Enbridge Semi-Annual Report November 23, 2020, to May 22, 2021

DJ# 90-5-1-1-10099

July 19, 2021 Enbridge Consent Decree (United States v. Enbridge Energy, Limited Partnership, et al., Case 1:16-cv-914)





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Glossary

A listing of many of the acronyms and initialisms in this report

AGM	Above Ground Marker
AIWP	Anchor Inspection Work Plan
AIS	Automated Identification System
ALD	Alternative Leak Detection
AL.I	Administrative Law Judge
AMSTEP	Area Maritime Security Training and Exercise Program
	Area of Potential Effect
	Area of Fotential Effect
	Agricultural Frotection Flam
	Anariaan Detroloum Institute
API	American Petroleum Institute
AIC	American Transmission Company
AUV	Autonomous Underwater Venicie
AVB	Automated Volume Balance
BIWP	Biota Investigation Work Plan
BIA	Bureau of Indian Affairs
COTP	Coast Guard of the Port
CCO	Control Centre Operations
CD	Consent Decree
CGR	Corrosion Growth Rate
CP	Cathodic Protection
CP CIS	Cathodic Protection Close Interval Survey
CRO	Control Room Operator
DAS	Distributed Acoustic Sensing
DOC	Department of Commerce
	Department of Justice
	Discharge Pressure Restriction
	Discharge Fressure Restriction
DQA	Data Quality Assessment
DQR	Data Quality Review
DIM	
DWSMAS	Minnesota Department of Drinking Water Supply Management Areas
EA	Engineering Assessment
EGLE	Michigan Department of Environment, Great Lakes, and Energy
EIS	Environmental Impact Statement
EMOP	Established Maximum Operating Pressure
EPA	Environmental Protection Agency
ER	Emergency Response
ESA	Endangered Species Act
ESMOC	Enbridge Straits Maritime Operations Center
eAtoN	Electronic Aids to Navigation
FCC	Federal Communications Commission
FFA	Finite Element Analysis
FHIA	Field Level Hazard Assessment
FLIR	Forward-Looking Infrared
FMP	Fen Management Plan
Edl	Fond du Lac Band of Lake Superior Chinnewa
	Field Despense Team
	Field Response Team
	Future Report
	reatures Requiring Excavation
GVV	Girth vveia
HCA	High Consequence Area
HDD	Horizontal Directional Drill
ICP	Integrated Contingency Plan
ICS	Incident Command System



ILI	In-Line Inspection
ILIMRR	In-Line Inspection Minimum Reporting Requirements
IMT	Incident Management Team
IR	Information Request
ISD	In-service Date
ITP	Independent Third Party
IVP	Intelligent Valve Placement
L3R	US Line 3 Replacement
LDA	Leak Detection Analyst
LDAM	Leak Detection Alarm Management
LDPIP	Leak Detection Project Integration Plan
LEPC	Local Emergency Planning Committee
MAOP	Maximum Allowed Operating Pressure
MBS	Material Balance System
MSCA	Mackinac Straits Corridor Authority
MSEL	Master Scenario Events List
MI	Michigan
MDEQ	Michigan Department of Environmental Quality
MN	Minnesota
MDA	Minnesota Department of Agriculture
MDNR	Minnesota Department of Natural Resources
MFL	Magnetic Flux Leakage
MnDOT	Minnesota Department of Transportation
MOP	Maximum Operating Pressure
MP	Milepost
MPC	Marine Pollution Control
MPCA	Minnesota Pollution Control Agency
MPUC	Minnesota Public Utilities Commission
MRR	Minimum Reporting Requirement
MSP	Most Severe Point
NA	Not Applicable
ND	North Dakota
NDDH	North Dakota Department of Health
NDE	Non-destructive Examination
NDGF	North Dakota Game and Fish
NDPSC	North Dakota Public Service Commission
NDSWC	North Dakota State Water Commission
NHPA	National Historic Preservation Act
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historical Properties
NTSB	National Transportation Safety Board
NWT	Nominal Wall Thickness
OD	Outside Diameter
OSRO	Oil Spill Response Organization
OMM	Operations & Maintenance Manual
PCSLD	Pipeline Control Systems and Leak Detection
PHMSA	Pipeline Hazardous Materials Safety Administration
Р	Paragraph
PI	Pipeline Integrity
PLM	Pipeline Maintenance
PN	Priority Notification
PO	Purchase Order
PPR	Point Pressure Restriction
PAWSA	Ports and Waterways Safety Assessment
PT	Pressure Transmitter



