Soil Resistivity Testing***. For immediate value, LSC engineering staff used this information to calculate, through voltage rise, distance to remote earth for proper placement of the temporary ground bed used in current requirement testing.

3.1.7 Current Requirement Testing

After confirming the West Leg's isolation from the station and the functionality of all placed SDLs, LSC energized a portable rectifier and temporary ground bed on the south side of the Mackinac Straits using a culvert at the corners of Wilderness and Algonquin Drives (approximately 450' east of the West Leg). Temporary bonds at each side of the straits were disconnected for testing. The temporary ground bed was confirmed remote by performing anode-to-soil CIS perpendicular to the ground bed's location towards the West Leg. Calculated current requirement, based upon 100 mVDC of polarization, was 1.3 ADC. Results are included in ***Appendix B—Current Requirement Testing***.

3.2 East Leg

LSC technicians mobilized to Mackinaw City, MI, to commence testing activities of the East Leg on June 12, 2017, first collaborating with on-site leadership to determine testing logistics and ensure the avoidance of a delay to the principal hydrotesting schedule.

Following site safety training, soil resistivity data was collected on both sides of the straits. $Cu/CuSO_4$ reference electrodes for the SDLs were calibrated using a calibrated MC Miller IonX Reference Electrode, and temporary bonds were made at both stations upon Enbridge Operations' removal of the valves for pressure testing break points. SDLs were then placed at multiple locations on the north and south sides of the Mackinac Straits, outside of the stations. During fixed-cell moving-ground testing to confirm isolation after Enbridge electricians removed equipment power grounds, it was identified that both station rectifiers had negative drains connected below-grade to the test segment. Because of this, temporary ground wires were run to the upstream side of the North Straits Station break point, and the downstream side of the Mackinaw Station break point (to allow for accurate measurements being obtained across the break point temporary bonds).

Rectifier influence testing was completed, and current interrupters were placed at all influencing sources on an 8 second on, 2 second off cycle. Current interrupters, shunts, and SDLs were also placed at break point bonds at the North Straits Station and Mackinaw Station. LSC technicians then conducted CIS on each side of the straits to the water's edge. Following CIS, LSC cycled the North Straits Station and Mackinaw Station rectifiers separately on a 4 second on, 1 second off cycle to

determine current returning through the temporary bonds and specific amount of influence on the East Leg.

LSC de-energized influencing permanent current sources affecting the West Leg, set up a temporary ground bed, performed testing to ensure remote earth from the West Leg was attained for ground bed placement (voltage rise equations to determine adequate distance and then field survey to verify), disconnected station temporary bonds at the break points, and energized the temporary source at increasing current output values to determine span requirements based upon effect to the West Leg pipe-to-soil (P/S) potentials.

Prior to de-mobilization, the system was returned to as-found conditions, except for the temporary bonds across the East Leg break points, which were left in place to allow for continued CP being applied during hydrotesting activities.

3.2.1 Isolation Testing

LSC performed isolation testing numerous times throughout testing, to ensure the efficacy of collected information. Drawings and isolation strategy are depicted in ***Appendix F—Hydrotest Setup Schematic and Electrical Continuity Markup***. LSC upheld contact with project and operations personnel throughout testing activities, and verified isolation daily via fixed-cell moving-ground testing with a reference electrode placed at remote earth.

3.2.2 Placement of Stationary Dataloggers

LSC installed a total of 12 Mobiltex UDL1 SDLs, 10 of which measured P/S potential values, and 2 of which measured current flow through temporary bonds. These were approximately placed at equidistant intervals across the West Leg, with structure connections run from the nearest available connection point. Locations of SDLs measuring P/S potentials are depicted in ***Appendix A—Cathodic Protection Testing Map***. There were several wire breaks during testing, and LSC technicians verified functionality at the beginning of, and intermittently throughout each day. The quantity of placed P/S SDLs allowed for redundancy in the event of a wire break during CP testing (e.g., from pig tracking and/or operations personnel traversing the ROW), and further validated testing results by yielding comparable results. Data was retrieved after each critical testing activity and thoroughly reviewed by LSC engineering staff prior to moving to the next step in the testing procedure.

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LSC technicians manually cycled individual area rectifiers and recorded the start/stop times after placing SDLs. SDL information was retrieved and analyzed at corresponding times to determine the influence of each source at each of the 10 SDL locations. This information was then graphed, summarized in a table, and depicted on a map, with rings of influence representing mVDC centered around CP components. A summary of findings, along with pertinent rectifier data, is collectively assembled in ***Appendix C—Rectifier Influence Testing***. All tested rectifiers were interrupted for testing purposes, as Enbridge and TransCanada have remote monitoring units with interruption capabilities, and ATC permitted LSC technicians supervised access into its substation to place a portable current interrupter.

3.2.4 Temporary Bond Measurements

During normal operating conditions (with facility grounding removed from the East Leg, station rectifier negatives moved to outside the extents of the test span, and polarization maintained), current was measured across both temporary bonds placed at piping break points in each station. North Straits Station was found to be 0.53 ADC flowing from upstream to downstream, and Mackinaw Station was found to be 3.0 ADC flowing from upstream to downstream. Total current pickup across the test span was therefore measured to be 2.47 ADC. Equipment utilized to collect the data was Mobiltex UDL1 dataloggers and 0.01-ohm shunts. A summary of the findings is in ***Appendix B—Current Response Testing***.

3.2.5 Close Interval Survey

LSC technicians completed CIS on both sides of the straits, from each station fence to the water's edge, with all tested current sources and temporary bonds interrupting. Interrupted (IR-Free) P/S potentials averaged -1.280 VDC on the North Side, and -1.202 VDC on the south side of the straits. These values were relatively consistent with readings obtained from the placed SDLs. Waveforms were collected before and after survey to ensure synchronous interruption was maintained. Data was collected using Allegro dataloggers and Trimble submeter-capable GPS equipment. Graphs of collected data are in ***Appendix D—Close Interval Survey***.

3.2.6 Soil Resistivity Testing

Soil resistivity data was collected at two separate locations on each side of the straits, at pin spacings of 150 cm, 230 cm, 350 cm, 700 cm, and 1400 cm. Results are included in ***Appendix E—Soil Resistivity Testing***. For immediate value, LSC engineering staff used this information to calculate, through voltage rise, distance to remote earth for proper placement of the temporary ground bed used in current requirement testing.

3.2.7 Current Requirement Testing

After confirming the West Leg's isolation from the station and the functionality of all placed SDLs, LSC energized a portable rectifier and temporary ground bed on the south side of the Mackinac Straits using a culvert at the corners of Wilderness and Algonquin Drives (approximately 350' north of the East Leg). Temporary bonds at each side of the straits were disconnected for testing. The temporary ground bed was confirmed remote by performing anode-to-soil CIS perpendicular to the ground bed's location towards the East Leg. Calculated current requirement, based upon 100 mVDC of polarization, was 1.74 ADC. Results are included in ***Appendix B—Current Requirement Testing***.

4 Discussion

LSC employed various methodologies to determine the effectiveness of Line 5 CP systems in the Mackinac Straits. Results can be summarized as follows:

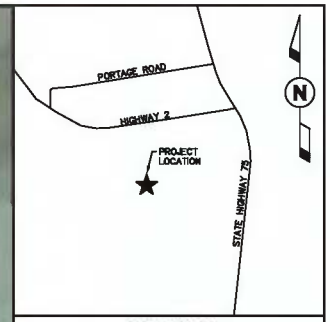
SUMMARY OF RESULTS		
	West Leg	**East Leg**
Current Required for 100mV of polarization	1.3 ADC	1.74 ADC
Current to Span under Normal Operating Conditions	2.49 ADC	2.47 ADC
Average CIS P/S Potential (North Side)	-1.284 VDC	-1.280 VDC
Average CIS P/S Potential (South Side)	-1.242 VDC	-1.202 VDC
Lowest P/S Potential (North Side)	-1.151 VDC	-1.236 VDC
Lowest P/S Potential (South Side)	-1.129 VDC	-1.106 VDC

Table 4.1

As indicated in Table 4.1 , both the West Leg and East Leg are predominantly polarized by the Mackinaw Station Rectifier, and the lowest IR-Free P/S potential encountered during testing was -1.106 VDC. Current supplied to each Leg was directly measured at hydrotest break points, and exceeded current required for achieving 100 mVDC of polarization, indicating that at as-found output values, existing CP systems are adequate and functional. Finally, note that P/S potential readings were obtained where piping is buried, up until the point where it traverses the straits.

APPENDIX A - CATHODIC PROTECTION TESTING MAP





LOCATION PLAN

MACKINAC COUNTY, MICHIGAN
T-40-N, R-04-W

LEGEND

- TEST STATION
- SOIL RESISTIVITY LOCATION
- BOND
- RECTIFIER
- CURRENT REQUIREMENT TEMPORARY GROUNDBED

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EXCELLENCE & INTEGRITY
130 West Superior Street, Suite 500, Duluth, MN 55802
www.LSConsulting.com
218.727.3141

NO	REVISION	BY DATE	APPR	APPR
A	ISSUED FOR REVIEW	LSC/JSS 08/22/17	LSC CCL	

ENBRIDGE

STRAITS OF MACKINAC

LINE 5

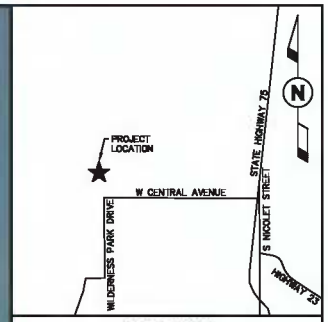
MACKINAC STRAITS HYDROTEST
FEATURE LOCATIONS

PROJECT:		
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CHECK: LSC/FAH	APPR: LSC/CCL	DATE:
APPR:		
APPR:	D-5-5.92-PLN01-A-160	

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LOCATION PLAN

EMMET COUNTY, MICHIGAN
T-40-N, R-04-W

LEGEND

- TEST STATION
- SOIL RESISTIVITY LOCATION
- BOND
- RECTIFIER
- CURRENT REQUIREMENT TEMPORARY GROUNDBED

LAKE SUPERIOR CONSULTING
EXCELLENCE & INTEGRITY
130 West Superior Street, Suite 500, Duluth, MN 55802
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218.727.3141

NO	REVISION	BY DATE	APPR	APPR
A	ISSUED FOR REVIEW	LSC/JSS 08/21/17	LSC CCL	

ENBRIDGE

STRAITS OF MACKINAC

LINE 5

MACKINAC STRAITS HYDROTEST
FEATURE LOCATIONS

PROJECT:		
SCALE: 1"=20'	DATE: 08/20/17	DRAWN: LSC/JSS
CHECK: LSC/FAH	APPR: LSC/CCL	DATE:
APPR:		
APPR:	D-5-5.92-PLN02-A-160	

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APPENDIX B - CURRENT RESPONSE TESTING

Summary of Actual Current -VS- Calculated Current Requirement

West Leg			
Mackinaw Station - Current	Mackinaw Station - Current Direction	St. Ignace Station - Current	St. Ignace Station - Current Direction
2.5 Amps	upstream to downstream	.0014 Amps	upstream to downstream
Mackinaw Station Rectifier Output		St. Ignace Station Rectifier Output	
13.52 Amps		5.7 Amps	

Total Actual Current to Segment
2.49 Amps
Calculated Current Requirement
1.3 Amps

East Leg			
Mackinaw Station - Current	Mackinaw Station - Current Direction	St. Ignace Station - Current	St. Ignace Station - Current Direction
3 Amps	upstream to downstream	0.53 Amps	upstream to downstream
Mackinaw Station Rectifier Output		St. Ignace Station Rectifier Output	
13.52 Amps		5.7 Amps	

Total Actual Current to Segment
2.47 Amps
Calculated Current Requirement
1.74 Amps

Note:

1. Current direction is indicated by product flow direction (north to south)

2. All current was measured at temporary bond location to make segment piping continuous with upstream/downstream mainline and station piping

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Current Requirement Measurements - East Segment

LAKE SUPERIOR CONSULTING

Client:	Enbridge Energy	Project:	Line 5 Straits CP Testing
Technician:	Cole Lundgren	Line:	Line 5
Date:	June 15th, 2017	Location:	Mackinac Straits

1.0 Pipe Characteristics

Length (ft):	21120	Length (m):	6437
Diameter (in):	20	Diameter (m):	0.508
Surface Area (ft^2):	110584	Surface Area (m^2):	10274
Coating Type:	Coal Tar		
Coating Thickness:	Unknown	Max Design Depth:	Unknown

2.0 Recorded Pipe to Soil Potentials

SDL Identifier	Reading #	IR Free P/S Potentials (mV)		ΔV (mV)	ΔV_{avg}/cell (mV)	ΔV_{avg} (mV)
		$V_{as\ found}$	V_{test}			
1	A	-1.014	-1.062	0.048	0.04	0.031
	B	-0.965	-0.989	0.024		
2	A	-1.096	-1.143	0.047	0.04	
	B	-1.087	-1.115	0.028		
3	A	-1.109	-1.13	0.021	0.04	
	B	-1.115	-1.165	0.05		
4	A	-1.089	-1.118	0.029	0.03	
	B	-1.112	-1.148	0.036		
5	A	-1.116	-1.133	0.017	0.01	
	B	-1.151	-1.162	0.011		

3.0 Recorded Test Currents

Current #1, I_1 (mA)	Current #2 , I_2 (mA)	Difference in Current (mA)
100	640	540

ENBDNR0004563

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Client:	Enbridge Energy	Project:	Line 5 Straits CP Testing
Technician:	Cole Lundgren	Line:	Line 5
Date:	June 15th, 2017	Location:	Mackinac Straits

4.0 Calculation of Current Requirement to Achieve 100mV of shift

Calculated current requirement to achieve 100mV of polarization (mA)	1740

Signed,

Alex Ristow

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Current Requirement Measurements - West Segment

LAKE SUPERIOR CONSULTING

Client:	Enbridge Energy	Project:	Line 5 Straits CP Testing
Technician:	Ryan Swor	Line:	Line 5
Date:	June 9th, 2017	Location:	Mackinac Straits

1.0 Pipe Characteristics

Length (ft):	21120	Length (m):	6437
Diameter (in):	20	Diameter (m):	0.508
Surface Area (ft^2):	110584.06	Surface Area (m^2):	10273.60
Coating Type:	Coal Tar		
Coating Thickness:	Unknown	Max Design Depth:	Unknown

2.0 Recorded Pipe to Soil Potentials

SDL Identifier	Reading #	IR Free P/S Potentials (mV)		ΔV (mV)	ΔV_{avg}/cell (mV)	ΔV_{avg} (mV)
		$V_{as\ found}$	V_{test}			
1	A	-1.083	-1.072	-0.011	-0.017	-0.017
	B	-1.097	-1.074	-0.023		
2	A	-1.176	-1.166	-0.010	-0.010	
	B	-1.171	-1.162	-0.009		
3	A	-1.196	-1.180	-0.016	-0.019	
	B	-1.182	-1.161	-0.021		
4	A	-1.113	-1.096	-0.017	-0.021	
	B	-1.200	-1.176	-0.024		
5	A	-1.198	-1.185	-0.013	-0.020	
	B	-1.227	-1.200	-0.027		

3.0 Recorded Test Currents

Current #1, I_1 (mA)	Current #2 , I_2 (mA)	Difference in Current (mA)
618	400	218

ENBDNR0004565

Client:	Enbridge Energy	Project:	Line 5 Straits CP Testing
Technician:	Ryan Swor	Line:	Line 5
Date:	June 9th, 2017	Location:	Mackinac Straits

4.0 Calculation of Current Requirement to Achieve 100mV of shift

Calculated current requirement to achieve 100mV of polarization (mA)	1300

Signed,

Alex Ristow

APPENDIX C - RECTIFIER INFLUENCE TESTING

LAKE SUPERIOR CONSULTING

West Leg

Operator	Latitude	Longitude	Rectifier ID	Location Description	DC Volts	DC Amps	Side A - Largest Amount of Influence (Volts)	Side B - Largest Amount of Influence (Volts)	Approximate SDL Location Influence Amount (Volts) A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	Date of Test	Time of Test (Eastern)
TransCanada	[redacted]		0.40	MP 0.4	39.48	12.35	-0.025	0.0	0.0	-0.025	-0.01	-0.005	-0.02	0.0	0.0	0.0	0.0	0.0	6/7/2017	19:06
TransCanada			7.07	MP 7.07	16.77	3.70	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6/8/2017	7:59
TransCanada			654.70	MP 654.7	48.58	7.58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6/7/2017	18:42
TransCanada			675.00	MP 675.0	19.88	15.06	-0.025	-0.01	0.0	-0.025	-0.01	0.0	-0.015	0.0	-0.01	0.0	0.0	0.0	6/7/2017	19:29
TransCanada			685.00	MP 685.0	42.20	10.40	-0.05	0.15	0.025	-0.05	-0.03	-0.01	-0.03	0.075	0.11	0.15	0.11	0.1	6/7/2017	19:10
TransCanada			689.00	MP 689.0	22.30	10.30	-0.01	0.01	0.0	-0.01	0.0	0.0	0.0	0.001	-0.01	0.01	0.01	0.01	6/7/2017	18:53
TransCanada			690.00	MP 690.0	29.40	9.16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6/7/2017	18:46
Enbridge			1444.00	Hog Island	25.30	4.63	0.01	0.01	0.0	0.01	0.01	0.0	0.005	0.0	0.01	0.01	0.01	0.01	6/7/2017	18:15
Enbridge			1451.00	Cut River	36.37	2.50	0.025	0.03	0.0	0.015	0.025	0.025	0.015	0.015	0.03	0.025	0.02	0.025	6/7/2017	18:50
Enbridge			1476.00	Straights station	6.32	5.70	0.55	0.2	0.2	0.5	0.55	0.3	0.4	0.1	0.19	0.2	0.2	0.195	6/7/2017	18:20
Enbridge			1479.00	Mackinaw station	30.10	13.00	0.25	1.5	0.14	0.25	0.25	0.2	0.25	1.5	1.4	1.05	1.1	0.75	6/7/2017	18:44
Enbridge			1498.00	Topinabee	10.12	11.05	0.1	0.14	0.05	0.075	0.1	0.075	0.1	0.07	0.125	0.14	0.12	0.115	6/7/2017	18:09
ATC			ATC	ATC Substation	26.5	11.4	-1.15	0.15	-0.175	-0.65	-0.85	-1.15	-0.85	0.045	0.1	0.13	0.15	0.15	6/8/2017	14:51

East Leg

Operator	Latitude	Longitude	Rectifier ID	Location Description	DC Volts	DC Amps	Side A - Largest Amount of Influence (Volts)	Side B - Largest Amount of Influence (Volts)	Approximate SDL Location Influence Amount (Volts) A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	Date of Test	Time of Test (Eastern)
TransCanada	[redacted]		0.40	MP 0.4	35.12	12.70	-0.01	0.02	0.0	0.0	0.01	-0.01	-0.01	0.0	0.0	0.0	0.005	0.02	6/14/2017	16:00
TransCanada			7.07	MP 7.07	16.54	3.70	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6/14/2017	15:51
TransCanada			654.70	MP 654.7	48.93	7.53	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6/14/2017	15:2
TransCanada			675.00	MP 675.0	19.50	15.90	-0.01	0.005	0.0	-0.005	-0.01	-0.01	-0.01	0.0	0.0	0.005	0.0	0.005	6/14/2017	15:18
TransCanada			685.00	MP 685.0	42.53	11.00	-0.05	0.2	-0.03	-0.03	-0.045	-0.05	-0.04	0.07	0.13	0.185	0.2	0.15	6/14/2017	16:0
TransCanada			689.00	MP 689.0	22.58	10.80	-0.01	0.01	0.0	0.0	-0.01	-0.01	-0.01	0.0	0.005	0.01	0.01	0.01	6/14/2017	15:4
TransCanada			690.00	MP 690.0	31.60	9.90	-0.02	0.01	0.0	-0.01	-0.02	-0.02	-0.01	0.0	0.005	0.01	0.01	0.0	6/14/2017	15:41
Enbridge			1444.00	Hog Island	23.70	4.48	0.45	0.13	0.3	0.45	0.45	0.4	0.35	0.05	0.07	0.12	0.13	0.12	6/14/2017	14:4
Enbridge			1451.00	Cut River	35.98	3.11	0.02	0.025	0.01	0.01	0.02	0.015	0.015	0.01	0.015	0.02	0.025	0.02	6/14/2017	15:3
Enbridge			1476.00	Straights station	7.07	5.07	0.55	0.15	0.3	0.55	0.55	0.51	0.375	0.05	0.085	0.12	0.15	0.12	6/14/2017	14:55
Enbridge			1479.00	Mackinaw station	30.27	13.52	0.35	1.9	0.15	0.21	0.35	0.35	0.25	1.675	1.3	1.9	1.25	0.8	6/14/2017	16:2
Enbridge			1498.00	Topinabee	11.08	11.10	0.13	0.13	0.07	0.09	0.13	0.12	0.1	0.05	0.06	0.11	0.13	0.12	6/14/2017	15:00
ATC			ATC	ATC Substation	26.2	11.4	-0.35	0.1	-0.15	-0.25	-0.3	-0.35	-0.3	0.04	0.05	0.1	0.0	0.0	6/15/2017	7:55

- East & West Leg, North & South Side

Operator	Latitude	Longitude	Rectifier ID	Location Description	Influence Amount (Volts)
TransCanada	[redacted]		0.40	MP 0.4	-0.025
TransCanada			7.07	MP 7.07	0
TransCanada			654.70	MP 654.7	0
TransCanada			675.00	MP 675.0	-0.025
TransCanada			685.00	MP 685.0	0.2
TransCanada			689.00	MP 689.0	-0.01
TransCanada			690.00	MP 690.0	-0.02
Enbridge			1444.00	Hog Island	0.45
Enbridge			1451.00	Cut River	0.03
Enbridge			1476.00	Straights station	0.55
Enbridge			1479.00	Mackinaw station	1.9
Enbridge			1498.00	Topinabee	0.14
ATC			ATC	ATC Substation	-1.15

Note:
A negative (-) number indicates an electronegative shift in potentials when the associated rectifier is turned OFF
Side "A" is the North Straits Station side
Side "B" is the Mackinaw Station side

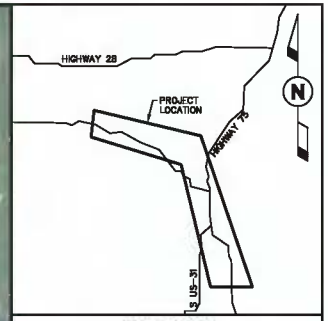
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ENBDNR0004568



[redacted]





LOCATION PLAN

OTSEGO COUNTY, MICHIGAN
S-21, T-30-N, R-01-W

NOTES:

1. RINGS DEPICT THE LARGEST PIPE TO SOIL CHANGE AMOUNT ON THE TEN TEST POINTS MONITORED ON THE EAST AND WEST LEGS DURING RECTIFIER INFLUENCE TESTING. RINGS DO NOT DEPICT DISTANCE OF RECTIFIER INFLUENCE.

LEGEND:

1. 1 RING = 50mV CHANGE IN P/S POTENTIAL
2. RED RINGS DEPICT AN ELECTROPOSITIVE SHIFT IN P/S POTENTIAL WHEN THE ASSOCIATED RECTIFIER IS ON
3. GREEN RINGS DEPICT AN ELECTRONEGATIVE SHIFT IN P/S POTENTIAL WHEN THE ASSOCIATED RECTIFIER IS ON

LARGEST INFLUENCE - EAST & WEST LEG, NORTH & SOUTH S

OPERATOR	LATITUDE	LONGITUDE	RECTIFIER ID	LOCATION DESCRIPTION
TRANSCANADA	[redacted]		0.4	MP 0.4
TRANSCANADA			7.07	MP 7.07
TRANSCANADA			654.7	MP 654.7
TRANSCANADA			675	MP 675.0
TRANSCANADA			685	MP 685.0
TRANSCANADA			689	MP 689.0
TRANSCANADA			690	MP 690.0
ENBRIDGE			1444	HOG ISLAND
ENBRIDGE			1451	CUT RIVER
ENBRIDGE			1478	STRAIGHTS STATION
ENBRIDGE			1479	MACKINAW STATION
ENBRIDGE			1498	TOPINABEE
ATC			ATC	ATC SUBSTATION

LAKE SUPERIOR CONSULTING
EXCELLENCE & INTEGRITY
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218.727.3141

NO	REVISION	BY DATE	APPR	APPR
A	ISSUED FOR REVIEW	LSC/JSS 08/21/17	LSC CCL	

ENBRIDGE

STRAITS OF MACKINAC

LINE 5

MACKINAC STRAITS HYDROTEST INFLUENCE TESTING

PROJECT:		
SCALE: 1"=700'	DATE: 08/20/17	DRAWN: LSC/JSS
CHECK: LSC/FAH	APPR: LSC/CCL	DATE:
APPR:		D-5-5.92-PLN03-A-160
APPR:		

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Rectifier Data Sheet

Project Information					
Date:	6/7/2016	**Client/Company Name:**	Enbridge		
Project Name & No.:	Line 5 Straits – CP Testing		00917200474	**Location:**	Mackinac Straits, MI

Rectifier Information			
Operator:	TransCanada	**Location Description:**	MP 0.4
Rectifier ID:	0.4	**GPS:**	[redacted]





Unit Information					
Manufacturer:	Universal	**Model:**	CSA/ASAI	**Type:**	Air Cooled
Serial Number:	001497	**Power:**	AC	**Phase:**	1
DC Voltage:	60	**DC Amps:**	40	**Ground Bed:**	Unknown

Rectifier Measurements					
DC Voltage:	39.48	**Shunt Rating:**	50/50	**mV Across Shunt:**	12.35
DC Amps:	12.35	**Course Tap:**	2	**Fine Tap:**	6

General Comments:

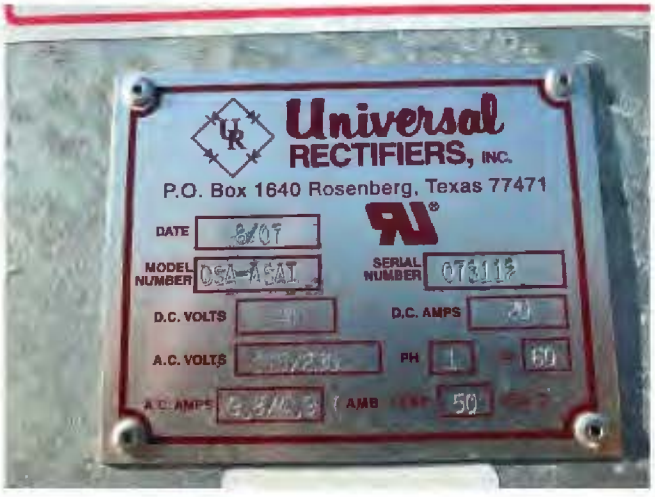
Were changes made to the original settings? **No** *(If yes see description below)*

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Rectifier Data Sheet

Project Information					
Date:	6/8/2016	**Client/Company Name:**	Enbridge		
Project Name & No.:	Line 5 Straits – CP Testing		00917200474	**Location:**	Mackinac Straits, MI

Rectifier Information			
Operator:	TransCanada	**Location Description:**	MP 7.07
Rectifier ID:	7.07	**GPS:**	[redacted]





Unit Information					
Manufacturer:	Universal	**Model:**	CSA-ASAI	**Type:**	Air Cooled
Serial Number:	73112	**Power:**	120/240	**Phase:**	1
DC Voltage:	40	**DC Amps:**	20	**Ground Bed:**	Unknown

Rectifier Measurements					
DC Voltage:	16.77	**Shunt Rating:**	50/50	**mV Across Shunt:**	3.7
DC Amps:	3.7	**Course Tap:**	7	**Fine Tap:**	6

General Comments:

Were changes made to the original settings? No *(If yes see description below)*

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Rectifier Data Sheet

Project Information					
Date:	6/7/2016	**Client/Company Name:**	Enbridge		
Project Name & No.:	Line 5 Straits – CP Testing		00917200474	**Location:**	Mackinac Straits, MI

Rectifier Information			
Operator:	TransCanada	**Location Description:**	MP 654.7
Rectifier ID:	654.7	**GPS:**	[redacted]





Unit Information					
Manufacturer:	Universal	**Model:**	CSA-ASAI	**Type:**	Air Cooled
Serial Number:	064002	**Power:**	AC	**Phase:**	1
DC Voltage:	60	**DC Amps:**	40	**Ground Bed:**	Unknown

Rectifier Measurements					
DC Voltage:	48.58	**Shunt Rating:**	50/50	**mV Across Shunt:**	7.48
DC Amps:	7.48	**Course Tap:**	2	**Fine Tap:**	5

General Comments:

Were changes made to the original settings? Yes or No *(If yes see description below)*

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Rectifier Data Sheet

Project Information					
Date:	6/7/2016	**Client/Company Name:**	Enbridge		
Project Name & No.:	Line 5 Straits – CP Testing		00917200474	**Location:**	Mackinac Straits, MI

Rectifier Information			
Operator:	TransCanada	**Location Description:**	MP 675.0
Rectifier ID:	675.0	**GPS:**	[redacted] [redacted]





Unit Information					
Manufacturer:	Universal	**Model:**	ASAI	**Type:**	Air Cooled
Serial Number:	151841	**Power:**	AC	**Phase:**	1
DC Voltage:	60	**DC Amps:**	40	**Ground Bed:**	Unknown

Rectifier Measurements					
DC Voltage:	19.88	**Shunt Rating:**	50/50	**mV Across Shunt:**	15.06
DC Amps:	15.06	**Course Tap:**	2	**Fine Tap:**	4

General Comments:

Were changes made to the original settings? Yes or No *(If yes see description below)*

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Rectifier Data Sheet

Project Information					
Date:	6/7/2016	**Client/Company Name:**	Enbridge		
Project Name & No.:	Line 5 Straits – CP Testing		00917200474	**Location:**	Mackinac Straits, MI

Rectifier Information			
Operator:	TransCanada	**Location Description:**	MP 685.0
Rectifier ID:	685.0	**GPS:**	[redacted]





Unit Information					
Manufacturer:	Universal	**Model:**	ASAI	**Type:**	Air Cooled
Serial Number:	151839	**Power:**	120/240	**Phase:**	1
DC Voltage:	60	**DC Amps:**	40	**Ground Bed:**	Unknown

Rectifier Measurements					
DC Voltage:	42.2	**Shunt Rating:**	50/50	**mV Across Shunt:**	10.4
DC Amps:	10.4	**Course Tap:**	4	**Fine Tap:**	1

General Comments:

Were changes made to the original settings? Yes or No *(If yes see description below)*

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Rectifier Data Sheet

Project Information					
Date:	6/7/2016	**Client/Company Name:**	Enbridge		
Project Name & No.:	Line 5 Straits – CP Testing		00917200474	**Location:**	Mackinac Straits, MI

Rectifier Information			
Operator:	TransCanada	**Location Description:**	MP 689.0
Rectifier ID:	689.0	**GPS:**	[redacted]





Unit Information					
Manufacturer:	Universal	**Model:**	ASAI	**Type:**	Air Cooled
Serial Number:	151840	**Power:**	120/240	**Phase:**	1
DC Voltage:	60	**DC Amps:**	40	**Ground Bed:**	Unknown

Rectifier Measurements					
DC Voltage:	22	**Shunt Rating:**	50/50	**mV Across Shunt:**	10.2
DC Amps:	10.2	**Course Tap:**	2	**Fine Tap:**	5

General Comments:

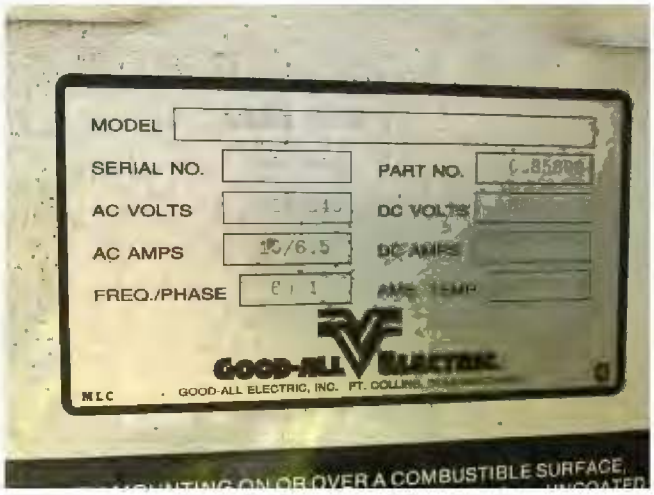
Were changes made to the original settings? Yes or No *(If yes see description below)*

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Rectifier Data Sheet

Project Information					
Date:	6/7/2016	**Client/Company Name:**	Enbridge		
Project Name & No.:	Line 5 Straits – CP Testing		00917200474	**Location:**	Mackinac Straits, MI

Rectifier Information			
Operator:	TransCanada	**Location Description:**	MP 690.0
Rectifier ID:	690.0	**GPS:**	[redacted]





Unit Information					
Manufacturer:	Goodall	**Model:**	JSAWSW-60-16 N	**Type:**	Air Cooled
Serial Number:	93J1009	**Power:**	120/240	**Phase:**	1
DC Voltage:	60	**DC Amps:**	16	**Ground Bed:**	Unknown

Rectifier Measurements					
DC Voltage:	28.3	**Shunt Rating:**	50/20	**mV Across Shunt:**	21.9
DC Amps:	6.76	**Course Tap:**	C	**Fine Tap:**	2

General Comments:

Were changes made to the original settings? Yes or No *(If yes see description below)*

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Rectifier Data Sheet

LAKE SUPERIOR CONSULTING

Project Information					
Date:	6/7/2016	**Client/Company Name:**	Enbridge		
Project Name & No.:	Line 5 Straits – CP Testing		00917200474	**Location:**	Mackinac Straits, MI

Rectifier Information			
Operator:	Enbridge	**Location Description:**	Hog Island
Rectifier ID:	1444	**GPS:**	[redacted]





Unit Information					
Manufacturer:		**Model:**		**Type:**	
Serial Number:		**Power:**	Solar	**Phase:**	
DC Voltage:		**DC Amps:**		**Ground Bed:**	DW

Rectifier Measurements					
DC Voltage:	25.53	**Shunt Rating:**	50/50	**mV Across Shunt:**	4.64
DC Amps:	4.63	**Course Tap:**	N/A	**Fine Tap:**	N/A

General Comments:

Were changes made to the original settings? Yes or No *(If yes see description below)*

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Rectifier Data Sheet

LAKE SUPERIOR CONSULTING

Project Information					
Date:	6/7/2016	**Client/Company Name:**	Enbridge		
Project Name & No.:	Line 5 Straits – CP Testing		00917200474	**Location:**	Mackinac Straits, MI

Rectifier Information			
Operator:	Enbridge	**Location Description:**	Cut River
Rectifier ID:	1451	**GPS:**	[redacted]





Unit Information					
Manufacturer:	Universal	**Model:**	ASAE	**Type:**	Air Cooled
Serial Number:	011611	**Power:**	AC	**Phase:**	1
DC Voltage:	60	**DC Amps:**	22	**Ground Bed:**	Unknown

Rectifier Measurements					
DC Voltage:	36.37	**Shunt Rating:**	50/25	**mV Across Shunt:**	5
DC Amps:	2.5	**Course Tap:**	3	**Fine Tap:**	6

General Comments:

Were changes made to the original settings? Yes or No *(If yes see description below)*

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Rectifier Data Sheet

Project Information					
Date:	6/7/2016	**Client/Company Name:**	Enbridge		
Project Name & No.:	Line 5 Straits – CP Testing		00917200474	**Location:**	Mackinac Straits, MI

Rectifier Information			
Operator:	Enbridge	**Location Description:**	North Straits Station
Rectifier ID:	1476	**GPS:**	[redacted]





Unit Information					
Manufacturer:	Universal	**Model:**	AAP	**Type:**	Air Cooled
Serial Number:	880279	**Power:**	120/240	**Phase:**	1
DC Voltage:	40	**DC Amps:**	12	**Ground Bed:**	Unknown

Rectifier Measurements					
DC Voltage:	6.12	**Shunt Rating:**	50/15	**mV Across Shunt:**	20.4
DC Amps:	6.12	**Course Tap:**	1	**Fine Tap:**	4

General Comments:

Were changes made to the original settings? Yes or No *(If yes see description below)*

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Rectifier Data Sheet

Project Information					
Date:	6/7/2016	**Client/Company Name:**	Enbridge		
Project Name & No.:	Line 5 Straits – CP Testing		00917200474	**Location:**	Mackinac Straits, MI

Rectifier Information			
Operator:	Enbridge	**Location Description:**	Mackinaw Station
Rectifier ID:	1479	**GPS:**	[redacted]





Unit Information					
Manufacturer:	Goodall	**Model:**	CSAWSA 60-34 N	**Type:**	Air Cooled
Serial Number:	77C2309	**Power:**	120/240	**Phase:**	1
DC Voltage:	60	**DC Amps:**	34	**Ground Bed:**	Unknown

Rectifier Measurements					
DC Voltage:	30.1	**Shunt Rating:**	50/40	**mV Across Shunt:**	16.2
DC Amps:	13	**Course Tap:**	2	**Fine Tap:**	4

General Comments:

Were changes made to the original settings? Yes or No *(If yes see description below)*

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Rectifier Data Sheet

Project Information					
Date:	6/7/2016	**Client/Company Name:**	Enbridge		
Project Name & No.:	Line 5 Straits – CP Testing		00917200474	**Location:**	Mackinac Straits, MI

Rectifier Information			
Operator:	Enbridge	**Location Description:**	Topinabee
Rectifier ID:	1498	**GPS:**	[redacted]





Unit Information					
Manufacturer:	Universal	**Model:**	ASAE	**Type:**	Air Cooled
Serial Number:	984083	**Power:**	120/240	**Phase:**	1
DC Voltage:	40	**DC Amps:**	20	**Ground Bed:**	Unknown

Rectifier Measurements					
DC Voltage:	10.05	**Shunt Rating:**	50/25	**mV Across Shunt:**	22.1
DC Amps:	11.05	**Course Tap:**	1	**Fine Tap:**	5