PR	Pressure Restriction
PAtoN	Private Aids to Navigation
RDS	Rupture Detection System
RFBS	Rupture Flow-based Solution
RNA	Regulated Navigation Area
ROA	Record of Alarms
ROV	Remote Operated Vehicle
RPR	Rupture Pressure Ratio
SAR	Semi-Annual Report
SAWP	Screw Anchor Work Plan
SCADA	Supervisory Control and Data Acquisition
SCC	Stress Crack Corrosion
SHPO	State Historic Preservation Office
SME	Subject Matter Expert
SML	Subject Matter Lead
SOA	Summary of Alarms
SOC	Security Operations Center
SoM	State of Michigan
SRAHC	Saginaw River All Hazards Committee
SRB	Sulfate Reducing Bacteria
STA	Senior Technical Advisor
TPC	Third Party Consultant
TT	Temperature Transmitter
TTX	Table Top Exercises
US	United States
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
USFWS	United States Fish and Wildlife Service
USWM	Ultrasonic Wall Measurement
VAIS	Visual Aids to Navigation
VIR	Verification Issue Record
VCI	Vapor Corrosion Inhibitor
VSR	Verification Status Record
VMRS	Vessel Movement Reporting System
WLOA	Weekly List of Alarms
WMA	Wildlife Management Area
WQC	Water Quality Certification
WT	Wall Thickness



Introduction

Enbridge¹ submits this eighth Semi-Annual Report (also referred to herein as "SAR" or "Report") in electronic form in accordance with United States Environmental Protection Agency ("EPA") request and Section IX, Reporting Requirements, of the Consent Decree entered in *United States v. Enbridge Energy, Limited Partnership, et al.*, Civ. No. 1:16-cv-00914 (referred to herein as "Consent Decree," "Decree," or "CD"). Specifically, this eighth SAR is submitted in accordance with Paragraph (or "P.") 143, which requires Enbridge to submit a SAR documenting Enbridge's compliance with the Consent Decree for the eighth reporting period dated November 23, 2020 to May 22, 2021 ("the reporting period"), no later than six months after the submittal of the seventh SAR. Enbridge's first SAR was submitted on January 18, 2018; the second on July 18, 2018; the third SAR on January 18, 2019; the fourth SAR on July 18, 2019; the fifth SAR is submitted on July 19, 2021, within six months of the seventh SAR. As per Paragraph 150 of the Consent Decree (Notices), and a copy is being supplied to the Independent Third Party (also referred to herein as the "ITP").

This eighth SAR summarizes the requirements in Subsections VII.A-J of the Consent Decree that became due and/or were required to be complied with by Enbridge during the eighth reporting period. To facilitate ongoing termination discussions between Enbridge and the United States, this eighth SAR also provides information to the ITP concerning Enbridge's compliance with certain requirements in Subsections VII.A-J from May 23, 2021 through the date of this SAR. This Report is organized by Paragraph and Subparagraph number of the Consent Decree. This SAR addresses, on a Paragraph-by-Paragraph basis, each injunctive requirement of the Consent Decree that became due during the seventh reporting period or for which reporting is required.

In accordance with Paragraph 144, this SAR provides the information that is required to be submitted to the United States under Paragraphs 29, 31, 49, 96, and Subparagraph 110.c, with each having specific SAR requirements. In accordance with Paragraph 144, Enbridge shall discuss, Paragraph-by-Paragraph, such matters as completion of milestones, status of permit applications, operation and maintenance issues, reports to state agencies, number of features, by type, planned for future repair or mitigation, and any significant changes or issues since the first SAR. Enbridge has reported specific activities encountered during Reporting Period 8 in Paragraph 144 of this Report, where there were problems encountered or anticipated in implementing the requirement (together with implemented or proposed solutions).

Enbridge is compliant with the Consent Decree requirements unless otherwise stated in the applicable section of the SAR, and this SAR includes the information and analysis required by Paragraph 145. Discharge information and post-incident reports required by Paragraphs 146 and 148 also are set forth in this SAR.

Enbridge has also enclosed appendices to this SAR, which provide supporting tables, further information on Enbridge's compliance with the Consent Decree, and/or documents that are required to be submitted to the United States under Section IX. The Table of Contents identifies each of these appendices.