General Comments:

Were changes made to the original settings? Yes or No *(If yes see description below)*

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Rectifier Data Sheet

Project Information					
Date:	6/7/2016	**Client/Company Name:**	Enbridge		
Project Name & No.:	Line 5 Straits – CP Testing		00917200474	**Location:**	Mackinac Straits, MI

Rectifier Information			
Operator:	ATC	**Location Description:**	ATC Substation
Rectifier ID:	ATC	**GPS:**	[redacted]





Unit Information					
Manufacturer:	Rio	**Model:**	ACP	**Type:**	Air Cooled
Serial Number:	741147	**Power:**	120/240	**Phase:**	1
DC Voltage:	200	**DC Amps:**	50	**Ground Bed:**	Unknown

Rectifier Measurements					
DC Voltage:	26.5	**Shunt Rating:**	50/75	**mV Across Shunt:**	7.6
DC Amps:	11.4	**Course Tap:**	1	**Fine Tap:**	2

General Comments:

Were changes made to the original settings? Yes or No *(If yes see description below)*

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Appendix F – Cathodic Protection Measurements

Location	Feature	ON (-mV)	OFF (-mV)	Cell	Metal Contact?	CP Date	Comment
WAS-1	1	1300		Top	Yes	8/25/2017	Over/through deposit
WAS-1	1	1362		Bottom	Yes	8/25/2017	Over/through deposit
WAS-1	1	1277	808	Top	Yes	8/25/2017	Over/through deposit
WAS-1	1	1336	870	Bottom	Yes	8/25/2017	Over/through deposit
WAS-1	1	1277		Top	Yes	8/25/2017	Over/through deposit
WAS-1	1	1322		Bottom	Yes	8/25/2017	Over/through deposit
WAS-1	2	1274		Top	Yes	8/25/2017	Over/through deposit
WAS-1	2	1328	848	Bottom	Yes	8/25/2017	Over/through deposit
WAS-1	2	1283		Top	Yes	8/25/2017	Over/through deposit
WAS-1	2	1327	851	Bottom	Yes	8/25/2017	Over/through deposit
WAS-1	2	1375	803	Top	Yes	8/25/2017	Over/through deposit
WAS-1	2	1372	851	Bottom	Yes	8/25/2017	Over/through deposit
WAS-1	3	1340		Top	Yes	8/25/2017	Over/through deposit
WAS-1	3	1388		Bottom	Yes	8/25/2017	Over/through deposit
WAS-1	3	1342		Top	Yes	8/25/2017	Over/through deposit
WAS-1	3	1389		Bottom	Yes	8/25/2017	Over/through deposit
WAS-1	3	1343		Top	Yes	8/25/2017	Over/through deposit
WAS-1	3	1385		Bottom	Yes	8/25/2017	Over/through deposit
WAS-1	4	1384		Top	Yes	8/25/2017	Over/through deposit
WAS-1	4	1433		Bottom	Yes	8/25/2017	Over/through deposit
WAS-1	4	1390		Top	Yes	8/25/2017	Over/through deposit
WAS-1	4	1430		Bottom	Yes	8/25/2017	Over/through deposit
WAS-1	4	1380		Top	Yes	8/25/2017	Over/through deposit
WAS-1	4	1430		Bottom	Yes	8/25/2017	Over/through deposit
WAS-1	2	471		Top	NO	9/22/2017	On deposit
WAS-1	2	509		Bottom	NO	9/22/2017	On deposit
WAS-1	2	460	199	Top	NO	9/22/2017	On deposit
WAS-1	2	451	211	Bottom	NO	9/22/2017	On deposit
WAS-1	2	1344	855	Top	Yes	9/22/2017	Scraped to metal
WAS-1	2	1370	848	Bottom	Yes	9/22/2017	Scraped to metal
WAS-1	2	1070	704	Top	Yes	9/22/2017	After wire brushing
WAS-1	2	1086	724	Bottom	Yes	9/22/2017	After wire brushing
WAS-1	4	334	223	Top	NO	9/22/2017	On deposit
WAS-1	4	360	250	Bottom	NO	9/22/2017	On deposit
WAS-1	4	1374	954	Top	Yes	9/22/2017	Scraped to metal
WAS-1	4	1402	860	Bottom	Yes	9/22/2017	Scraped to metal
WAS-1	4	1188	777	Top	Yes	9/22/2017	After wire brushing
WAS-1	4	1203	782	Bottom	Yes	9/22/2017	After wire brushing
WAS-1	3	269	172	Top	NO	9/22/2017	On deposit
WAS-1	3	295	197	Bottom	NO	9/22/2017	On deposit
WAS-1	3	1382	846	Top	Yes	9/22/2017	Scraped to metal
WAS-1	3	1411	826	Bottom	Yes	9/22/2017	Scraped to metal
WAS-1	3	1221	768	Top	Yes	9/22/2017	After wire brushing
WAS-1	3	1239	779	Bottom	Yes	9/22/2017	After wire brushing
EAS-1	1	1676		Top	Yes	8/15/2017	Over/through deposit

Location	Feature	ON (-mV)	OFF (-mV)	Cell	Metal Contact?	CP Date	Comment
EAS-1	1	1683		Bottom	Yes	8/15/2017	Over/through deposit
EAS-1	1	1674		Top	Yes	8/15/2017	Over/through deposit
EAS-1	1	1681		Bottom	Yes	8/15/2017	Over/through deposit
EAS-1	1	1690		Top	Yes	8/15/2017	Over/through deposit
EAS-1	1	1674		Bottom	Yes	8/15/2017	Over/through deposit
EAS-1	1B	298		Top	NO	10/6/2017	Over/through deposit
EAS-1	1B	298		Bottom	NO	10/6/2017	Over/through deposit
EAS-1	1B	1616		Top	Yes	10/6/2017	After deposit removal
EAS-1	1B	1606		Bottom	Yes	10/6/2017	After deposit removal
EAS-1	1B	1394		Top	Yes	10/6/2017	After deposit removal
EAS-1	1B	1418		Bottom	Yes	10/6/2017	After deposit removal
EAS-1	1B	1390		Top	Yes	10/6/2017	After deposit removal
EAS-1	1B	1407		Bottom	Yes	10/6/2017	After deposit removal
EAS-1	1C	277		Top	NO	10/6/2017	Over/through deposit
EAS-1	1C	279		Bottom	NO	10/6/2017	Over/through deposit
EAS-1	1C	1569		Top	Yes	10/6/2017	After deposit removal
EAS-1	1C	1578		Bottom	Yes	10/6/2017	After deposit removal
EAS-1	1C		956	Top	Yes	10/6/2017	OFF reading, or poor pipe contact.
EAS-1	1C		998	Bottom	Yes	10/6/2017	OFF reading, or poor pipe contact.
EAS-1	1C		945	Top	Yes	10/6/2017	OFF reading, or poor pipe contact.
EAS-1	1C		960	Bottom	Yes	10/6/2017	OFF reading, or poor pipe contact.
EAS-1	1D	1582		Top	Yes	10/6/2017	Over/through deposit
EAS-1	1D	1602		Bottom	Yes	10/6/2017	Over/through deposit
EAS-1	1D		1133	Top	Yes	10/6/2017	After deposit removal
EAS-1	1D	1496		Bottom	Yes	10/6/2017	After deposit removal
EAS-1	1D	1437		Top	Yes	10/6/2017	After deposit removal
EAS-1	1D	1439		Bottom	Yes	10/6/2017	After deposit removal
EAS-1	1D	1435		Top	Yes	10/6/2017	After deposit removal (video)
EAS-1	1D		1127	Bottom	Yes	10/6/2017	After deposit removal (video)
EAS-1	1D	1471		Top	Yes	10/6/2017	After deposit removal
EAS-1	1D	1460		Bottom	Yes	10/6/2017	After deposit removal
EAS-1	1E	560		Top	NO	10/6/2017	Over/through deposit
EAS-1	1E	554		Bottom	NO	10/6/2017	Over/through deposit
EAS-1	1E	600		Top	NO	10/6/2017	After deposit removal
EAS-1	1E	591		Bottom	NO	10/6/2017	After deposit removal
EAS-1	1E	530		Top	NO	10/6/2017	After deposit removal
EAS-1	1E	501		Bottom	NO	10/6/2017	After deposit removal
EAS-1	1E	1406		Top	Yes	10/6/2017	After deposit removal
EAS-1	1E	1403		Bottom	Yes	10/6/2017	After deposit removal
EAS-1	1F	512		Top	NO	10/6/2017	Over/through deposit
EAS-1	1F	503		Bottom	NO	10/6/2017	Over/through deposit
EAS-1	1F	1669		Top	Yes	10/6/2017	After deposit removal
EAS-1	1F	1674		Bottom	Yes	10/6/2017	After deposit removal
EAS-1	1F	1478		Top	Yes	10/6/2017	
EAS-1	1F	1494		Bottom	Yes	10/6/2017	

Location	Feature	ON (-mV)	OFF (-mV)	Cell	Metal Contact?	CP Date	Comment
EAS-1	1F	1478		Top	Yes	10/6/2017	
EAS-1	1F	1494		Bottom	Yes	10/6/2017	
EAS-2	1	261		Top	NO	8/24/2017	No CP readings (DFT>70)
EAS-2	1	291		Bottom	NO	8/24/2017	No CP readings (DFT>70)
EAS-3	1	852		Top	Yes	8/29/2017	ON reading from dive video
EAS-3	1	886		Bottom	Yes	8/29/2017	
EAS-3	1	804		Top	Yes	8/29/2017	
EAS-3	1	842		Bottom	Yes	8/29/2017	
EAS-3	1	834		Top	Yes	8/29/2017	
EAS-3	1	875		Bottom	Yes	8/29/2017	
EAS-3	1	799	620	Top	Yes	8/29/2017	ON/OFF readings from dive video
EAS-3	1	836	666	Bottom	Yes	8/29/2017	ON/OFF readings from dive video
EAS-4	1	955		Top	Yes	8/30/2017	
EAS-4	1	991		Bottom	Yes	8/30/2017	
EAS-4	1	938		Top	Yes	8/30/2017	
EAS-4	1	965		Bottom	Yes	8/30/2017	
EAS-4	1	951		Top	Yes	8/30/2017	
EAS-4	1	979		Bottom	Yes	8/30/2017	
EAS-4	2	981		Top	Yes	8/30/2017	
EAS-4	2	1012		Bottom	Yes	8/30/2017	
EAS-4	2	907	682	Top	Yes	8/30/2017	OFF reading from dive video
EAS-4	2	933	705	Bottom	Yes	8/30/2017	OFF reading from dive video
EAS-4	2	944	701	Top	Yes	8/30/2017	OFF reading from dive video
EAS-4	2	974	722	Bottom	Yes	8/30/2017	OFF reading from dive video
EAOI-1		234		Top	NO	9/8/2017	
EAOI-1		281		Bottom	NO	9/8/2017	
EAOI-1		440		Top	NO	9/8/2017	
EAOI-1		316		Bottom	NO	9/8/2017	
EAOI-1		320		Top	NO	9/8/2017	
EAOI-1		260		Bottom	NO	9/8/2017	
EAOI-5		391		Top	NO	9/6/2017	
EAOI-5		326		Bottom	NO	9/6/2017	
EAOI-7	1	1155	849	Top	Yes	10/13/2017	Under deposit
EAOI-7	1	1158	841	Bottom	Yes	10/13/2017	Under deposit
EAOI-7	1	1188	832	Top	Yes	10/13/2017	Under deposit
EAOI-7	1	1101	815	Bottom	Yes	10/13/2017	Under deposit
EAOI-7	1	1085	832	Top	Yes	10/13/2017	Under deposit
EAOI-7	1	1081	814	Bottom	Yes	10/13/2017	Under deposit
EAOI-7	1A	1235	894	Top	Yes	10/13/2017	Under deposit
EAOI-7	1A	1238	837	Bottom	Yes	10/13/2017	Under deposit
EAOI-7	1A	1223	893	Top	Yes	10/13/2017	Under deposit
EAOI-7	1A	1269	836	Bottom	Yes	10/13/2017	Under deposit
EAOI-7	1A	1206	886	Top	Yes	10/13/2017	Under deposit
EAOI-7	1A	1195	869	Bottom	Yes	10/13/2017	Under deposit
EAOI-7	1B	1185	879	Top	Yes	10/13/2017	Under deposit

Location	Feature	ON (-mV)	OFF (-mV)	Cell	Metal Contact?	CP Date	Comment
EAOI-7	1B	1196	870	Bottom	Yes	10/13/2017	Under deposit
EAOI-7	1B	1281	918	Top	Yes	10/13/2017	Under deposit
EAOI-7	1B	1277	903	Bottom	Yes	10/13/2017	Under deposit
EAOI-7	1B	1278	932	Top	Yes	10/13/2017	Under deposit
EAOI-7	1B	1279	918	Bottom	Yes	10/13/2017	Under deposit
EAOI-7	1C	1511	1109	Top	Yes	10/12/2017	Under deposit
EAOI-7	1C	1528	1114	Bottom	Yes	10/12/2017	Under deposit
EAOI-7	1C	1485	1119	Top	Yes	10/12/2017	Under deposit
EAOI-7	1C	1511	1111	Bottom	Yes	10/12/2017	Under deposit
EAOI-7	1C	1505	1109	Top	Yes	10/12/2017	Under deposit
EAOI-7	1C	1515	1111	Bottom	Yes	10/12/2017	Under deposit
EAOI-7	1D	1359	1077	Top	Yes	10/12/2017	Under deposit
EAOI-7	1D	1370	1086	Bottom	Yes	10/12/2017	Under deposit
EAOI-7	1D	1355	1077	Top	Yes	10/12/2017	Under deposit
EAOI-7	1D	1367	1062	Bottom	Yes	10/12/2017	Under deposit
EAOI-7	1D	1365	1079	Top	Yes	10/12/2017	Under deposit
EAOI-7	1D	1373	1085	Bottom	Yes	10/12/2017	Under deposit
EAOI-7	1E	1174	908	Top	Yes	10/12/2017	Under deposit
EAOI-7	1E	1187	914	Bottom	Yes	10/12/2017	Under deposit
EAOI-7	1E	1205	914	Top	Yes	10/12/2017	Under deposit
EAOI-7	1E	1214	921	Bottom	Yes	10/12/2017	Under deposit
EAOI-7	1E	1186	921	Top	Yes	10/12/2017	Under deposit
EAOI-7	1E	1087	926	Bottom	Yes	10/12/2017	Under deposit
EAOI-7	1E	485	344	Top	NO	10/12/2017	Over deposit pH 11
EAOI-7	1E	484	347	Bottom	NO	10/12/2017	Over deposit pH 11
EAOI-7	1E	432	359	Top	NO	10/12/2017	Over deposit pH 11
EAOI-7	1E	437	364	Bottom	NO	10/12/2017	Over deposit pH 11
EAOI-7	1E			Top		10/12/2017	
EAOI-7	1E			Bottom		10/12/2017	
EAOI-7	1F	1568	1133	Top	Yes	10/12/2017	Under deposit
EAOI-7	1F	1570	1122	Bottom	Yes	10/12/2017	Under deposit
EAOI-7	1F	1561	1125	Top	Yes	10/12/2017	Under deposit
EAOI-7	1F	1570	1135	Bottom	Yes	10/12/2017	Under deposit
EAOI-7	1F	1552	1124	Top	Yes	10/12/2017	Under deposit
EAOI-7	1F	1558	1125	Bottom	Yes	10/12/2017	Under deposit
EAOI-7	1F	429	310	Top	NO	10/12/2017	Over deposit pH 12
EAOI-7	1F	437	314	Bottom	NO	10/12/2017	Over deposit pH 12
EAOI-7	1F	472	381	Top	NO	10/12/2017	Over deposit pH 12
EAOI-7	1F	478	384	Bottom	NO	10/12/2017	Over deposit pH 12
EAOI-7	1G	272	199	Top	NO	10/12/2017	Under deposit
EAOI-7	1G	254	211	Bottom	NO	10/12/2017	Under deposit
EAOI-7	1G	227	187	Top	NO	10/12/2017	Under deposit
EAOI-7	1G	184	189	Bottom	NO	10/12/2017	Under deposit
EAOI-7	1G	251	187	Top	NO	10/12/2017	Under deposit
EAOI-7	1G	248	185	Bottom	NO	10/12/2017	Under deposit

Location	Feature	ON (-mV)	OFF (-mV)	Cell	Metal Contact?	CP Date	Comment
EAOI-7	1H	1577	1091	Top	Yes	10/12/2017	Under deposit
EAOI-7	1H	1571	1079	Bottom	Yes	10/12/2017	Under deposit
EAOI-7	1H	1562	1071	Top	Yes	10/12/2017	Under deposit
EAOI-7	1H	1575	1074	Top	Yes	10/12/2017	Under deposit
EAOI-7	1H	1559	1053	Bottom	Yes	10/12/2017	Under deposit
EAOI-7	1I	1486	1044	Top	Yes	10/13/2017	Under deposit
EAOI-7	1I	1468	1032	Bottom	Yes	10/13/2017	Under deposit
EAOI-7	1I	1551	1063	Top	Yes	10/13/2017	Under deposit
EAOI-7	1I	1508	1055	Bottom	Yes	10/13/2017	Under deposit
EAOI-7	1I	1524	1070	Top	Yes	10/13/2017	Under deposit
EAOI-7	1I	1517	1054	Bottom	Yes	10/13/2017	Under deposit
EAOI-7	1J	270	237	Top	NO	10/12/2017	Under deposit
EAOI-7	1J	290	263	Bottom	NO	10/12/2017	Under deposit
EAOI-7	1J	252	222	Top	NO	10/12/2017	Under deposit
EAOI-7	1J	273	241	Bottom	NO	10/12/2017	Under deposit
EAOI-7	1J	401	299	Top	NO	10/12/2017	Under deposit
EAOI-7	1J	349	255	Bottom	NO	10/12/2017	Under deposit
EAOI-7	1K	311	301	Top	NO	10/12/2017	Under deposit
EAOI-7	1K	282	230	Bottom	NO	10/12/2017	Under deposit
EAOI-7	1K	276	238	Top	NO	10/12/2017	Under deposit
EAOI-7	1K	258	223	Bottom	NO	10/12/2017	Under deposit
EAOI-7	1K	276	234	Top	NO	10/12/2017	Under deposit
EAOI-7	1K	261	217	Bottom	NO	10/12/2017	Under deposit
EAOI-7	1L	278	239	Top	NO	10/12/2017	Under deposit
EAOI-7	1L	265	227	Bottom	NO	10/12/2017	Under deposit
EAOI-7	1L	267	235	Top	NO	10/12/2017	Under deposit
EAOI-7	1L	252	220	Bottom	NO	10/12/2017	Under deposit
EAOI-7	1L	280	239	Top	NO	10/12/2017	Under deposit
EAOI-7	1L	259	216	Bottom	NO	10/12/2017	Under deposit
EAOI-7	1M	434	420	Top	NO	10/12/2017	Under deposit
EAOI-7	1M	429	384	Bottom	NO	10/12/2017	Under deposit
EAOI-7	1M	407	408	Top	NO	10/12/2017	Under deposit
EAOI-7	1M	403	397	Bottom	NO	10/12/2017	Under deposit
EAOI-7	1M	446	437	Top	NO	10/12/2017	Under deposit
EAOI-7	1M	416	395	Bottom	NO	10/12/2017	Under deposit
EAOI-7	1N	1436	1011	Top	Yes	10/13/2017	Under deposit
EAOI-7	1N	1430	999	Bottom	Yes	10/13/2017	Under deposit
EAOI-7	1N	1025	785	Top	NO	10/13/2017	Invalid due to companion (high contact resistance)
EAOI-7	1N	1043	744	Bottom	NO	10/13/2017	Invalid due to companion (high contact resistance)
EAOI-7	1N	1401	963	Top	Yes	10/13/2017	Under deposit
EAOI-7	1N	1406	967	Bottom	Yes	10/13/2017	Under deposit
EAOI-7	1O	1291	939	Top	Yes	10/13/2017	Under deposit
EAOI-7	1O	1302	989	Bottom	Yes	10/13/2017	Under deposit

Location	Feature	ON (-mV)	OFF (-mV)	Cell	Metal Contact?	CP Date	Comment
EAOI-7	1O	1466	1052	Top	Yes	10/13/2017	Under deposit
EAOI-7	1O	1459	1036	Bottom	Yes	10/13/2017	Under deposit
EAOI-7	1O	1212	908	Top	Yes	10/13/2017	Under deposit
EAOI-7	1O	1218	895	Bottom	Yes	10/13/2017	Under deposit
DI-E-1	1	517		Top	NO	9/30/2017	Over/through deposit
DI-E-1	1	484		Bottom	NO	9/30/2017	Over/through deposit
DI-E-1	1	474		Top	NO	9/30/2017	Over/through deposit
DI-E-1	1	456		Bottom	NO	9/30/2017	Over/through deposit
DI-E-1	1	454		Top	NO	9/30/2017	Over/through deposit
DI-E-1	1	434		Bottom	NO	9/30/2017	Over/through deposit
DI-E-1	1	421		Top	NO	9/30/2017	Over/through deposit
DI-E-1	1	419		Bottom	NO	9/30/2017	Over/through deposit
DI-E-1	1	266		Top	NO	9/30/2017	Under deposit
DI-E-1	1	262		Bottom	NO	9/30/2017	Under deposit
DI-E-1	1	288		Top	NO	9/30/2017	Under deposit
DI-E-1	1	282		Bottom	NO	9/30/2017	Under deposit
DI-E-1	1	291		Top	NO	9/30/2017	Under deposit
DI-E-1	1	268		Bottom	NO	9/30/2017	Under deposit
DI-E-1	1	289		Top	NO	9/30/2017	Under deposit
DI-E-1	1	283		Bottom	NO	9/30/2017	Under deposit
DI-E-1	3	429		Top	NO	9/30/2017	Over/through deposit
DI-E-1	3	421		Bottom	NO	9/30/2017	Over/through deposit
DI-E-1	3	448		Top	NO	9/30/2017	Over/through deposit
DI-E-1	3	443		Bottom	NO	9/30/2017	Over/through deposit
DI-E-1	3	440		Top	NO	9/30/2017	Over/through deposit
DI-E-1	3	429		Bottom	NO	9/30/2017	Over/through deposit
DI-E-1	3	357		Top	NO	9/30/2017	Over/through deposit
DI-E-1	3	334		Bottom	NO	9/30/2017	Over/through deposit
DI-E-1	3	1775		Top	Yes	9/30/2017	Under deposit
DI-E-1	3	1651		Bottom	Yes	9/30/2017	Under deposit
DI-E-1	3	1645		Top	Yes	9/30/2017	Under deposit
DI-E-1	3	1665		Bottom	Yes	9/30/2017	Under deposit
DI-E-1	3	1651		Top	Yes	9/30/2017	Under deposit
DI-E-1	3	1642		Bottom	Yes	9/30/2017	Under deposit
DI-E-1	3	1640		Top	Yes	9/30/2017	Under deposit
DI-E-1	3	1633		Bottom	Yes	9/30/2017	Under deposit
DI-E-1	4	350		Top	NO	9/30/2017	Over/through deposit
DI-E-1	4	342		Bottom	NO	9/30/2017	Over/through deposit
DI-E-1	4	392		Top	NO	9/30/2017	Over/through deposit
DI-E-1	4	362		Bottom	NO	9/30/2017	Over/through deposit
DI-E-1	4	331		Top	NO	9/30/2017	Over/through deposit
DI-E-1	4	323		Bottom	NO	9/30/2017	Over/through deposit
DI-E-1	4	576		Top	NO	9/30/2017	Under deposit
DI-E-1	4	561		Bottom	NO	9/30/2017	Under deposit
DI-E-1	4	605		Top	NO	9/30/2017	Under deposit

Location	Feature	ON (-mV)	OFF (-mV)	Cell	Metal Contact?	CP Date	Comment
DI-E-1	4	587		Bottom	NO	9/30/2017	Under deposit
DI-E-1	4	1335		Top	Yes	9/30/2017	Under deposit
DI-E-1	4		907	Bottom	Yes	9/30/2017	Under deposit; 907 reading either OFF or high resistance
DI-E-1	4	1640		Top	Yes	9/30/2017	Under deposit
DI-E-1	4	1638		Bottom	Yes	9/30/2017	Under deposit
DI-E-1	5	292		Top	NO	9/30/2017	Over/through deposit
DI-E-1	5	285		Bottom	NO	9/30/2017	Over/through deposit
DI-E-1	5	1689		Top	Yes	9/30/2017	Under deposit
DI-E-1	5	1692		Bottom	Yes	9/30/2017	Under deposit
DI-E-1	5	1819		Top	Yes	9/30/2017	Under deposit
DI-E-1	5	1681		Bottom	Yes	9/30/2017	Under deposit
DI-E-2	1	1608		Top	Yes	10/1/2017	Over/through deposit
DI-E-2	1	1615		Bottom	Yes	10/1/2017	Over/through deposit
DI-E-2	1	1611		Top	Yes	10/1/2017	Over/through deposit
DI-E-2	1	1615		Bottom	Yes	10/1/2017	Over/through deposit
DI-E-2	1	1522		Top	Yes	10/1/2017	Under deposit
DI-E-2	1	1438		Bottom	Yes	10/1/2017	Under deposit
DI-E-2	1	1465		Top	Yes	10/1/2017	Under deposit
DI-E-2	1	1400		Bottom	Yes	10/1/2017	Under deposit
DI-E-2	2	565		Top	NO	10/1/2017	Over/through deposit
DI-E-2	2	557		Bottom	NO	10/1/2017	Over/through deposit
DI-E-2	2	370		Top	NO	10/1/2017	Over/through deposit
DI-E-2	2	372		Bottom	NO	10/1/2017	Over/through deposit
DI-E-2	2	404		Top	NO	10/1/2017	Over/through deposit
DI-E-2	2	396		Bottom	NO	10/1/2017	Over/through deposit
DI-E-2	2	1500		Top	Yes	10/1/2017	Under deposit
DI-E-2	2	1496		Bottom	Yes	10/1/2017	Under deposit
DI-E-2	2	1519		Top	Yes	10/1/2017	Under deposit
DI-E-2	2	1515		Bottom	Yes	10/1/2017	Under deposit
DI-E-2	2	1540		Top	Yes	10/1/2017	Under deposit
DI-E-2	2	1535		Bottom	Yes	10/1/2017	Under deposit
DI-E-2	3	320		Top	NO	10/1/2017	Over/through deposit
DI-E-2	3	321		Bottom	NO	10/1/2017	Over/through deposit
DI-E-2	3	310		Top	NO	10/1/2017	Over/through deposit
DI-E-2	3	313		Bottom	NO	10/1/2017	Over/through deposit
DI-E-2	3	261		Top	NO	10/1/2017	Under deposit
DI-E-2	3	265		Bottom	NO	10/1/2017	Under deposit
DI-E-2	3	275		Top	NO	10/1/2017	Under deposit
DI-E-2	3	267		Bottom	NO	10/1/2017	Under deposit
DI-E-2	4	268		Top	NO	10/1/2017	Over/through deposit
DI-E-2	4	259		Bottom	NO	10/1/2017	Over/through deposit
DI-E-2	4	274		Top	NO	10/1/2017	Over/through deposit
DI-E-2	4	274		Bottom	NO	10/1/2017	Over/through deposit
DI-E-2	4	253		Top	NO	10/1/2017	Under deposit

Location	Feature	ON (-mV)	OFF (-mV)	Cell	Metal Contact?	CP Date	Comment
DI-E-2	4	248		Bottom	NO	10/1/2017	Under deposit
DI-E-2	4	334		Top	NO	10/1/2017	Under deposit
DI-E-2	4	327		Bottom	NO	10/1/2017	Under deposit
DI-E-2	5	198		Top	NO	10/1/2017	Over/through deposit
DI-E-2	5	196		Bottom	NO	10/1/2017	Over/through deposit
DI-E-2	5	251		Top	NO	10/1/2017	Over/through deposit
DI-E-2	5	248		Bottom	NO	10/1/2017	Over/through deposit
DI-E-2	5	245		Top	NO	10/1/2017	Over/through deposit
DI-E-2	5	231		Bottom	NO	10/1/2017	Over/through deposit
DI-E-2	5	400		Top	NO	10/1/2017	Under deposit
DI-E-2	5	381		Bottom	NO	10/1/2017	Under deposit
DI-E-2	5	1598		Top	Yes	10/1/2017	Under deposit
DI-E-2	5	1577		Bottom	Yes	10/1/2017	Under deposit
DI-E-2	5	255		Top	NO	10/1/2017	Under deposit
DI-E-2	5	247		Bottom	NO	10/1/2017	Under deposit
DI-E-5	2	312		Top	NO	10/1/2017	Over/through deposit
DI-E-5	2	306		Bottom	NO	10/1/2017	Over/through deposit
DI-E-5	2	410		Top	NO	10/1/2017	Over/through deposit
DI-E-5	2	391		Bottom	NO	10/1/2017	Over/through deposit
DI-E-5	2	1592		Top	Yes	10/1/2017	Under deposit
DI-E-5	2	1585		Bottom	Yes	10/1/2017	Under deposit
DI-E-5	2	1702		Top	Yes	10/1/2017	Under deposit
DI-E-5	2	1604		Bottom	Yes	10/1/2017	Under deposit
DI-E-5	3	350		Top	NO	10/1/2017	Over/through deposit
DI-E-5	3	348		Bottom	NO	10/1/2017	Over/through deposit
DI-E-5	3	1630		Top	Yes	10/1/2017	Under deposit
DI-E-5	3	1681		Bottom	Yes	10/1/2017	Under deposit
DI-E-7	1	504		Top	NO	10/2/2017	Over/through deposit
DI-E-7	1	520		Bottom	NO	10/2/2017	Over/through deposit
DI-E-7	1	560		Top	NO	10/2/2017	Over/through deposit
DI-E-7	1	590		Bottom	NO	10/2/2017	Over/through deposit
DI-E-7	1	1480		Top	Yes	10/2/2017	Under deposit
DI-E-7	1	1500		Bottom	Yes	10/2/2017	Under deposit
DI-E-7	1	1460		Top	Yes	10/2/2017	Under deposit
DI-E-7	1	1485		Bottom	Yes	10/2/2017	Under deposit
DI-E-7	2	415		Top	NO	10/2/2017	Over/through deposit
DI-E-7	2	400		Bottom	NO	10/2/2017	Over/through deposit
DI-E-7	2	472		Top	NO	10/2/2017	Over/through deposit
DI-E-7	2	440		Bottom	NO	10/2/2017	Over/through deposit
DI-E-7	2	1606		Top	Yes	10/2/2017	Under deposit
DI-E-7	2	1608		Bottom	Yes	10/2/2017	Under deposit
DI-E-7	2	1604		Top	Yes	10/2/2017	Under deposit
DI-E-7	2	1609		Bottom	Yes	10/2/2017	Under deposit
DI-E-7	3	360		Top	NO	10/2/2017	Over/through deposit
DI-E-7	3	370		Bottom	NO	10/2/2017	Over/through deposit

Location	Feature	ON (-mV)	OFF (-mV)	Cell	Metal Contact?	CP Date	Comment
DI-E-7	3	1587		Top	Yes	10/2/2017	Under deposit
DI-E-7	3	1597		Bottom	Yes	10/2/2017	Under deposit
DI-E-7	4	330		Top	NO	10/2/2017	Over/through deposit
DI-E-7	4	340		Bottom	NO	10/2/2017	Over/through deposit
DI-E-7	4	340		Top	NO	10/2/2017	Over/through deposit
DI-E-7	4	344		Bottom	NO	10/2/2017	Over/through deposit
DI-E-7	4	200		Top	NO	10/2/2017	Under deposit
DI-E-7	4	202		Bottom	NO	10/2/2017	Under deposit
DI-E-7	4	198		Top	NO	10/2/2017	Under deposit
DI-E-7	4	202		Bottom	NO	10/2/2017	Under deposit
DI-E-10	2	192		Top	NO	10/2/2017	Over/through deposit
DI-E-10	2	200		Bottom	NO	10/2/2017	Over/through deposit
DI-E-10	2	178		Top	NO	10/2/2017	Over/through deposit
DI-E-10	2	189		Bottom	NO	10/2/2017	Over/through deposit
DI-E-10	2	1546		Top	Yes	10/2/2017	Under deposit
DI-E-10	2	1559		Bottom	Yes	10/2/2017	Under deposit
DI-E-10	2	1553		Top	Yes	10/2/2017	Under deposit
DI-E-10	2	1556		Bottom	Yes	10/2/2017	Under deposit
DI-E-10	3	199		Top	NO	10/2/2017	Over/through deposit
DI-E-10	3	209		Bottom	NO	10/2/2017	Over/through deposit
DI-E-10	3	200		Top	NO	10/2/2017	Over/through deposit
DI-E-10	3	206		Bottom	NO	10/2/2017	Over/through deposit
DI-E-10	3	272		Top	NO	10/2/2017	Under deposit
DI-E-10	3	282		Bottom	NO	10/2/2017	Under deposit
DI-E-10	3	285		Top	NO	10/2/2017	Under deposit
DI-E-10	3	291		Bottom	NO	10/2/2017	Under deposit
DI-E-10	3	1249	924	Top	Yes	11/2/2017	After deposit removal
DI-E-10	3	1236	912	Bottom	Yes	11/2/2017	After deposit removal
DI-E-10	4	161		Top	NO	10/2/2017	Over/through deposit
DI-E-10	4	168		Bottom	NO	10/2/2017	Over/through deposit
DI-E-10	4	204		Top	NO	10/2/2017	Over/through deposit
DI-E-10	4	206		Bottom	NO	10/2/2017	Over/through deposit
DI-E-10	4	208		Top	NO	10/2/2017	Under deposit
DI-E-10	4	212		Bottom	NO	10/2/2017	Under deposit
DI-E-10	4	205		Top	NO	10/2/2017	Under deposit
DI-E-10	4	213		Bottom	NO	10/2/2017	Under deposit
DI-E-10	4	1363	963	Top	Yes	11/2/2017	After deposit removal
DI-E-10	4	1352	937	Bottom	Yes	11/2/2017	After deposit removal
DI-E-10	5	199		Top	NO	10/3/2017	Over/through deposit
DI-E-10	5	205		Bottom	NO	10/3/2017	Over/through deposit
DI-E-10	5	195		Top	NO	10/3/2017	Over/through deposit
DI-E-10	5	201		Bottom	NO	10/3/2017	Over/through deposit
DI-E-10	5	1571		Top	Yes	10/3/2017	Under deposit
DI-E-10	5	1568		Bottom	Yes	10/3/2017	Under deposit
DI-E-10	5	1571		Top	Yes	10/3/2017	Under deposit

Location	Feature	ON (-mV)	OFF (-mV)	Cell	Metal Contact?	CP Date	Comment
DI-E-10	5	1575		Bottom	Yes	10/3/2017	Under deposit
DI-E-10	6	345		Top	NO	10/3/2017	Over/through deposit
DI-E-10	6	350		Bottom	NO	10/3/2017	Over/through deposit
DI-E-10	6	320		Top	NO	10/3/2017	Over/through deposit
DI-E-10	6	314		Bottom	NO	10/3/2017	Over/through deposit
DI-E-10	6	1569		Top	Yes	10/3/2017	Under deposit
DI-E-10	6	1568		Bottom	Yes	10/3/2017	Under deposit
DI-E-10	6	1559		Top	Yes	10/3/2017	Under deposit
DI-E-10	6	1563		Bottom	Yes	10/3/2017	Under deposit
DI-E-10	6	1751	1078	Top	Yes	11/2/2017	After deposit removal
DI-E-10	6	1738	1049	Bottom	Yes	11/2/2017	After deposit removal
DI-E-10	7	331		Top	NO	10/3/2017	Over/through deposit
DI-E-10	7	332		Bottom	NO	10/3/2017	Over/through deposit
DI-E-10	7	334		Top	NO	10/3/2017	Over/through deposit
DI-E-10	7	338		Bottom	NO	10/3/2017	Over/through deposit
DI-E-10	7	306		Top	NO	10/3/2017	Over/through deposit
DI-E-10	7	305		Bottom	NO	10/3/2017	Over/through deposit
DI-E-10	7	1475		Top	Yes	10/3/2017	Under deposit
DI-E-10	7	1476		Bottom	Yes	10/3/2017	Under deposit
DI-E-10	7	1470		Top	Yes	10/3/2017	Under deposit
DI-E-10	7	1472		Bottom	Yes	10/3/2017	Under deposit
DI-E-10	7	1476		Top	Yes	10/3/2017	Under deposit
DI-E-10	7	1485		Bottom	Yes	10/3/2017	Under deposit
DI-E-10	7	1578	954	Top	Yes	11/2/2017	Before wire brush
DI-E-10	7	1541	969	Bottom	Yes	11/2/2017	Before wire brush
DI-E-10	7	1692	1062	Top	Yes	11/2/2017	Before wire brush
DI-E-10	7	1682	1054	Bottom	Yes	11/2/2017	Before wire brush
DI-E-10	7	1641	1092	Top	Yes	11/2/2017	After wire brush
DI-E-10	7	1626	1089	Bottom	Yes	11/2/2017	After wire brush
DI-E-10	7	1642	1096	Top	Yes	11/2/2017	After wire brush
DI-E-10	7	1039	1076	Bottom	Yes	11/2/2017	After wire brush. NB: "ON" reading shown is clearly an "OFF"
DI-E-10	7	1683	1122	Top	Yes	11/2/2017	After wire brush
DI-E-10	7	1675	1115	Bottom	Yes	11/2/2017	After wire brush
DI-E-10	8	202		Top	NO	10/3/2017	Over/through deposit
DI-E-10	8	203		Bottom	NO	10/3/2017	Over/through deposit
DI-E-10	8	207		Top	NO	10/3/2017	Over/through deposit
DI-E-10	8	209		Bottom	NO	10/3/2017	Over/through deposit
DI-E-10	8	210		Top	NO	10/3/2017	Under deposit
DI-E-10	8	208		Bottom	NO	10/3/2017	Under deposit
DI-E-10	8	227		Top	NO	10/3/2017	Under deposit
DI-E-10	8	224		Bottom	NO	10/3/2017	Under deposit
DI-E-10	9	226		Top	NO	10/3/2017	Over/through deposit
DI-E-10	9	228		Bottom	NO	10/3/2017	Over/through deposit
DI-E-10	9	238		Top	NO	10/3/2017	Over/through deposit