¹ As used herein, "Enbridge" refers to the following entities: Enbridge Energy, L.P., Enbridge Pipelines (Lakehead) L.L.C., Enbridge Energy Partners, L.P., Enbridge Energy Management, L.L.C., Enbridge Energy Company, Inc., Enbridge Employee Services, Inc., Enbridge Operational Services, Inc., Enbridge Pipelines Inc., and Enbridge Employee Services Canada Inc. Enbridge Consent Decree Eighth Semi-Annual Report Page 6 of 72



Summary of Activities

Table Intro-1 in Appendix 1 lists the Enbridge activities that are complete in accordance with P. 203(i) as implemented requirements of the Consent Decree.

Section A – Original US Line 6B

21. [Original US Line 6B]

As reported in the first SAR, the original Line 6B was permanently disconnected from the Enbridge system prior to the Effective Date of the Consent Decree and remains inoperable. This Consent Decree activity is complete. Enbridge continues to monitor Line 6B and will provide updates as warranted in future SARs. There is no update for this reporting period.

Section B – Replacement of Line 3; Evaluation of Replacement of Line 10

22.a [Replacement of Line 3 in the United States]

Enbridge vigorously pursued all avenues to complete the replacement of Line 3² as quickly as possible to meet the requirements under Paragraph 22.a. As discussed in SARs 1 through 7, Enbridge obtained a Certificate of Need and Route Permit from the Minnesota Public Utilities Commission ("MPUC"), both of which were required before certain other state and federal approvals could be obtained. Prior to this report, the Certificate of Need and Route Permit were restored by the MPUC. In this reporting period, and shortly after the covered period:

- MPUC issued Enbridge its construction authorization for the project November 24, 2020.
- On December 4, 2020, the MPUC voted against a motion for a stay following an expedited hearing request from project opponents. The MPUC denied reconsideration of that decision on December 23, 2020. On February 7, 2021, the U.S. District Court for the District of Columbia denied plaintiffs' request to enjoin construction while their challenge to the permit issued by the U.S. Army Corps of Engineers remains pending. The status of primary permits and approvals for the Line 3 Replacement project are noted in Table B-1 in Appendix 1. Additional detail is provided below on the permitting and construction plans.
- On June 14, 2021, the Minnesota Court of Appeals affirmed the MPUC's issuance of a project certificate of need.

Permitting:

<u>Minnesota</u>: The Minnesota Department of Natural Resource issued permits on November 12, 2020. On the same date, the Minnesota Pollution Control Agency issued all but one of the remaining authorizations for the project; the outstanding item was the Construction Stormwater Permit issued on November 30, 2020. Enbridge received the US Army Corps of Engineers permits for the replacement on November 23, 2020.

 ² New US Line 3 as contemplated by the Consent Decree is now called Line 93 by Enbridge.
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As of December 1, 2020, Enbridge received all necessary authorizations to begin construction for the replacement of the approximate 340.4-mile segment of Line 3 in Minnesota. Construction was initiated on December 1, 2020. Details on permits are below and in **Table B-1** in Appendix 1.

<u>North Dakota</u>: As reported in previous SARs, on May 7, 2014, Enbridge received approval to replace Line 3 in North Dakota from the North Dakota Public Service Commission ("NDPSC"). In that year, Enbridge replaced an approximate 15-mile segment of Original Line 3 that extends from the U.S.-Canada border to the first U.S. mainline valve. Enbridge replaced the remaining 12.3-mile segment of Line 3 in North Dakota between August and October 2020 following the required NDPSC construction notification per the PSC's certification process. This 12.3-mile segment will be brought into service with the rest of Line 3 Replacement.

<u>Wisconsin</u>: As reported in previous SARs, the Original Line 3 extends approximately 14 miles in the State of Wisconsin. Enbridge received from federal, state, and local authorities all approvals and permits necessary for the replacement of that 14-mile segment. Enbridge initiated construction of the replacement in July 2017. Construction of that segment is complete and the replacement, known as "Segment 18," went into service on May 25, 2018.

Construction Plans:

Table B-2 in Appendix 1 identifies key dates regarding Enbridge's plans to construct the Line 3 replacement. As shown in the table and as indicated above, construction of the portion of the Line 3 replacement in the State of Wisconsin has already been completed and was placed into service on May 25, 2018. Construction of the remaining replacement segments in Minnesota commenced following the receipt of the permits and is underway described in **Table B-1**.

A planned mainline construction hiatus in April and May 2021 accommodated road weight restrictions and environmental work restriction dates. Construction at Line 3 Replacement facilities continued during this period and mainline construction resumed June 2, 2021.

22.b [Line 3 Decommissioning]

Within 90 Days after the Original Line 3 is taken out of service (following the construction of the Line 3 replacement and placing the replacement into service), Enbridge will purge remaining oil from Original US Line 3 by running a cleaning pig through the line. Enbridge will complete final clean-out and decommissioning of Original US Line 3 will be complete within one year thereafter, in accordance with Subparagraph 22.b.

The ITP requested additional information about the "Segment 18" cleaning program which followed decommissioning of the segment. Enbridge provided a memo on June 28, 2021 detailing the successful cleaning process implementation.

22.c [Original US Line 3 Maximum Operating Pressure ("MOP")]

Enbridge has limited the operating pressure of all Line 3 segments in accordance with MOP values specified at https://www.epa.gov/enbridge-spill-michigan/enbridge-revised-maximum-operating-pressure-values.

Enbridge has not increased operating pressures above the specified MOP values; therefore, hydrostatic pressure tests were neither required to be conducted nor needed to be provided to the EPA with associated procedures and results. Although not required by the Consent Decree, each month, Enbridge has been



reporting to the ITP the maximum pressure compared to the maximum allowable pressure on Line 3. Enbridge has not exceeded the Line 3 MOP values submitted to the EPA.

22.d [Requirements for the Use of Original US Line 3]

Portions of Original US Line 3 remain in service as of December 31, 2017. As a result, in this reporting period, Enbridge implemented the additional requirements specified under Subparagraph 22.d, which pertain to the continued use of Original US Line 3.

(1) The In-Line Inspection ("ILI") of all portions of Original US Line 3 is scheduled on an annual basis, using the most appropriate tools for detecting, charactering, and sizing Crack Features, Corrosion Features, and Geometric Features. The ILI schedule is described in this SAR under Subsection VII.D: In-Line Inspection Based Spill Prevention Program.

Enbridge and the ITP and EPA have a difference in interpretation regarding this Paragraph in the Consent Decree. Enbridge, without agreeing that its initial interpretation was incorrect, has agreed to schedule all Line 3 runs in line with the EPA interpretation that each ILI will be scheduled within 365 days of the previous run with the exception of the final year of service.

During the period of this report, ILIs on Line 3 were completed for axial Crack, Corrosion, and Geometry features within 365 Days of the previous ILI completion as per Enbridge's commitment stated above. The pull date and required completion dates are provided in **Table D-1**.

- (2) The identification, excavation and mitigation or repair of all Features Requiring Excavation ("FREs") are described in this SAR under Subsection VII.D: In-Line Inspection Based Spill Prevention Program.
- (3) Enbridge conducted quarterly cleaning and biocide treatment of Original US Line 3 in 2020 and 2021 as required in Subparagraph 22.d.(3) of the Consent Decree. During the current reporting period, Enbridge conducted quarterly biocide treatments on the Original US Line 3 as set forth in Table B-3.

The biocide treatment vendors and specific biocide chemicals used in the Line 3 GF-CR and CR-PW segments were adjusted in 2020 to address seasonal requirements. Two different biocides were used for 2020. Spec-Aid 8Q5703, in which the active ingredient is Cocodiamine, is used when the biocide is exposed to winter conditions at the time of injection. Spec-Aid 8Q5700ULS, in which the active ingredient is Glutaraldehyde, is used when the biocide is exposed to other conditions at the time of injection. One biodispersant, Spec-Aid 8Q5701, is used in conjunction with each specific biocide. The biocide concentration requirement for each biocide remains unchanged at 500 ppm.

22.e [Prohibition Regarding the Use of Original US Line 3 Following Replacement]

The Original US Line 3 continues to operate. The following two portions of Line 3 have been replaced to date: (i) a 15.7-mile segment located in North Dakota, which was taken out of service in 2014; and (ii) the 14-mile Segment 18 located in Wisconsin, which was taken out of service in 2018. These two portions of the Original US Line 3 are not used for any operations, including to transport oil, gas, diluent or any hazardous substances. The 12.3-mile section constructed in North Dakota in 2020 has not been commissioned and the Original US Line 3 in this area is still operating.



23 [Line 10 Replacement Evaluation]

As reported in SAR4 this requirement is complete. On April 8, 2019, Enbridge received the ITP's Evaluation of Enbridge US Line 10 Submittals Report, identifying that "the Collective Information, taken as a whole, complies with the requirements of CD P. 23".

As previously reported to the EPA and ITP, on June 1, 2020, Enbridge closed on the sale of Line 10 to Kiantone Pipeline Corporation. Enbridge will continue to maintain responsibility for the operation of Line 10 during the term of the Consent Decree.