Location	Feature	ON (-mV)	OFF (-mV)	Cell	Metal Contact?	CP Date	Comment
DI-E-10	9	239		Bottom	NO	10/3/2017	Over/through deposit
DI-E-10	9	248		Top	NO	10/3/2017	Over/through deposit
DI-E-10	9	251		Bottom	NO	10/3/2017	Over/through deposit
DI-E-10	9	210		Top	NO	10/3/2017	Under deposit
DI-E-10	9	212		Bottom	NO	10/3/2017	Under deposit
DI-E-10	9	215		Top	NO	10/3/2017	Under deposit
DI-E-10	9	214		Bottom	NO	10/3/2017	Under deposit
DI-E-10	9	257		Top	NO	10/3/2017	Under deposit
DI-E-10	9	258		Bottom	NO	10/3/2017	Under deposit
DI-E-10	9	289	289	Top	NO	11/2/2017	Before wire brush
DI-E-10	9	275	275	Bottom	NO	11/2/2017	Before wire brush
DI-E-10	9	338	279	Top	NO	11/2/2017	Before wire brush
DI-E-10	9	333	268	Bottom	NO	11/2/2017	Before wire brush
DI-E-10	9	1745	1045	Top	Yes	11/2/2017	After wire brush
DI-E-10	9	1733	1030	Bottom	Yes	11/2/2017	After wire brush
DI-E-10	9	1744	1048	Top	Yes	11/2/2017	After wire brush
DI-E-10	9	1735	1053	Bottom	Yes	11/2/2017	After wire brush
DI-E-10	10	226		Top	NO	10/3/2017	Over/through deposit
DI-E-10	10	231		Bottom	NO	10/3/2017	Over/through deposit
DI-E-10	10	255		Top	NO	10/3/2017	Over/through deposit
DI-E-10	10	258		Bottom	NO	10/3/2017	Over/through deposit
DI-E-10	10	195		Top	NO	10/3/2017	Over/through deposit
DI-E-10	10	198		Bottom	NO	10/3/2017	Over/through deposit
DI-E-10	10	471	348	Top	NO	11/2/2017	Before wire brush
DI-E-10	10	458	329	Bottom	NO	11/2/2017	Before wire brush
DI-E-10	10	494	305	Top	NO	11/2/2017	Before wire brush
DI-E-10	10	479	313	Bottom	NO	11/2/2017	Before wire brush
DI-E-10	10	1545	1053	Top	Yes	11/2/2017	After wire brush
DI-E-10	10	1536	1034	Bottom	Yes	11/2/2017	After wire brush
DI-E-10	10	1550	1047	Top	Yes	11/2/2017	After wire brush
DI-E-10	10	1538	1033	Bottom	Yes	11/2/2017	After wire brush
DI-E-10	10	1710	1035	Top	Yes	11/2/2017	After wire brush
DI-E-10	10	1702	1029	Bottom	Yes	11/2/2017	After wire brush
DI-E-10	11	1509		Top	Yes	10/3/2017	After deposit removal
DI-E-10	11	1511		Bottom	Yes	10/3/2017	After deposit removal
DI-E-10	11	1476		Top	Yes	10/3/2017	After deposit removal
DI-E-10	11	1479		Bottom	Yes	10/3/2017	After deposit removal
DI-E-10	11	1453		Top	Yes	10/3/2017	After deposit removal
DI-E-10	11	1457		Bottom	Yes	10/3/2017	After deposit removal
DI-E-10	12	374		Top	NO	10/3/2017	After deposit removal
DI-E-10	12	372		Bottom	NO	10/3/2017	After deposit removal
DI-E-10	12	1485		Top	Yes	10/3/2017	After deposit removal
DI-E-10	12	1487		Bottom	Yes	10/3/2017	After deposit removal
DI-E-10	12	405		Top	NO	10/3/2017	After deposit removal
DI-E-10	12	401		Bottom	NO	10/3/2017	After deposit removal

Location	Feature	ON (-mV)	OFF (-mV)	Cell	Metal Contact?	CP Date	Comment
DI-E-10	16	1532		Top	Yes	10/3/2017	Over/through deposit
DI-E-10	16	1540		Bottom	Yes	10/3/2017	Over/through deposit
DI-E-10	16	1525		Top	Yes	10/3/2017	Over/through deposit
DI-E-10	16	1519		Bottom	Yes	10/3/2017	Over/through deposit
DI-E-10	16	1549		Top	Yes	10/3/2017	Over/through deposit
DI-E-10	16	1547		Bottom	Yes	10/3/2017	Over/through deposit
DI-E-10	16	1554		Top	Yes	10/3/2017	After deposit removal
DI-E-10	16	1556		Bottom	Yes	10/3/2017	After deposit removal
DI-E-10	16	1502		Top	Yes	10/3/2017	After deposit removal
DI-E-10	16	1504		Bottom	Yes	10/3/2017	After deposit removal
DI-E-10	16	1511		Top	Yes	10/3/2017	After deposit removal
DI-E-10	16	1509		Bottom	Yes	10/3/2017	After deposit removal
DI-E-10	16	1663	1055	Top	Yes	11/2/2017	Before wire brush
DI-E-10	16	1664	1059	Bottom	Yes	11/2/2017	Before wire brush
DI-E-10	16	616	345	Top	NO	11/2/2017	Before wire brush
DI-E-10	16	595	330	Bottom	NO	11/2/2017	Before wire brush
DI-E-10	16	1610	1065	Top	Yes	11/2/2017	After wire brush
DI-E-10	16	1599	1064	Bottom	Yes	11/2/2017	After wire brush
DI-E-10	16	1598	1070	Top	Yes	11/2/2017	After wire brush
DI-E-10	16	1588	1085	Bottom	Yes	11/2/2017	After wire brush
DI-E-10	18	284		Top	NO	10/3/2017	Over/through deposit
DI-E-10	18	244		Bottom	NO	10/3/2017	Over/through deposit
DI-E-10	18	293		Top	NO	10/3/2017	Under deposit
DI-E-10	18	289		Bottom	NO	10/3/2017	Under deposit
DI-E-10	19	168		Top	NO	10/3/2017	Over/through deposit
DI-E-10	19	177		Bottom	NO	10/3/2017	Over/through deposit
DI-E-10	19	186		Top	NO	10/3/2017	Over/through deposit
DI-E-10	19	189		Bottom	NO	10/3/2017	Over/through deposit
DI-E-10	19	170		Top	NO	10/3/2017	Under deposit
DI-E-10	19	173		Bottom	NO	10/3/2017	Under deposit
DI-E-10	19	200		Top	NO	10/3/2017	Under deposit
DI-E-10	19	203		Bottom	NO	10/3/2017	Under deposit
DI-E-10	19	379	303	Top	NO	11/2/2017	Before wire brush
DI-E-10	19	362	292	Bottom	NO	11/2/2017	Before wire brush
DI-E-10	19	330	287	Top	NO	11/2/2017	Before wire brush
DI-E-10	19	315	274	Bottom	NO	11/2/2017	Before wire brush
DI-E-10	19	1723	1065	Top	Yes	11/2/2017	After wire brush
DI-E-10	19	1724	1048	Bottom	Yes	11/2/2017	After wire brush
DI-E-10	19	1721	1067	Top	Yes	11/2/2017	After wire brush
DI-E-10	19	1715	1066	Bottom	Yes	11/2/2017	After wire brush
DI-E-10	22	168		Top	NO	10/3/2017	Over/through deposit
DI-E-10	22	171		Bottom	NO	10/3/2017	Over/through deposit
DI-E-10	22	177		Top	NO	10/3/2017	Under deposit
DI-E-10	22	180		Bottom	NO	10/3/2017	Under deposit
DI-E-10	23	265		Top	NO	10/3/2017	Over/through deposit

Location	Feature	ON (-mV)	OFF (-mV)	Cell	Metal Contact?	CP Date	Comment
DI-E-10	23	266		Bottom	NO	10/3/2017	Over/through deposit
DI-E-10	23	221		Top	NO	10/3/2017	Over/through deposit
DI-E-10	23	224		Bottom	NO	10/3/2017	Over/through deposit
DI-E-10	23	216		Top	NO	10/3/2017	Over/through deposit
DI-E-10	23	218		Bottom	NO	10/3/2017	Over/through deposit
DI-E-10	23	1601		Top	Yes	10/3/2017	Under deposit
DI-E-10	23	1607		Bottom	Yes	10/3/2017	Under deposit
DI-E-10	23	347		Top	NO	10/3/2017	Under deposit
DI-E-10	23	347		Bottom	NO	10/3/2017	Under deposit
DI-E-10	23	300		Top	NO	10/3/2017	Under deposit
DI-E-10	23	303		Bottom	NO	10/3/2017	Under deposit
DI-E-10	24	1396		Top	Yes	10/3/2017	After deposit removal
DI-E-10	24	1398		Bottom	Yes	10/3/2017	After deposit removal
DI-E-10	24	1230		Top	Yes	10/3/2017	After deposit removal
DI-E-10	24	1275		Bottom	Yes	10/3/2017	After deposit removal
DI-E-10	24	1389		Top	Yes	10/3/2017	After deposit removal
DI-E-10	24	1383		Bottom	Yes	10/3/2017	After deposit removal
DI-E-10	25	270		Top	NO	10/3/2017	Over/through deposit
DI-E-10	25	274		Bottom	NO	10/3/2017	Over/through deposit
DI-E-10	25	227		Top	NO	10/3/2017	Over/through deposit
DI-E-10	25	230		Bottom	NO	10/3/2017	Over/through deposit
DI-E-10	25	196		Top	NO	10/3/2017	Under deposit
DI-E-10	25	200		Bottom	NO	10/3/2017	Under deposit
DI-E-10	25	1500		Top	Yes	10/3/2017	Under deposit
DI-E-10	25	1513		Bottom	Yes	10/3/2017	Under deposit
DI-E-10	26	179		Top	NO	10/3/2017	Over/through deposit
DI-E-10	26	181		Bottom	NO	10/3/2017	Over/through deposit
DI-E-10	27	173		Top	NO	10/3/2017	Over/through deposit
DI-E-10	27	175		Bottom	NO	10/3/2017	Over/through deposit
DI-E-10	27	165		Top	NO	10/3/2017	Over/through deposit
DI-E-10	27	168		Bottom	NO	10/3/2017	Over/through deposit
DI-E-10	28	265		Top	NO	10/3/2017	Over/through deposit
DI-E-10	28	265		Bottom	NO	10/3/2017	Over/through deposit
DI-E-13	2	1524		Top	Yes		
DI-E-13	2	1513		Bottom	Yes		
DI-E-13	2	1519		Top	Yes		
DI-E-13	2	1507		Bottom	Yes		
DI-E-13	2	1484		Top	Yes		
DI-E-13	2	1479		Bottom	Yes		
DI-E-13	9	1513		Top	Yes		
DI-E-13	9	1505		Bottom	Yes		
DI-E-13	9	1464		Top	Yes		
DI-E-13	9	1295		Bottom	Yes		
DI-E-13	9	1499		Top	Yes		
DI-E-13	9	1509		Bottom	Yes		

Location	Feature	ON (-mV)	OFF (-mV)	Cell	Metal Contact?	CP Date	Comment
DI-E-13	11	1511		Top	Yes		
DI-E-13	11	1507		Bottom	Yes		
DI-E-13	11	1493		Top	Yes		
DI-E-13	11	1486		Bottom	Yes		
DI-E-13	11	1473		Top	Yes		
DI-E-13	11	1457		Bottom	Yes		
DI-E-13	17	1501		Top	Yes		
DI-E-13	17	1505		Bottom	Yes		
DI-E-13	17	1475		Top	Yes		
DI-E-13	17	1482		Bottom	Yes		
DI-E-13	19	250		Top	NO		
DI-E-13	19	243		Bottom	NO		
DI-E-13	19	331		Top	NO		
DI-E-13	19	324		Bottom	NO		
DI-E-13	19	287		Top	NO		
DI-E-13	19	279		Bottom	NO		
DI-W-3	3	1653		Top	Yes		
DI-W-3	3	1636		Bottom	Yes		
DI-W-3	3	483		Top	NO		
DI-W-3	3	482		Bottom	NO		
DI-W-3	3	1583		Top	Yes		
DI-W-3	3	1553		Bottom	Yes		
DI-W-57	3	262		Top	NO		
DI-W-57	3	252		Bottom	NO		
DI-W-57	3	245		Top	NO		
DI-W-57	3	234		Bottom	NO		
DI-W-57	3	245		Top	NO		
DI-W-57	3	226		Bottom	NO		
DI-W-57	7	243		Top	NO		
DI-W-57	7	293		Bottom	NO		
DI-W-57	7	234		Top	NO		
DI-W-57	7	224		Bottom	NO		
DI-W-57	7	285		Top	NO	11/11/2017	
DI-W-57	7	275		Bottom	NO	11/11/2017	
DI-W-57	7	238		Top	NO	11/11/2017	
DI-W-57	7	228		Bottom	NO	11/11/2017	

Dive Inspection CP Measurements - Introduction:

Enbridge executed underwater CP measurements as per the BIWP and AIWP. These measurements were recorded using the Polatrak CP Gun, which is specifically designed for underwater work. This tool contains two independent precision voltmeters, two reference electrodes, and a sharp metal electrode that is used to make electrical contact with the pipe.

This was the first diver executed underwater CP survey in Enbridge history in the Straits. As a result, Enbridge made various procedural modifications aimed at improving the quality and value of the CP measurements as the BIWP and AIWP progressed. Some of the challenges experienced and procedural modifications which resulted are discussed below:

- **Pipe Contact Resistance:** As a pipe-to-soil potential measurement requires good metallic contact with the pipe, any contact resistance between the Polatrak CP Gun's metal tip and the pipe will introduce reading error. Measurements conducted early in the study demonstrated instability which was attributed to high resistance contact between the CP gun and the pipe metal. In the interest of minimizing dive inspection related coating damage, Enbridge instructed divers to use 'firm pressure' when taking CP readings and to avoid using excessive pressure that could cause coating damage. As a consequence, the CP potentials became relevant as an indicator of possible existence of bare pipe metal. Enbridge instituted a criterion of -600mV (300mV more electronegative than open water readings) as a preliminary indicator of bare metal – this was used to confirm diver's visual observations of coating damage or possible metal exposure. It should be noted that the -600mV CSE criterion does not independently verify good electrical contact with the pipe metal if other CP readings taken from the same feature or at the same dive site are substantially more electronegative.
- **Loss of Reference Cell calibration:** The Polatrak CP Gun contains two copper/copper sulphate electrodes (CSE) that are used as a voltage reference for the pipe CP measurements. These electrodes are comprised of a copper wire within a plastic barrel containing saturated copper sulphate solution that is electrolytically coupled to the environment through a porous plug. The calibration of the electrodes was found to drift after successive dives, and this was attributed to cyclical ingress and egress of lake water through the porous plug during successive dives: a process exacerbated if the reference cells contained air bubbles. In response, Enbridge instituted more frequent calibrations of the reference cells, and employed an electrolyte replenishment procedure intended to

minimize air in the reference cell. Some of the pipe-to-soil potentials recorded in the first few days of the project were affected by calibration error.

- **Rectifier Interruption Status:** The interpretation of CP potential readings requires consideration of voltage effects other than those across the structure to electrolyte boundary; the most common method of removing extraneous CP reading error is to simultaneously interrupt all current sources that affect CP levels on the structure of interest. Potential measurements recorded under the influence of operating cathodic protection current sources are referred to as "ON" readings; potentials recorded with current sources briefly deactivated are commonly called "OFF" or "Polarized" potentials. The most recent (2017) CP study discussed previously identified several rectifiers (both Enbridge and foreign) with influence on the Straits dual pipelines. To the best of the ability of Enbridge field staff, these rectifiers were simultaneously interrupted; however, some foreign CP sources were not consistently interrupted due to equipment failures and coordination issues. Enbridge regional CP staff summarized the status of rectifier interruption during each day of survey, and these have been considered in evaluating the CP potential obtained.
- **Special Investigation:** In order to explore the transient processes (time dependent polarization of freshly exposed metal), Enbridge dive personnel obtained additional cathodic protection readings on select dives. Where logistics and time permitted, CP readings were taken on select features before and after the power wire wheel brush was used to clean the calcareous deposit from the pipe surface. The intent of this exercise was to investigate how significantly the CP potentials were affected by the calcareous deposit, and to demonstrate the level of protection that would be immediately available to freshly exposed pipe metal surface. It was observed that completely removing calcareous deposit (using a power wire brush) could dramatically decrease the level of cathodic protection measured.

Dive Inspection Summaries:

WAS-1:

44 cathodic protection potential measurements were recorded from this location over several dives conducted on 24/08/2017 and 22/09/2017. Calcareous deposits and residual coating created high resistance between the pipe and the tip of the Polatrak CP Gun on 8 of these readings (which averaged -314 mV) and these have not been considered in this analysis.

The "ON" readings (potentials recorded with the CP systems operating) ranged from -1274 mV to -1433 mV CSE (average of -1358 mV), indicating substantial availability of cathodic protection current at this site. "OFF" readings (potentials obtained with most current sources briefly deactivated) indicated a range of -803 mV to -954 mV, with an average of -852 mV CSE. One foreign CP system was not interrupted at the time these readings were taken; and this fact is estimated to produce an electropositive shift in the "OFF" readings of 33 mV at this location[1]. The error corrected "OFF" readings (after considering the voltage gradient produced by the foreign influence) are estimated at -836 mV (minimum) with an average of -885 mV, indicating marginal to complete levels of cathodic protection. The CP data summary table in the report body reflects these error corrected data.

Additional CP measurements were obtained immediately after a hydraulic power wire brush was used to remove calcareous deposit and residual coating material (the cup-disk brush wheel used at this site exposed large areas of bare metal). The readings obtained before the wire brushing reflect residual chemical polarization from alkaline species contained by, or trapped within, any remaining calcareous deposit; the readings after wire brushing represent the 'worst case' condition of a newly developed coating holiday (with freshly exposed bare metal). Average "ON" and "OFF" readings taken after the wire brushing were -1167 mV and -755 mV CSE, respectively. These data clearly demonstrate that the removal of the calcareous deposit decreased the effective level of CP by nearly 100mV at this location.

As all of the recorded pipe potentials involved as least some disruption of the calcareous deposits to make electrical contact between the CP gun and the pipe wall, it is believed that all CP data recorded during the 2017 BIWP and AIWP dive inspections contains some electropositive error (the CP readings may indicate lower levels of cathodic protection than would have existed before the deposits were disrupted). In order to collect accurate CP measurements that represent the actual level of cathodic protection being received by the dual pipelines under normal operating conditions, it is recommended to leave these deposits intact for the duration of the survey. Alternatively, any CP survey performed after deposit removal should be delayed until the subsequent recoating program has been completed.

[1] The adjustments made to "OFF" potential readings recorded during the BIWP and AIWP are based upon rectifier influence testing performed by Lake Superior Consulting, and uses the methodology developed to compensate for transient interference of CIS data. Ref: "Practical Telluric Compensation for Pipeline Close Interval Survey", Paper #00741, Corrosion 2000 Symposia, NACE International, Houston TX (2000).

EAS-1:

48 cathodic protection potential measurements were recorded from this location over several dives conducted on 15/08/2017 and 10/06/2017. Calcareous deposits and residual coating created high resistance between the pipe and the tip of the Polatrak CP Gun on 12 of these readings (which averaged -458 mV) and these have not been considered in this analysis.

The "ON" readings observed ranged from -1390 mV to -1690 mV CSE (average of -1535 mV), indicating substantial availability of cathodic protection current at the site. "OFF" readings ranged from -945 mV to -1133 mV, with an average of -1019 mV CSE. These readings indicate complete cathodic protection in accordance with industry best practice and applicable regulations.

EAS-2:

2 cathodic protection potential measurements were recorded from this location during dives on 08/24/2017. Calcareous deposits and residual coating created high resistance between the pipe and the tip of the Polatrak CP Gun on all 2 of these readings (which averaged -276 mV). No valid "ON" or "OFF" CP readings could be obtained at this location.

EAS-3:

The coating damage at this site was created by a communication cable rub that occurred on August 26, 2017 during execution of the BIWP. This exposed metal consists of one feature with an area of 0.93 ft^2.

8 cathodic protection potential measurements were recorded from this location during dives conducted on 8/29/2017.

The "ON" readings observed ranged from -799 mV to -886 mV CSE (average of -841 mV), indicating lower availability of cathodic protection current at this site compared to other dive sites. "OFF" readings obtained from dive video analysis ranged from -620 mV to -666 mV, with an average of -643 mV CSE. One foreign CP system was not interrupted at the time these readings were taken; and this fact is estimated to produce an electropositive shift in the "OFF" readings of 163 mV at this location. The error corrected "OFF" readings (after considering the voltage gradient produced by the foreign influence) are estimated at -783 mV (minimum) with an average of -806 mV, indicating marginal levels of cathodic protection. The CP data summary table in the report body reflects these error corrected data.

While there are numerous possible sources of error in the collection of 'ON' and 'OFF' CP readings by divers (discussed previously), the marginal levels of CP observed at this site are believed to be a consequence of the relatively large size of the bare metal area in conjunction with the very short time between metal exposure and the CP survey. This short timeframe (~3 days) was inadequate for calcareous deposit to form (none was observed) and appears to be inadequate for cathodic polarization to achieve a steady state. Based on observations from other dive sites, it is expected that a calcareous coating would eventually grow to cover this feature, resulting in increased chemical polarization and complete cathodic protection.

EAS-4:

The coating damage at this site was created by a communication cable rub that occurred on August 26, 2017 during execution of the BIWP. This exposed area consists of one feature with an area of 1.64 ft^2

12 cathodic protection potential measurements were recorded from this location during dives conducted on 8/30/2017.

The "ON" readings observed ranged from -907 mV to -1012 mV CSE (average of -961 mV), indicating moderate availability of cathodic protection current at the site. "OFF" readings obtained from dive video analysis ranged from -682 mV to -772 mV, with an average of -703 mV CSE. One foreign CP system was not interrupted at the time these readings were taken; and this fact is estimated to produce an electropositive shift in the "OFF" readings of 162 mV at this location. The error corrected "OFF" readings (after considering the voltage gradient produced by the foreign influence) are estimated at -844 mV (minimum) with an average of -865 mV, indicating marginal to complete levels of cathodic protection. The CP data summary table in the report body reflects these error corrected data.

While there are numerous possible sources of error in the collection of 'ON' and 'OFF' CP readings by divers (discussed previously), the marginal levels of CP observed at this site are believed to be a consequence of the relatively large size of the bare metal area in conjunction with the very short time between metal exposure and the CP survey. This short timeframe (~4 days) was inadequate for calcareous deposit to form (none was observed) and appears to be inadequate for cathodic polarization to achieve a steady state. It is noted that the cathodic protection levels recorded at EAS-4 were measurably improved as compared to the smaller area of exposed metal at EAS-3. This may be attributable to the additional day of cathodic protection

that EAS-4 received. Based on observations from other dive sites, it is expected that a calcareous coating would eventually grow to cover this feature, resulting in a higher level of chemical polarization and complete cathodic protection.

EAOI-1:

6 cathodic protection potential measurements were recorded from this location during dives conducted on 9/8/2017. Calcareous deposits and residual coating created high resistance between the pipe and the tip of the Polatrak CP Gun on all 6 of these readings (which averaged -309mV). No valid "ON" or "OFF" readings could be obtained from this location.

EAOI-5:

2 cathodic protection potential measurements were recorded from this location over one dive conducted on 9/06/2017. Calcareous deposits and residual coating created high resistance between the pipe and the tip of the Polatrak CP Gun on all 2 of these readings (which averaged -359mV). No valid "ON" or "OFF" readings could be obtained from this location.

EAOI-7:

103 cathodic protection potential measurements were recorded from this location over several dives conducted on 10/12/2017 and 10/13/2017. Calcareous deposits and residual coating created high resistance between the pipe and the tip of the Polatrak CP Gun on 40 of these readings (which averaged -338 mV) and these have not been considered in this analysis.

The "ON" readings observed ranged from -1081 mV to -1577 mV CSE (average of -1362 mV), indicating substantial availability of cathodic protection current at the site. "OFF" readings ranged from -814 mV to -1135 mV, with an average of -992 mV CSE. The ATC rectifier was not interrupted at the time these readings were taken; and this fact is estimated to produce an electropositive shift in the "OFF" readings of 89 mV at this location. The error corrected "OFF" readings (after considering the voltage gradient produced by the ATC rectifier) are estimated at -903 mV (minimum) with an average of -1081 mV, indicating complete cathodic protection in accordance with industry best practice and all applicable regulations. The CP data summary table in the report body reflects these error corrected data.

DI-E1:

52 cathodic protection potential measurements were recorded from this location over several dives conducted on 9/30/2017. Calcareous deposits and residual coating created high resistance

between the pipe and the tip of the Polatrak CP Gun on 36 of these readings (which averaged -394 mV) and these have not been considered in this analysis.

The "ON" readings observed ranged from -1335 mV to -1819 mV CSE (average of -1653 mV), indicating substantial availability of cathodic protection current at the site. Only a single "OFF" reading of -907 mV CSE was identified, although this reading could also be the result of a high resistance contact. These readings indicate complete cathodic protection in accordance with industry best practice and all applicable regulations.

DI-E2:

48 cathodic protection potential measurements were recorded from this location over several dives conducted on 10/1/2017. Calcareous deposits and residual coating created high resistance between the pipe and the tip of the Polatrak CP Gun on 32 of these readings (which averaged -309 mV) and these have not been considered in this analysis.

The "ON" readings observed ranged from -1400 mV to -1615 mV CSE (average of -1535 mV), indicating substantial availability of cathodic protection current at the site. No "OFF" readings were collected at this site.

DI-E5:

12 cathodic protection potential measurements were recorded from this location during dives conducted on 10/26/2017. Calcareous deposits and residual coating created high resistance between the pipe and the tip of the Polatrak CP Gun on 6 of these readings (which averaged -353 mV) and these have not been considered in this analysis.

The "ON" readings observed ranged from -1585 mV to -1702 mV CSE (average of -1632 mV), indicating substantial availability of cathodic protection current at the site. No "OFF" readings were obtained from this location.

DI-E7:

28 cathodic protection potential measurements were recorded from this location over several dives conducted on 10/2/2017. Calcareous deposits and residual coating created high resistance between the pipe and the tip of the Polatrak CP Gun on 18 of these readings (which averaged -377 mV) and these have not been considered in this analysis.

The "ON" readings observed ranged from -1460 mV to -1609 mV CSE (average of -1554 mV), indicating substantial availability of cathodic protection current at the site. No "OFF" readings were obtained from this location.

DI-E10:

202 cathodic protection potential measurements were recorded from this location over several dives conducted on October 2, October 3, October 6, and November 2. Calcareous deposits and residual coating created high resistance between the pipe and the tip of the Polatrak CP Gun on 118 of these readings (which averaged -263 mV) and these have not been considered in this analysis.

"ON" readings observed ranged from -1039mV to -1751mV (average of -1545 mV), indicating substantial availability of cathodic protection current at the site. The operating status of a foreign CP system (which can only produce electropositive measurement error at this location) could not be confirmed. Notwithstanding the possibility of electropositive measurement error, the average "OFF" reading of -1043mV indicates excellent levels of cathodic polarization. Even the most electropositive "OFF" reading obtained (-912 mV CSE) indicates complete protection in accordance with industry best practice and all regulated requirements.

Additional testing was performed immediately before and after a wire brush was used to remove calcareous deposit. The readings before the wire brush are expected to reflect residual chemical polarization from alkaline species contained by, or trapped within, the calcareous deposit; the readings after wire brushing represent the 'worst case' condition of a newly developed coating holiday (with freshly exposed bare metal). As readings after wire brushing exceeded -1030mV, it was demonstrated that effective cathodic protection could be achieved on newly bared metal within 1-3 minutes at this location.

DI-E13:

28 cathodic protection potential measurements were recorded from this location over several dives conducted on 10/6/2017 and 10/9/2017. Calcareous deposits and residual coating created high resistance between the pipe and the tip of the Polatrak CP Gun on 6 of these readings (which averaged -287 mV) and these have not been considered in this analysis.

The "ON" readings observed ranged from -1295 mV to -1524 mV CSE (average of -1486 mV), indicating substantial availability of cathodic protection current at the site. No "OFF" readings were collected.

DI-W3:

6 cathodic protection potential measurements were recorded from this location over several dives conducted on 10/9/2017 and 10/13/2017. Calcareous deposits and residual coating created high resistance between the pipe and the tip of the Polatrak CP Gun on 2 of these readings (which averaged -483 mV) and these have not been considered in this analysis.

The "ON" readings observed ranged from -1553 mV to -1653 mV CSE (average of -1606 mV), indicating substantial availability of cathodic protection current at the site. No "OFF" readings were obtained at this location.

DI-W57:

14 cathodic protection potential measurements were recorded from this location during dives conducted on 11/11/2017. Calcareous deposits and residual coating created high resistance between the pipe and the tip of the Polatrak CP Gun on all 14 of these readings (which averaged -248 mV). Valid "ON" or "OFF" readings could not be obtained at this location.

Discussion:

Cathodic protection potentials recorded during the BIWP and AIWP dive inspections generally exhibited substantial availability of cathodic protection current – as indicated by current applied 'ON' CP readings. The average of all 'ON' readings was -1442 mV CSE, which is approximately 800mV more electronegative than the expected native potential of steel in freshwater. Moderate to high levels of cathodic polarization were also observed in the majority of data – as indicated by the current interrupted 'OFF' CP readings. The average of all 'OFF' readings was -968 mV CSE, which exceeds the requirements of industry best practice[i] and applicable regulations[ii].

It is noted that many of the CP readings obtained during the BIWP and AIWP CP survey were affected by measurement errors associated with equipment (rectifier interruption issues, CP gun calibration), procedures (long 'OFF' cycle depolarization, manual meter reading, and disruption of calcareous deposits), and problems associated with contact resistance.

The prevalence of calcareous deposits at the vast majority of dive sites provides clear indication of chemical polarization due to applied cathodic protection (ie. increase of local pH at the pipe surface). These calcareous deposits are highly resistive and impede the divers' ability to obtain cathodic protection levels without substantial disruption of the deposit. It is noted that errors due to contact resistance are always electropositive (tending to under represent actual CP levels).

Disruption or removal of calcareous deposits for the purposes of obtaining metal contact has the adverse consequence of disrupting or removing chemical polarization. The action of cleaning the metal surface to obtain good electrical contact has the potential to negate the intended purpose of collecting cathodic protection potentials – that is, to determine the levels of cathodic protection being achieved under normal operations. Some dive sites clearly demonstrated a significant electropositive shift (loss of cathodic polarization) when a wire brush was used to clean the metal surface. While the effect is temporary (as the calcareous deposit reforms), it underscores the beneficial impact of the intact deposits and highlights the importance of scheduling CP survey at times when bare pipe has not been intentionally created by deposit removal.

While some sites demonstrated marginal levels of cathodic polarization, the absence of any detectable external corrosion metal loss demonstrates that the cathodic protection being received by the dual pipelines has been successful at preventing external corrosion over the long history of the pipelines operation.

An ROV based close interval survey (CIS) of the Dual Pipelines is recommended in 2018; this form of survey will provide a substantially more comprehensive and reliable assessment of the cathodic protection levels being achieved throughout the Straits crossing than could be achieved during this project. The proposed CIS survey will include the following elements:

- Complete inspection of the entire ROV navigable pipe span (as opposed to a few discrete dive areas);
- Rigorous rectifier interruption management;
- Reliable electrical connection to the pipeline – to avoid contact resistance issues;
- A more reliable reference cell – to avoid contamination issues;
- Synchronized stationary dataloggers – to ensure the data has not been affected by transient phenomenon, and to permit transient error correction if required.

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[i] NACE SP0169-13, "Control of External Corrosion on Underground or Submerged Metallic Piping Systems", NACE International, Houston TX, (2013).

[ii] Title 49, CFR 195, "Transportation of Hazardous Liquids by Pipeline", Office of the Federal Register, Washington DC (2017).

ENBRIDGE

Appendix G – Report on Calcareous Deposits

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Study of Line 5 Pipeline
Mackinac Straits Crossing
The Role of Calcareous Deposits in Corrosion Control

1/15/2018

Prepared for:

Enbridge Energy, Limited Partnership

Prepared by:

Kevin C. Garrity, FNACE

Executive Vice President

Mears Group, Inc.

The Value of Excellence

Executive Summary

Mears Group, Inc. (Mears) has been retained by Enbridge Energy, Limited Partnership (Enbridge) to complete a study and analysis of the potential impact of calcareous deposits at coating flaws discovered at discrete locations along the Enbridge Line 5 crossing of Mackinac Straits and to opine regarding the need to remove the deposits and repair flaws (Holidays) in the pipeline coating.

This work was carried out under the direction of Kevin C. Garrity who has over forty years of experience in corrosion engineering and material science and the application of cathodic protection (CP) to buried pipelines and tanks, concrete structures, and marine structures.

The study has been completed through a review of available data and information and a compilation of applicable research and scientific information on calcareous deposit formation on pipelines subjected to cathodic protection.

The Enbridge pipeline Line 5 was installed in 1953 and is comprised of two 20-in. diameter pipelines that lie on the lakebed at a maximum water depth of 250 ft. (Figure 2.1), extending approximately 4.5 miles across the Straits of Mackinac. The two 20-in. diameter pipelines are separated by about 1,300 ft. Line 5 system transports approximately 540,000 barrels/day of crude oil and natural gas liquids (product) from Superior, Wisconsin to Sarnia, Ontario, Canada (645 mi.). The pipe is reported to have been constructed using heavy-wall pipe (0.812-in) and operates at a relatively low stress level (about 150 Psi, less than 25% of the pipe's capacity). The pipelines are reported to have an external Coal Tar Enamel protective coating (CTE) and fiber reinforced wrapping. The Operating temperature is reported to range between 43.2 °F and 83.5°F, with an average temperature of 57.9°F.

Recent analysis (by Enbridge) of select deposits removed during coating inspections has conclusively determined the material to be calcareous deposits primarily consisting of calcium carbonate and magnesium carbonate.

The information reviewed and analyzed to date indicates that the presence of calcareous deposits observed at coating flaws on Line 5 are a beneficial result of an effective external protective coating system and an effective cathodic protection system. The formation of calcium carbonate and magnesium carbonate at coating flaws results from the application of cathodic protection and serves to protect the underlying steel from corrosion at the elevated pH values consistent with the formation and adhesion of the deposits. Corrosion rates for carbon steel are significantly reduced at pH values associated with the application of effective CP and the development of calcium and magnesium carbonate at the pipe surface. This is further substantiated through the In-Line-Inspection (ILI) results which indicate no external metal loss anomalies in Line 5.

There is no technical basis for removing the calcareous deposits to affect repairs to underlying coating holidays. In fact, Industry practice has been to leave such deposits undisturbed recognizing the beneficial protective effects of calcareous deposits at coating flaws in conjunction with effective CP.

Most importantly, a review of In-Line Inspection data has shown that Line 5 is not currently experiencing external corrosion issues across that Straits and to remove the calcareous deposits may introduce unintended consequences that may adversely alter the current state of effective corrosion protection afforded Line 5. The retention of the calcareous deposits does not increase the risk of corrosion on Line 5.

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Abbreviations and Acronyms

CP	Cathodic protection
CTE	Coal Tar Enamel
CSE	Copper-Copper Sulfate Reference Electrode
SCE	Saturated calomel electrode
mV	Millivolt
V	Volt
cm	Centimeter
dm	Decimeter
m	Meter
km	Kilometer
ft	Feet
F	Fahrenheit
C	Celsius
Ω	Resistance in Ohms
Ω-cm	Resistivity in Ohms-centimeters
Sec	Second
min	Minute
pH	Potential of Hydrogen
M	Molar/Liter
E	Potential
mA	Milliamps
A	Ampere
psi	Pounds per square inch
Mpa	Mega pascal
ILI	In-Line Inspection
$-0.85V_{CSE}$	Reference to the SP0169 Standard criterion for steel at a polarized (Instant Off potential)

1 Introduction

Mears Group, Inc. has been retained by Enbridge Energy, Limited Partnership (Enbridge) to complete a study and analysis of the potential impact of calcareous deposits at coating flaws discovered at discrete locations along the Enbridge Line 5 crossing of Mackinac Straits and to opine regarding the need to remove the deposits and repair flaws (Holidays) in the pipeline coating. The study, the results of which are reported here, has been completed through a review of available data and information and a compilation of applicable research and scientific information on calcareous deposit formation on pipelines subjected to cathodic protection. The following information has been reviewed and relied upon in completing this study:

- Alternatives Analysis for the Straits Pipeline - Report by Dynamic Risk,
- 2013 ILI Report for Straits of Mackinac – East Leg (ENO-EMA) by GE,
- 2013 ILI Report for Straits of Mackinac – West Leg (WNO-WMA) by GE,
- 2016 Cathodic Protection Current Measurement Report– East Leg by BAKER HUGHES,
- 2016 Cathodic Protection Current Measurement Report – West Leg by BAKER HUGHES,
- 2017 ILI Report for Straits of Mackinac – East Leg (ENO-EMA) by BAKER HUGHES,
- 2017 ILI Report for Straits of Mackinac – West Leg (ENO-EMA) by BAKER HUGHES,
- 2003 Hanson Survey and Design Straits of Mackinac CIS Findings,
- 2016 Enbridge line 5 Annual CP Survey by Lake Superior Consulting,
- 2017 Enbridge line 5 – Mackinac Straits Cathodic Protection Testing by Lake Superior Consulting, and
- All documents listed in Bibliography.