Section C – Hydrostatic Pressure Testing

No hydrostatic pressure tests were conducted pursuant to the terms of the Consent Decree during this reporting period (i.e., between November 23, 2020 and May 22, 2021). Therefore, the requirements specified in Paragraphs 24, 25, and 26 were not triggered and are not applicable to this SAR.

Section D – In-Line Inspection Based Spill Prevention Program

(I) In-Line Inspections

27 [Timely Identification and Evaluation of All Features]

Enbridge's implementation of the requirements of Subsection VII.D.(I) (Paragraphs 27 to 31) for the timely identification and evaluation of features of significance is set forth in the paragraphs that follow. Enbridge continues to implement the requirements for geometry, corrosion and axial cracking features.

Enbridge and the ITP have identified a difference in interpretation regarding the incorporation of circumferential cracking within the CD. Enbridge has also identified difficulties encountered, from a technical perspective, in applying the Consent Decree to circumferential cracking. Enbridge, the EPA, and the ITP continue to discuss ways to resolve this challenge and this item is included in **Table IX-1** in P. 144 Problems Anticipated in Appendix 1.

28.a-b [Periodic In-Line Inspections and ILI Schedule]

A complete list of in-line inspection (ILI) programs conducted by Enbridge to identify features of interest for the pipelines in the Lakehead System, during the reporting period for this SAR is provided in **Table D-1**.

Enbridge conducts ILIs on Lakehead System Pipelines using tools identified on the Enbridge Approved ILI Tool List which was submitted to the ITP. All ILIs currently required under Paragraphs 65 and 66 of the Consent Decree for all Lakehead System Pipelines, have been completed. The schedule for ILIs to detect crack features on Line 2 is addressed in the "Stipulation and Agreement Regarding Assessment and Payment of Stipulated Penalties Relating to Timeliness of Certain In-Line Inspection" which was filed with the Court on May 2, 2018 (referred to herein as the "ILI Stipulation"). Per the ILI Stipulation, Enbridge worked with ILI vendors to develop and test a new crack ILI tool to detect Line 2 cracking features, with a particular focus on crack features on or adjacent to the pipeline's long seam weld. The new crack ILI tool development and validation is complete, and Enbridge submitted its report to the ITP and EPA on November 22, 2019. The ITP submitted a Validation Report to EPA on July 9, 2020 that stated "the NGCT [Proton tool] Report meets the requirements established by the S&A" (Stipulation and Agreement).



Refer to **Table IX-1** in P. 144 Problems Anticipated in Appendix 1 for circumferential cracking details and the P. 144 discussion regarding cracking: [Section D] Circumferential Cracking Engineering Assessment Process – Various Paragraphs.

28.c [Incomplete or Invalid ILI]

Enbridge's contracts with vendors that are retained to conduct ILIs on the Lakehead System reference the In-Line Inspection Minimum Reporting Requirements, ("ILIMRR" version 8.3, version date March 1, 2020). This was updated from the previous version which was issued to all approved ILI vendors prior to the Consent Decree Effective Date. The requirements that vendors must submit Data Quality Assessments ("DQA") according to the deadlines specified in the Consent Decree are specified in the ILIMRR. The ILIMRR is incorporated into the ILI vendors' overall contracts with Enbridge. In addition to the ILIMRR, ILI vendor contracts stipulate that all work under the contract is completed in accordance with the terms and conditions of the Consent Decree, and each ILI is contracted through Enbridge's contract Work Order Process.

In addition, Enbridge Lakehead System work order contracts, including those concerning ILIs, contained and continue to contain the following stipulating language:

"The following are specifically made part of this Work Order Contract and all work shall be performed in accordance with the following: Company's Consent Decree in United States of America v. Enbridge Energy, Limited Partnership, et al., Case No. 1:16-CV-914, available at:

https://www.epa.gov/sites/production/files/2017-06/documents/enbridgeentered-cd_0.pdf.

Incomplete or invalid ILI runs are reported in Table D-2.

There were 4 incomplete or invalid ILI runs during this reporting period. Two of the four incomplete or invalid ILI runs (Line 10 WNR-EB MFL4 Corrosion/Geometry TRID 6719) were subsequently completed on March 24, 2021, which is within the required CD reinspection interval.

The remaining two ILI runs (Line 3 CR-PW MFL4 Corrosion/Geometry TRID 10229) were completed on May 21, 2021. The CD required reinspection interval does not apply to these two runs as they were on Original US Line 3 which Enbridge predicts is in its final 12 months of operation and therefore not required to be inspected under Paragraph 66 of the CD. Further details of the incomplete or invalid ILI runs can be found in paragraph 31.

29 [12-Month ILI Schedule]

Table D-3 includes each Consent Decree ILI tool run that is scheduled to be initiated on any pipeline during the 12-month period after the reporting period covered by this SAR.

The Required Completion Dates shown in this table are consistent with the re-inspection interval requirements in Paragraphs 65, 66 and 70 of the Consent Decree and the ILI Stipulation agreed to by EPA and Enbridge and filed with the Court on May 2, 2018.

30 [ILI Schedule Modification]

ILIs have been performed by Enbridge, as shown **Table D-1**. During this time period, any failed or partially failed ILI runs that required a re-run are discussed in Subparagraph 28.c of this SAR.

Table D-4 outlines changes to Tool Runs associated with the previous 12-month Lakehead ILI schedule as reported in SAR7. All schedule changes associated with the ILIs are planned to be completed as per the



re-inspection interval requirements in Paragraphs 65, 66 and 70 of the Consent Decree and the ILI Stipulation agreed to by EPA and Enbridge and filed with the Court on May 2, 2018. The modified schedule was communicated to the ITP and EPA during monthly Technical meetings.

31 [ILI Compliance with Tool Specifications]

Enbridge reviewed the vendor-provided Data Quality Assessment ("DQA") reports for each ILI performed and compared the reports against vendor tool specifications and other relevant information. **Table D-5** reports incomplete or invalid ILIs in this reporting period.

The ILIs that operated outside of the tool specifications are summarized below. The tool performance summaries are provided in **Table D-6** with details available in the Initial ILI Reports and ILI Summary Documents.

Enbridge reviewed the vendor-provided Data Quality Assessment ("DQA") reports for each ILI performed and compared the reports against vendor tool specifications and other relevant information. Per **Table D-5** there are 4 incomplete or invalid ILIs in this reporting period.

The ILIs that operated outside of the tool specifications are summarized below. The tool performance summaries are provided in **Table D-6** with details available in the Initial ILI Reports and ILI Summary Documents.

Incomplete or Invalid ILIs and Rerun Dates

Line 3 CR-PW MFL4 Corrosion/Geometry (Tool Run ID 10229/11019)

During the initial inspection, there was a breakdown of some corrosion sensors and damage to some caliper sensors. As a result, the initial ILI data was degraded in some areas and Corrosion data loss occurred on approximately 3.3 % of the segment. This resulted in an incomplete initial ILI.

A re-run was carried out between 5/17/2021 and 5/21/2021. During the re-run inspection, there was a breakdown of some Corrosion sensors which resulted in some data degradation in some areas. These affected areas are being reviewed using data from the initial ILI. Multiple Caliper sensors were also faulty for a part of the segment length. It was concluded that these faulty sensors will not affect Geometry sizing since the sensors are not adjacent.

As a result of the data quality issues associated with the initial inspection and the re-run inspection, the data from both of the inspections is being stitched together where necessary to provide a complete ILI data set for feature analysis and assessment.

Line 10 WNR-EB MFL4 Corrosion/Geometry (Tool Run ID 6719/10986)

During the initial inspection, the tool vendor did not release the caliper arms prior to launch resulting in no geometry or deformation data recorded. A re-run was carried out on 3/24/2021. During the re-run inspection, irregular tool rotation was observed during the inspection; however, this irregularity did not affect the tool analysis. The data from the re-run inspection provided a complete ILI data set for feature analysis and assessment.



ILIs with Minor Tool Performance Deficiencies (did not meet vendor specification)

Line 14 AM-MK Eclipse Crack (Tool Run ID 6742))

One of the ultrasonic sensors experienced low signal amplitudes throughout the inspection. The ILI vendor treated this sensor as having continuous coupling loss for the inspection. During the inspection, there were two instances of speed excursions above the specified tool maximum speed. This led to a decrease in the tools sizing accuracy from 66,604.84 m to 68,065.13 m and from 12,5492.28 m to 12,5579.06 m. Between the sensor experiencing low signal amplitudes and the speed excursions, the ILI vendors stated performance specification was achieved for 99.6% of the pipeline length and circumference. The ILI vendor reviewed the areas of the speed excursions and no features were reported in those areas, so a revised tool specification was not required. No corrective action is required. Enbridge accepted the ILI run because the data is of sufficient quality to complete the required analysis.