A large body of scientific journals and treatises reporting on calcareous deposits in conjunction with cathodic protection relate to seawater exposure conditions. While this data and information has been relied upon, Mears has undertaken a study of thermodynamic behavior in fresh water reported in this document. The study confirms the applicability of the seawater scientific data to fresh water conditions similar to the Line 5 exposure conditions.

Specifically, Mears has examined the thermodynamic behavior, environment chemistry, chemistry of the calcium and magnesium carbonate as calcareous films/deposits, and the role of cathodic protection. This report offers a summary of findings, conclusions and recommendations regarding whether there is a need to remove such deposits and repair underlying coating flaws.

Our review has included an analysis of the results of In-Line-Inspection tool runs and the results of cathodic protection surveys.

The results of our study indicate that the calcareous deposit formation from the applied CP on Line 5 are both beneficial and sufficiently protective to preclude any efforts to remove the deposits and affect repairs to the underlying coating holidays. Moreover, to undertake such repairs that would require removal of the deposits may introduce unintended consequences that may adversely alter the current state of effective corrosion protection afforded Line 5.

2 Background of Pipeline and Environment

The Enbridge pipeline Line 5 was installed in 1953 and is comprised of two 20-in. diameter pipelines that lie on the lakebed at a maximum water depth of 250 ft. (Figure 2.1), extending approximately 4.5 miles across the Straits of Mackinac. The two 20-in. diameter pipelines are separated by about 1,300 ft. Line 5 system transports approximately 540,000 barrels/day of crude oil and natural gas liquids (product) from Superior, Wisconsin to Sarnia, Ontario, Canada (645 mi.). The pipe is reported to have been constructed using heavy-wall pipe (0.812-in) and operates at a relatively low stress level (about 150 Psi, less than 25% of the pipe's capacity). The pipelines are reported to have an external Coal Tar Enamel protective coating (CTE) and fiber reinforced wrapping. The Operating temperature is reported to range between 43.2 °F and 83.5°F, with an average temperature of 57.9°F.

Recent analysis (by Enbridge) of select deposits removed during coating inspections has conclusively determined the material to be calcareous deposits primarily consisting of calcium carbonate and magnesium carbonate.

2.1 Water Temperature

Water temperature of the pipe was obtained during the coating inspection performed between August 24th, 2017 and August 30th, 2017 as shown in Table 2.1.

Table 2.1: Reported Water Temperature Data

Date	Depth (ft.)/m	Temperature (°F/°C)
August 24th	[redacted]	61.2-61.9/16.2-16.6
August 29-30th	[redacted]	51.0-52.4/11-11.3
August 25th	[redacted]	49.9-51.7/9.9-10.9

2.2 Depth of Straits of Mackinac

The depth was measured west of the bridge at 84°45' west meridian and the profile was shown in Figure 2.1.

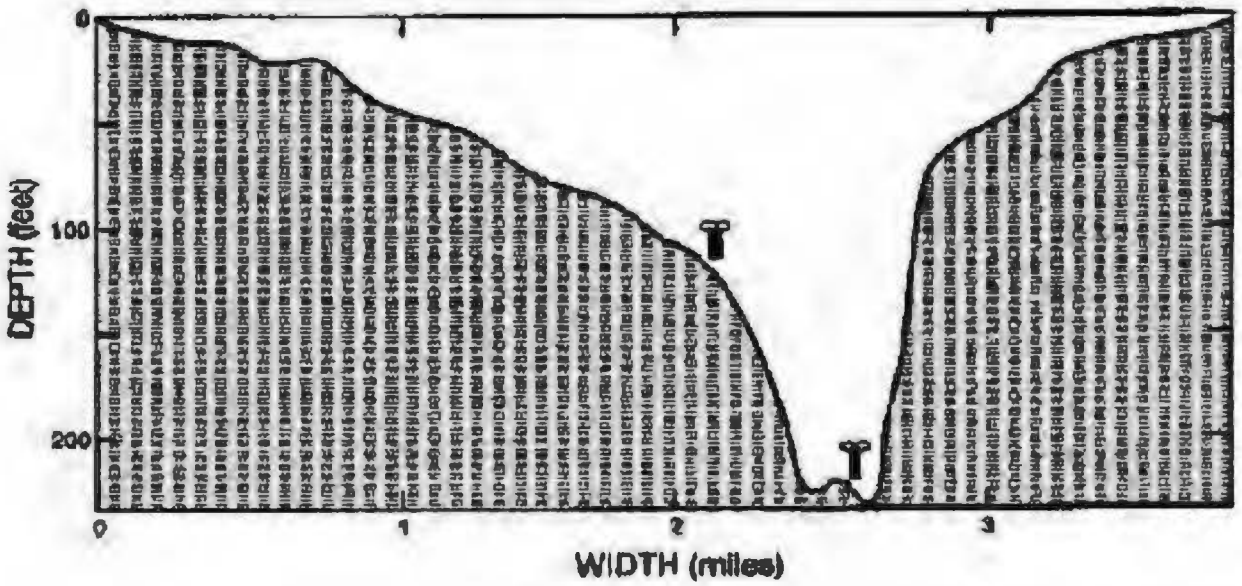


Figure 2.1: A cross section of Straits bathymetry in the Straits of Mackinac from the NOM Research Vessel Shenehon the currents meter is placed inside a spherical flotation collar above an acoustic release device and anchor[1].

2.3 Current Velocity

A review of published data indicates that Current in the Straits tend to reverse direction between eastward and westward flowing. Historical data on current velocity was found within 10 cm/s (0.32 ft/s) in 1976 as shown in Figure 2.2 below.

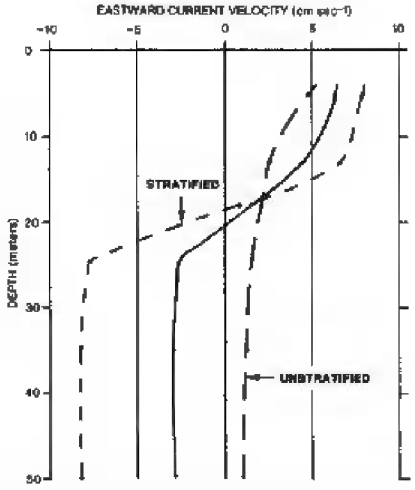


Figure 2.2: Vertical Profiles of Eastward Current Velocity. Solid Line is the Average for the Entire Recording Interval[2].

Current velocity was found within 60 cm/s (2 ft/s) in 1990 as shown below in Figure 2.3.

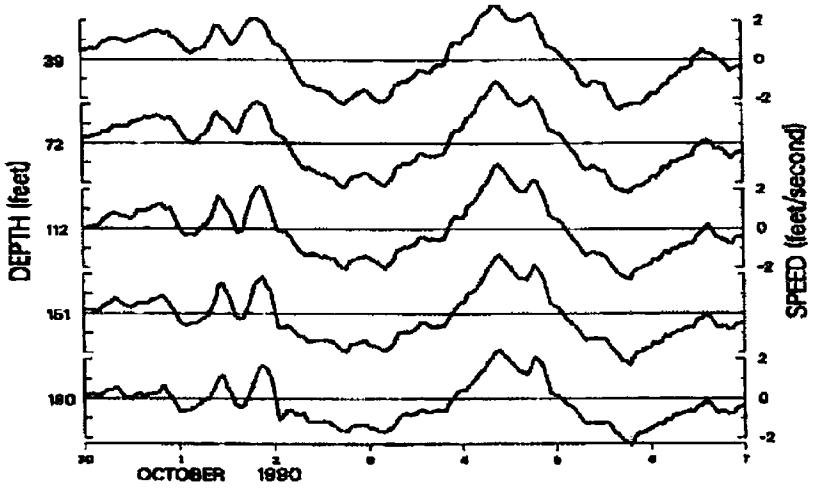


Figure 2.3: The east-directed component of current velocity through the Straits from Sept. 30 through Oct. 8, 1990. Positive speeds (above the horizontal axis) are east-directed currents, negative speeds are west-directed. Five measurement levels are shown, with the depth below the water surface for each level shown at the left of the recordings[1]

2.4 Environment pH

In chemistry, pH is a scale used to define the relative acidity or alkalinity of an environment. It is defined as the negative logarithm of the hydrogen ion concentration. A review of historical data shows that pH in the area of interest has been found to be relatively uniform on the Lake Michigan transect and on those areas south of Bois Blanc Island where pH values range from 8.3 - 8.5 from east to west. East and north of Bois Blanc Island, surface pH values ranged from 8.10 - 8.3 with water from the Detour Passage having a pH about 8.1. Subsurface values for pH ranged as low as 7.8 at Station 37 north of Bois Blanc Island, but in general most values were not lower than 8.0[3].

3 Formation of Calcium and Magnesium Carbonates

The beneficial role of calcareous deposit formations on coated and cathodically protected pipelines buried in soil has long been reported in the scientific literature. Calcium and magnesium carbonate form under cathodic and basic (Alkaline) conditions. When potentials are more electro positive than -1020 mV_{CSE} the dominating reduction reaction is oxygen and water:

$$O_2 + 2H_2O + 4e^- \rightarrow 4OH^-$$

When potentials are more electro-negative than -1170 mV_{CSE} the dominating reduction reaction is water hydrolysis:

$$2H_2O + 2e^- \rightarrow H_2 + 2OH^-$$

In either case, hydroxyl ions are generated and increase the pH at the metal / electrolyte interface. As the pH increases, insoluble salts form through the following chemical reactions:

Calcium Carbonate:

$$OH^- + HCO_3^- \rightarrow CO_3^{2-} + H_2O$$

$$Ca^{2+} + CO_3^{2-} \rightarrow CaCO_3$$

Carbonate in natural water is present as a part of a pH-dependent buffer system within which the following components are in a state of dynamic equilibrium[4]:

$$CO_2gas \leftrightharpoons CO_2sol \leftrightharpoons H_2CO_3sol \leftrightharpoons HCO_3^-sol \leftrightharpoons CO_3^{2-}sol \leftrightharpoons CO_3^{2-}sed$$

Magnesium Carbonate:

$$OH^- + HCO_3^- \rightarrow CO_3^{2-} + H_2O$$

$$Mg^{2+} + CO_3^{2-} \rightarrow MgCO_3$$

Another dominating chemical reaction taking place is magnesium hydroxide. This reaction is favored in solutions with a pH of 10 and higher.

Magnesium Hydroxide:

$$Mg^{2+} + 2OH^- \rightarrow Mg(OH)_2$$

4 Calcareous Deposit Formation in Fresh Water

As previously mentioned, much of the published scientific data is based upon seawater exposure conditions. In fresh and hard waters that contain higher concentrations of calcium and bicarbonate, the natural deposition of calcium carbonate on the steel surface provides an effective diffusion barrier to oxygen, greatly decreasing corrosion. In soft waters the corrosion rate is higher than in hard waters, but is still lower than theoretical maximum values because of the film formed on the surface and acts to some degree as a diffusion barrier[5].

4.1 Langelier Saturation Index

The Langelier Saturation Index is an equilibrium index utilizing thermodynamics to identify the degree of saturation of calcium carbonate in water. It is calculated by using the alkalinity, calcium concentration, total dissolved solids, pH, and water temperature. The Langelier saturation index approximates the base 10 logarithm of the calcite saturation level[6].

A negative Langelier saturation index number indicates calcium carbonate formation is unfavorable. A positive number and an increasing number indicates they are favorable in formation. Lake Michigan was found to have a Langelier Index number of approximately 0.5, Figure 4.1.

As the pH increases at the metal / electrolyte interface due to the application of CP, the Langelier saturation index number will increase.

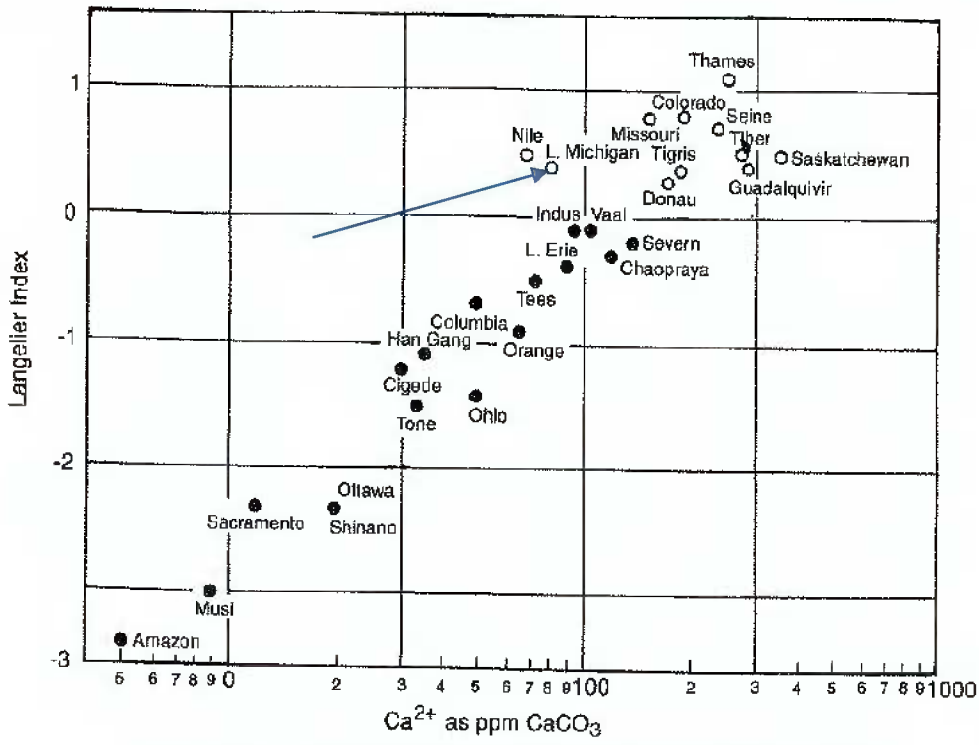


Figure 4.1: Langelier Index for rivers and bodies of water[5].

Key parameters in fresh water and sea water are shown in following Table 4.1[7,8,9,10,11].

Table 4.1: Langelier Saturation Index for Fresh Water, Sea Water and Great Lakes

Key Parameters	Fresh Water	Sea Water	Great Lakes
Resistivity	100 ohm-meter	10 ohm-meter	33 ohm-meter
Ca^{2+} concentration	1.3×10^{-3} M	1.0×10^{-2} M	0.9×10^{-3} M
Mg^{2+} concentration	3.5×10^{-4} M	2.5×10^{-3} M	0.47×10^{-3} M
CO_3^{2-} concentration	2.8×10^{-5} M	1.7×10^{-4} M	1.1×10^{-5} M
HCO_3^- concentration	2.1×10^{-3} M	1.9×10^{-3} M	1.8×10^{-3} M
pH at cathodic protection metal surface	10.75 – 11.25	10.75 – 11.25	10.75 – 11.25
$K_{(CaCO3)}$ Solubility Constant at 20 °C	3.8×10^{-9}	3.8×10^{-9}	3.8×10^{-9}
$K_{(Mg(OH)2)}$ Solubility Constant at 20 °C	6×10^{-10}	6×10^{-10}	6×10^{-10}
Temperature	20 °C	20 °C	20 °C
Langelier Saturation Index	1.1	1.8	0.8

Based on the concentrations of Ca^{2+}, Mg^{2+}, and CO_3^{2-}, pH, and solubility constants shown in Table 4.1, for pipelines with cathodic protection, calcareous deposits would thermodynamically be formed on the metal surface equally well in both fresh water and sea water. So, the chemistry difference between sea water and fresh water won't adversely affect the formation of calcareous deposits from a thermodynamic perspective. The thermodynamic calculation is based on the solubility constant at 20 °C. Water temperature of the pipe was found to be in the range from 9.9 °C to 16.7 °C during the coating inspection between August 24th, 2017 and August 30th, 2017. The Solubility of calcareous deposits also decreases with decreasing temperature, which results in a greater opportunity for calcareous deposits to form on the pipe. Therefore, from a thermodynamic perspective, the water temperature around pipe is not detrimental to the formation of calcareous deposits.

Based on the foregoing analysis, it can be reasonably concluded that the differences between fresh water and seawater are insignificant when compared to factors, such as velocity, temperature, time, and, metal surface pH as they affect the formation and properties of calcareous deposits. Therefore these critical factors on calcareous deposit formation in fresh water can reasonably be extrapolated by the seawater results.

5 Critical Factors That Affect the Formation and Properties of Calcareous Deposits

The formation and properties of calcareous deposits on metal surfaces are affected by variables such as cathodic potential, cathodic current densities, time, temperature, pressure, pH, chemistry, velocity, and substrate surface condition. Available published data have been reviewed and analyzed in support of this study in an effort to predict the impact of environmental and operating characteristics on the formation of calcareous deposits.

5.1 Cathodic potential/Cathodic current density

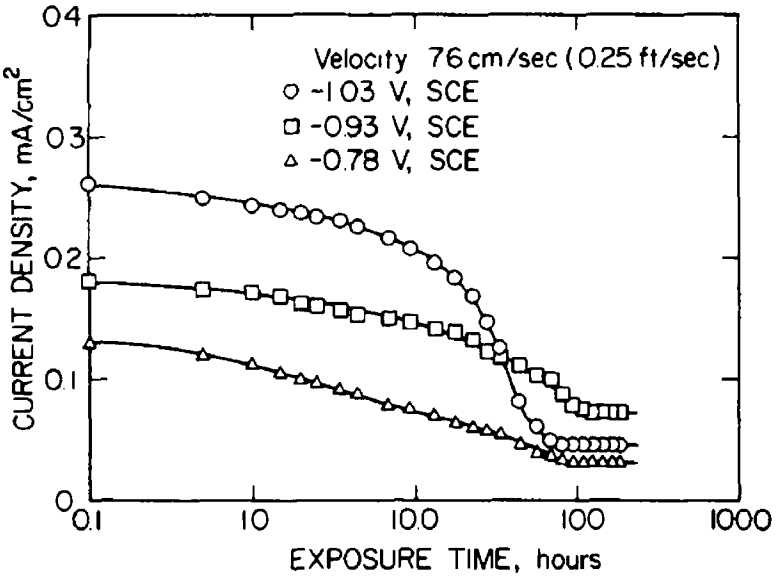


Figure 5.1: Decrease in current density for steel specimens cathodically polarized in seawater with time[8]

From a review of the data presented in Figure 5.1 the following conclusion are applicable:

- The current density reduction in Figure 5.1 is attributed to build up of calcareous deposits on the metal surface. It indicates that the formation of calcareous deposits restricts oxygen access to a steel surface.
- At the cathodic potential of -1.03 V_{SCE} in Figure 5.1, the current density has a significant drop indicating the calcareous deposits formed at lower potential likely have better corrosion protection to the metal substrate.