Line 14 PE-AM Eclipse Crack (Tool Run ID 6553)

During the inspection, there were four instances of speed excursions above the specified tool maximum speed. This led to a decrease in the tools sizing accuracy from 68,685.04 m to 68,906.66 m, 11,5064.06 m to 11,5396.49 m, 11,6600.44 m to 11,6651.36 m, and from 18,4081.53 m to 18,4300.16 m. In these areas of speed excursions, the ILI vendor provided an updated minimum detection threshold length between 28 mm and 30 mm. The ILI vendors stated performance specification was achieved for 99.78% of the pipeline length and circumference. No corrective action is required. Enbridge accepted the ILI run because the data is of sufficient quality to complete the required analysis.

Line 65 GF-CR GEMINI Corrosion (Tool Run ID 6744)

During this inspection, some of the MFL sensor heads experienced lift-off intermittently throughout the inspection. Sensor lift-off can occur when internal debris or scale is present, in the proximity of welds, and in some cases as tools traverse pipeline fittings. It was estimated that 0.0003% of the inspection experienced the sensor head lift-off that may result in some reduction in the sizing and detection specification. The ILI vendor provided a revised tool specification for these areas as can be seen in the Summary DQA report, as detection and sizing was degraded. Enbridge accepted this ILI with the revised tool specification because the revised specification was sufficient to complete the required integrity assessment. No measures are required to prevent reoccurrence.

(II) Review of ILI Data

32.a-c [Initial ILI Reports for Crack, Corrosion and Geometric Features Received]

Table D-7 lists valid ILI tool runs for which the Initial ILI Reports were received during this Reporting Period. All Initial ILI Reports were received in accordance with the timelines outlined in Paragraph 32.a through c.



33 [Priority Features]

33.a [Immediate Priority Feature Notification Requirements]

Enbridge contracts require that vendors notify Enbridge of Priority Features as specified in Subparagraphs 33.a and 33.b.³

The immediate priority feature notification requirements are documented in the ILI MRR, which forms part of all Enbridge contracts with vendors, as described above in Subparagraph 28.c.

33.b [Priority Feature Definition]

Reporting criteria for what are deemed as Priority Features are outlined in the ILIMRR which is a contractual obligation for all ILI vendors (**Table D-8**). The ILI Reporting Profile Standard has been provided to the ITP for compliance verification activities and specifies the following priority notification reporting criteria, which are consistent with Appendix A of the Consent Decree and Exhibit 1 – Fifth Modification of the Consent Decree:

- 1. Features that the ILI Vendor may consider to be an immediate threat to the integrity of the pipeline.
- 2. Ovalities greater or equal than 10 percent of the outside diameter ("OD") of the pipe.
- 3. Dent or geometric features (other than ovalities) greater than or equal to 5 percent of the outside diameter ("OD") of the pipe.
- 4. Metal loss features with peak depth greater than or equal to 75 percent of the nominal wall thickness of the pipe.
- 5. Metal loss features forecasted to reach a maximum depth of greater than or equal to 75 percent of nominal wall thickness with 365 calendar days.
- 6. Metal loss features with an effective area RPR less than or equal to 0.85.
- 7. Unmatched metal loss features with a depth greater than or equal to 50 percent of the nominal wall thickness or actual wall thickness.
- 8. Crack features that meet or exceed the saturation limit of the crack detection tool.
- 9. Crack features greater than or equal to 2.5 mm/0.098 inch detected on the internal and external pipe surface at the same location.
- 10. Priority notification criteria specifically identified in a project work order. For example, the ILIMRR specifies Priority Notification Criteria for Ovalities, Wrinkles or Ovalities associated with Dents with a minimum ID less than or equal to the values shown in ILIMRR Table 5. The appropriate application of Appendix A with regards to ovality features has been incorporated into the Fifth Modification of the Consent Decree. For the purposes of this reporting period, Enbridge has applied the Priority Notification Criteria for ovalities as per the Fifth Modification requirements. Refer to **Table D-8** for Enbridge's Priority Notification Criteria for Ovalities and other Deformation Features.

Upon receiving notice of any Priority Feature, Enbridge determines whether the feature was correctly identified and whether the feature was previously repaired or mitigated. After making such a determination,

³ Enbridge has not applied CD Priority Notification requirements to circumferential cracking features and has not applied Appendix B to evaluate circumferential crack features as it is not suitable for such features.



Enbridge then determines whether any Priority Feature is a Feature Requiring Excavation ("FRE") in accordance with Section VII.D(III) of the Consent Decree. All Priority Features that Enbridge determined to be FREs during this reporting period are summarized in Subparagraph 33.d **Table D-9**.