5.2 Temperature/Pressure

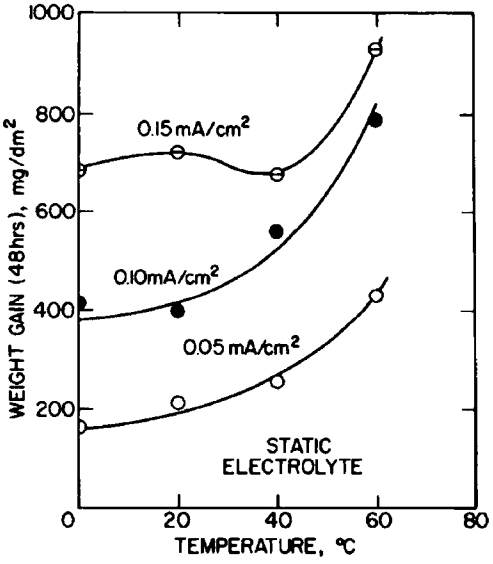


Figure 5.2: Weight gain (attributed to calcareous deposits) as a function of temperature and current densities[8]

- The fact that scaling occurs more rapidly at higher temperatures is well established as shown in Figure 5.2. The above data indicates that calcareous deposits form more readily on metal surfaces in warm waters than in cold, but as previously mentioned, thermodynamics are favorable for the formation of calcareous deposits in the Line 5 environment.
- Pressure as one factor influences the degree of saturation for various inorganic compounds in the calcareous deposits. The solubility of calcareous deposits increases with the water depth increasing, implying that a greater pH shift in the vicinity of the metal/electrolyte interface (higher cathodic current) may be necessary to form a given amount of calcareous deposits at greater depths than near the surface.

5.3 pH

- A Calcareous deposit is a complex compound of $CaCO_3$, $MgCO_3$, and $Mg(OH)_2$. Each has a critical pH value for precipitation. $CaCO_3$ precipitates when the pH exceeds 8.1. $MgCO_3$ precipitates when pH exceeds approximately 8.5. $Mg(OH)_2$ precipitates when pH exceeds 9.5[8].
- Calcareous deposits form under alkaline environments which is the case for the electrolyte adjacent to a cathodically polarized metal surface. Hartt[8] calculated the pH at the surface of cathodically protected steel in seawater would be ranging from 10.75 to 11.25. This pH range covers the pH threshold of calcareous deposit formation.

- From the following pH-E diagram of steel in Figure 5.3, in the pH range from 10 to 12 at the potential lower than -0.85 V_{CSE}, the corrosion is suppressed. From the relationship between corrosion rate and pH in Figure 5.4, in the pH range from 10 to 12, the corrosion rate of Iron is less than 8 mils/year.

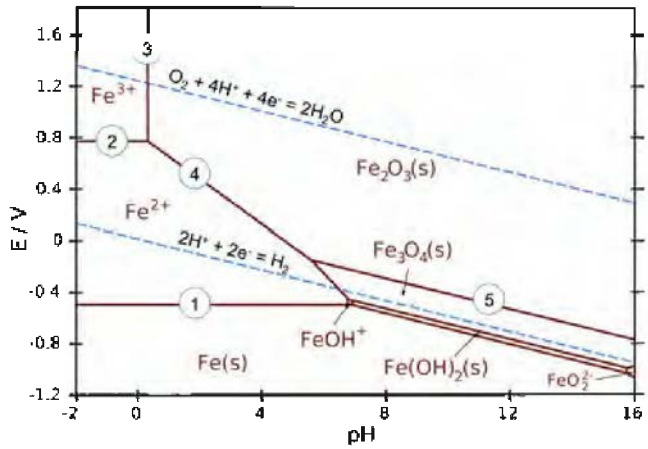


Figure 5.3: Iron Pourbaix Diagram[9]

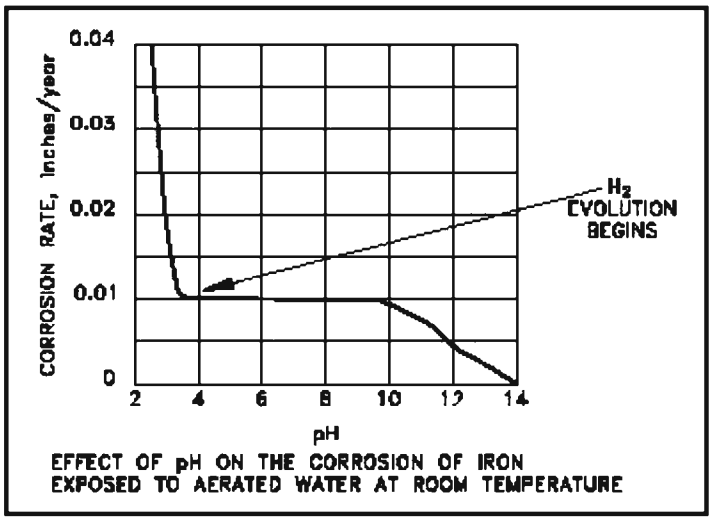


Figure 5.4: Corrosion Rate vs. pH[9]

5.4 Velocity

- Increasing relative motion between a metal and an electrolyte typically leads to enhanced reactant availability and more rapid dissipation of products. This is a consequence of reduced thickness of the diffusion barrier adjacent to the metal surface.
- The film thickness of calcareous deposits decreases with increasing velocity, even though films formed in moving water may have better inherent properties than ones deposited under quiescent circumstances.

5.5 Time

- The thickness of calcareous deposits increases linearly with time even during a period when cathodic current density is applied without variation to maintain a constant potential. With increased time, the deposit film increases in thickness and it becomes harder for Ca^{2+} and Mg^{2+} to transport through the film to form new films and the growth of the deposit eventually stabilizes.
- The electrical resistance of calcareous deposits was measured to be increasing (in the range of 10 to 10^4 ohm-cm^2) as a function of exposure duration during cathodic polarization in synthetic seawater.

6 Adhesion of Calcareous Deposits on Metal Surface

Adhesion of calcareous deposits has been studied focusing on the influence of exposure time, flow rate, and applied potential.

- Calcareous deposit formation involves 1) precipitation of an initial Mg-rich layer during the first minutes of exposure, 2) individual, isolated $CaCO_3$ particle formation prior to 2000 mins of polarization, 3) progressive $CaCO_3$ particle impingement within 2000 - 4000 mins, and 4) presence of a uniform $CaCO_3$ outer layer (time > 4000 mins).
- The current density versus time behavior that results from this precipitation involves 1) a current density decrease during the first minutes of exposure, 2) an upper plateau of approximately constant current density to about 2000 min, 3) a transition regime of current density decay (2000 - 4000 mins), 4) and a lower plateau of constant current density (time > 4000 mins).
- Deposit adhesion was judged to increase with duration of exposure at -900 mV_{SCE} to approximately 4000 mins, beyond which it is constant.
- Deposit adhesion decreases with increasing flow rate, possibly reflecting a dependence of thickness upon flow rate.
- For low applied potential a relatively thick Mg-rich inner layer and dense $CaCO_3$ outer layer can be expected; and this may enhance the adhesion of deposits to the metal surface. However, at more negative potentials a cathodic reaction involving water dissociation and hydrogen reduction occurs, and this may compromise adhesion.

7 Calcareous Deposit Corrosion Protection

- As a results of applying cathodic protection, pH at the steel surface increase, and a protective deposits precipitate. This surface layer provides a physical barrier[12].
- The calcareous deposit functions as an effective barrier to oxygen transport reducing the availability of oxygen at the pipe surface with a resultant decrease in corrosion rates.
- The formation of the calcareous deposit on the steel reduces the CP current demand due to its ability to reduce the oxygen transport to the steel surface, which leads to a low maintenance current[13].

- Figure 7.1 shows the calcareous deposit coating over different immersion times. The longer immersion times resulted in a thicker calcareous deposit. Results show that passive region was increased, which indicated better corrosion resistance of the deposit[14].
- Figure 7.2 shows different types of coating applied to the steel plates. Results show that no corrosion was found when the sample was coated with calcareous deposits, and was subjected to cathodic protection by a potentiostat at -1.0 V_{SCE}, which simulated the effect of sacrificial anode placement[14].

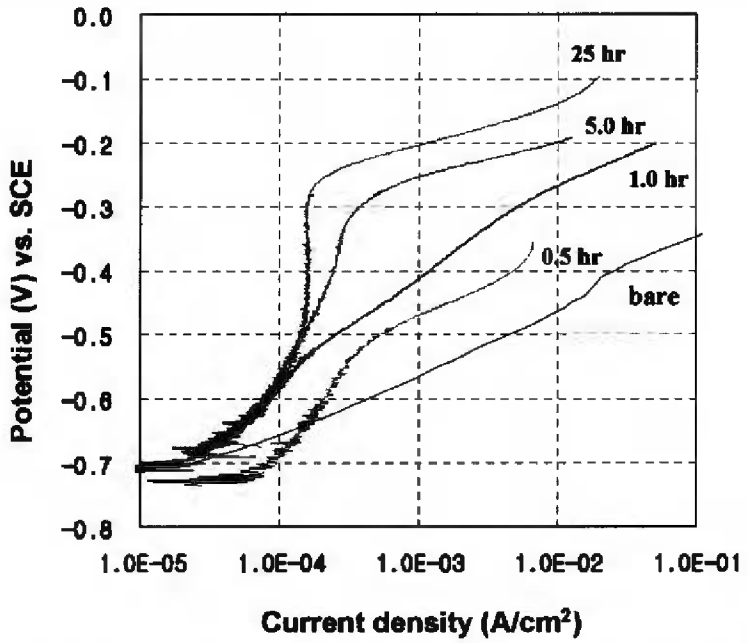


Figure 7.1: Anodic Polarization curves of various coating deposited at 0.5 A/cm^2 for different times in seawater[14].

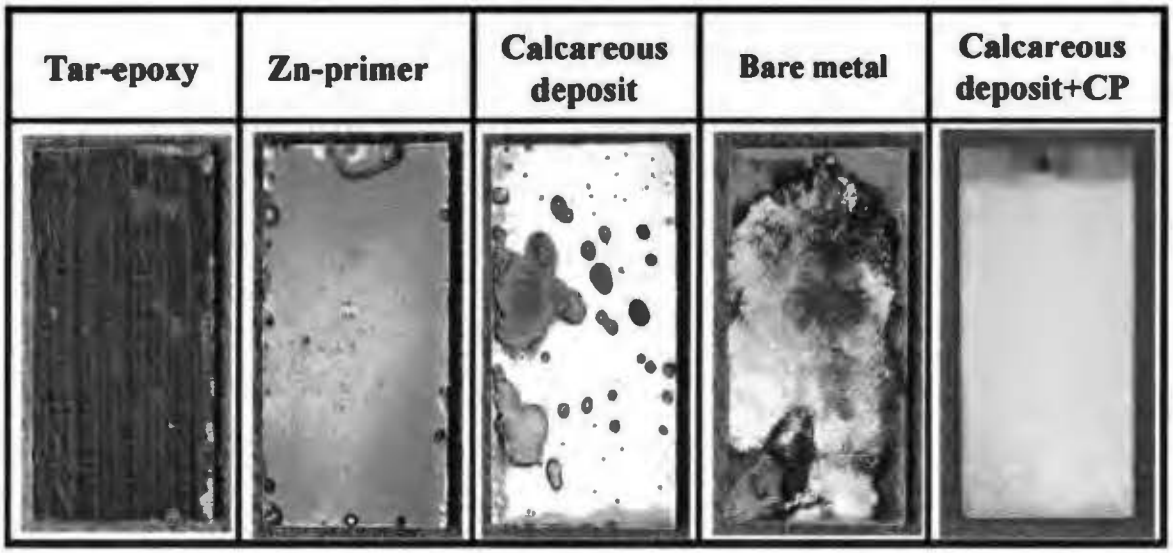


Figure 7.2: Comparison of corrosion resistance of calcareous coating with other conventional coatings, tested in 50°C seawater for 10 days[14].

8 Cathodic Protection Current Density in Fresh Water and Seawater

Cathodic current densities for pipe protection are shown in the following table for different environments including flowing seawater, flowing fresh water, and stationary fresh water. It should be noted that the desired cathodic current density would be lower than the values in Table 8.1, as the calcareous deposit forms[15].

Table 8.1: Desired Cathodic Current Density in Both Fresh Water and Sea Water

Reference	Environment	Desired Current Density (mA/m^2)	Desired Current Density (mA/ft^2)
Shirer's Corrosion Control[15]	Flowing seawater	300	27.87
	Air-saturated hot water	100-150	9.29-13.94
	Flowing fresh water	50-100	4.65-9.29
NACE CP3 Manual[16]	Seawater	32.3-161.4	3.0-15.0
	Hot water	32.3-161.4	3.0-15.0
	Flowing fresh water	32.3-64.6	3.0-6.0
Air Force Manual AFM 88-9[17]	Flowing seawater	32.3-100.8	3.0-10.0
	Stationary fresh water	10.8 - 64.6	1.0-6.0

The data show that the cathodic current density required to achieve protection in fresh water is lower than that required in seawater.

9 Review of Cathodic Protection on Line 5

In an effort to study the effectiveness of the existing cathodic protection systems in maintaining a level of protection consistent with the formation of protective calcareous deposits, data was reviewed from 3 CP surveys and a CPCM ILI Tool run. The data reviewed spanned the period of 2003 – 2017. A summary of the review of available cathodic protection survey data is as follows:

2003 Hanson Survey

- Mackinac Straits CP testing Performed on 9/10/2003
- 18,460 ft. surveyed for the West Line
- 18,170 ft. surveyed for the East Line
- 100% of pipe length meeting -850 mV OFF potential for both East and West Lines.
- Average "ON" pipe to soil readings are over -2000 mV for both East and West Lines.
- Average "OFF" pipe to soil readings are over -1100 mV for both East and West Lines.

2016 Lake Superior Consulting

- Line 5 annual CP survey performed on 10/21/2016

- From MP 1099 in Superior, WI to MP 1544 near Lewiston, MI
- Approximately 659 test points were surveyed within the region, including test stations, foreign line crossing bonds, rectifiers, transitions within pumping stations and valve enclosures.
- The P/S readings at Mackinac are shown in Table 9.1.

Table 9.1: Historic Pipe to Soil Readings at Mackinac

ROW Code and Pipe	MP & Location description	Structure P/S	Structure P/S IRF
5_1480 Mackinac	1479.566 [IR Drop TS E 20"]	-4.342	-1.069
5_1480 Mackinac	1479.568 [Station Sump Tank]	-4.868	-1.090
5_1480 Mackinac	1479.575 [5-20" Pipe West Transition]	-4.621	-1.149
5_1480 Mackinac	1479.576 [5-20" Pipe East Transition]	-1.641	-1.021
5_1480 Mackinac	1479.577 [5-20" Pipe Off 5-SSV-1]	-1.223	-0.858
5_1480 Mackinac	1479.578 [5-30" Pipe Off 5-CSV-11]	-4.324	-1.124
5_1480 Mackinac	1479.579 [5-30" Pipe South Transition]	-1.853	-0.969

2017 Lake Superior Consulting

- Mackinac Straits CP testing Performed on 10/31/2017
- Performed CIS with all current sources and temporary bonds interrupted. The lowest IR-Free P/S potential encountered during testing was -1.106 VDC.
- Performed current requirement testing with the temporary bonds removed. The measured current exceeded the current required for achieving 100 mV DC of polarization, indicating that existing CP systems are adequate and functional.

Table 9.2: Summary Results from Lake Superior Consulting

	West Leg	East Leg
Current required for 100 mV of polarization	1.3 A DC	1.74 A DC
Current to Span under Normal Operating Conditions	2.49 A DC	2.47 A DC
Average CIS P/S Potential (North Side)	-1.284 V DC	-1.280 V DC
Average CIS P/S Potential (South Side)	-1.242 V DC	-1.202 V DC
Lowest P/S Potential (North Side)	-1.151 V DC	-1.236 V DC
Lowest P/S Potential (South Side)	-1.129 V DC	-1.106 V DC

2016 Cathodic Protection Current Measurement (CPCM)

- Performed on 9/27/2016
- Vendor – Baker Hughes
- 21,806 ft. for West Line:
  - Based on the amount of DC current and the DC current density on the line it appears the line has an excellent coating system.
  - The line has a coal tar coating and it is not unusual to have low CP current density and low total CP current.
  - There is noise in the CPCM data caused by speed variations, contact quality and pipe roughness and since the CP current is very low the noise level is a significant factor in data analysis.
- 21,875 ft for East Line:
  - Based on the amount of DC current and the DC current density on the line it appears the line has an excellent coating system.
  - There is very little total CP current on this line. However, since the line has good coating it is not unusual to have very low CP current density and very low total CP current flow.

Based on the data reviewed, the CP systems associated with the Line 5 Pipeline are operating effectively and the results indicate that industry recognized criteria are being met at the locations tested. It is expected that maintaining effective CP will promote the development, retention, and maintenance of protective calcareous films at existing coating flaws.

10 Review of Line 5 ILI Data

In an effort to study the available corrosion history of Line 5, a review of ILI data was performed with specific attention to external metal loss corrosion. A summary of available In-Line Inspection data is as follows:

10.1 Enbridge Line 5: 20" Straits of Mackinac – East Pipe

2013 GE MFL Inspection

- Ran on 8/28/2013
- Vendor – PII Pipeline Solutions
- Tool Type – MagneScan MFL 3
- Technology – MFL
- 21,742 feet
- 71 External Manufacturing Defects
- 61 Internal Manufacturing Defects
- 9 Internal Metal Loss Anomalies
- 0 External Metal Loss Anomalies

2017 BH MFL Inspection

- Ran on 4/12/2017
- Vendor – Baker Hughes
- Technology – MFL
- 21,648 feet
- 41 Internal Manufactured/Pipe Mill Anomalies
- No Metal Loss Anomalies

10.2 Enbridge Line 5: 20" Straits of Mackinac – West Pipe

2013 GE MFL Inspection

- Ran on 8/27/2013
- Vendor – PII Pipeline Solutions
- Tool Type – MagneScan MFL 3
- Technology – MFL
- 21,816 feet
- 194 External Manufacturing Defects
- 100 Internal Manufacturing Defects
- No Metal Loss Anomalies

2017 BH MFL Inspection

- Ran on 4/11/2017
- Vendor – Baker Hughes
- Technology – MFL
- 21,648 feet
- 24 Internal Manufactured/Pipe Mill Anomalies
- 2 Deformations
- No Metal Loss Anomalies

Based on the data reviewed and the absence of any external metal loss anomalies in the Line 5 Straits Crossing, the combination of the quality of the protective coating and effective cathodic protection is effective in controlling corrosion and there is no technical basis to support removal of calcareous deposits and inspecting/repairing the underlying coating or inspecting the underlying pipe.

11 Summary of Findings

The information reviewed and analyzed to date indicates that the presence of calcareous deposits observed at coating flaws on Line 5 are a beneficial result of an effective external protective coating system and an effective cathodic protection system. The formation of calcium carbonate and magnesium carbonate at coating flaws results from the application of cathodic protection and serves to protect the underlying steel from corrosion at the elevated pH values consistent with the formation and adhesion of the deposits. Corrosion rates for carbon steel are significantly reduced at pH values associated with the application of effective CP and the development of calcium and magnesium carbonate at the pipe surface. This is further substantiated through the In-Line-Inspection (ILI) results which indicate no external metal loss anomalies in Line 5.

There is no technical basis for removal the calcareous deposits to affect repairs to underlying coating holidays. The pipeline is not currently experiencing external corrosion issues and to remove the deposits may introduced unintended consequences that may adversely alter the current state of effective corrosion protection afforded Line 5. The retention of the calcareous deposits does not increase the risk of corrosion on Line 5.

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