33.c-d [Priority Feature Review and Mitigation if Required]

Table D-9 identifies Priority Features for which Enbridge received notification from vendors and/or repaired during this reporting period. Each listed feature is then discussed in greater detail in this section. All priority features identified within this reporting period were reviewed in accordance with required timelines as per the Consent Decree, and repair or mitigation actions were taken if required as indicated in the table.

Line 5 IR-NO GEMINI Geometry (Tool Run ID 6743)

A priority notification for a 5.15% deep bottom side dent on pipe joint 143560 was received on 4/14/2021. The priority notification was sent in accordance with the priority notification criteria in Appendix A due to the dent having a depth \ge 5% OD. The assessment on the priority notification feature was completed and approved on 4/15/2021. This feature did not meet any FRE criteria specified in Table 4 and no excavation was issued.

34, 34.a [Data Quality Review - Preliminary Review of Initial ILI Report]

Initial ILI reports that were received and reviewed during this Reporting Period are reported in **Table D-10**. This table provides a comparison of the Data Quality Review ("DQR") timeline and the requirements in Subparagraph 34.a of the Consent Decree.

Line 65 GF-CR UTCD November 2020

During the SAR8 reporting period, Enbridge discovered an issue related to the ILI report receipt date for the L65 GF-CR UTCD November 2020 ILI. It was determined that the ILI Analyst entered the ILI Report receipt date incorrectly into Enbridge's system which is used for tracking and scheduling ILI-related task deadlines. This resulted in the preliminary quality review and the Interacting Feature review being completed 2 Days later than the 30 Day Consent Decree deadline. All other Consent Decree requirements were met for this ILI.

Further details describing the data quality issues can be found in Paragraph145 [Section D] Untimely Preliminary Quality Review and Interacting Feature Review on L65 GF-CR UTCD – P34a and 58.

34.b [Evaluation of Features Requiring Excavation]

For ILI runs for which no data quality concerns were identified, Enbridge proceeded to evaluate the pipeline segments and/or features against the requirements in Subsection VII.D.(III) of the Consent Decree. Paragraph 37 of this SAR identifies the timelines when FREs were identified and placed onto the Dig List during this SAR reporting period.

34.c [Resolution of Identified Data Quality Issues]

Enbridge identified quality concerns during its preliminary review of some Initial ILI Reports (**Table D-11**). Enbridge completed evaluations required to resolve all identified data quality concerns. In some cases, ILI



vendors provided re-issued ILI reports to correct and improve the ILI reporting and data quality, as summarized in **Table D-11a**. Details regarding data quality issues are reported below.

ILI Reports with Data Quality Issues in Areas with Significant Changes in Wall Thickness-P34c

In this reporting period, one of Enbridge's ILI vendors discovered that MFL inspections completed by the vendor may not have appropriately identified Corrosion features in close proximity to areas of the pipeline which have a significant change in Wall Thickness (WT). This is due to the rapid change in the magnetic field values due to WT transitions, that often requires a manual review of the data as the automated algorithms are not always able to appropriately identify these Corrosion features.

As a result of this discovery, Enbridge asked the ILI vendor to manually review the latest inspection for each segment of the Lakehead system performed by this ILI vendor. The ILI vendor manually reviewed all locations close to sleeves, casings, offtakes, full circulars, flanges, valves, and WT transitions. From the over 11,000 locations with a rapid change in the magnetic field values due to WT transitions reviewed, over 99.9% of these locations identified no additional features. Only nine features were identified for further assessment on six line segments as shown in **Table D-11a**.

Each of the ILI reports that identified additional features was reissued. The additional features/clusters are included in the corresponding re-issued ILI reports. None of the additional features identified met CD FRE criteria and no validation digs were issued from these additional features.

Line 2 DR-PW Proton (Tool Run ID 4507)

The ILI (robot) speed was below the specified maximum speed of 1.27 m/s for almost the entire inspection. There is one small section where the (robot) speed exceeded the specified maximum speed. However, it was determined by the ILI vendor that there was no impact to the tool specification, as documented in the ILI report. Enbridge's Control Center attempts to ensure that line operation during pigging is kept at a value that ensures that the tool does not exceed the maximum speed, however, the correct speed cannot always be maintained. This is an anomaly and no corrective action is required. Enbridge accepted the ILI run because the data is of sufficient quality to complete the required analysis. Further details can be found in the speed profile diagram in the ILI report.

Line 4 CS-DR UCM Corrosion (Tool Run ID 10991)

While preforming the threat integration assessment for this inspection, it was noticed that there were inconsistencies between the long seam weld orientations in the ILI Report and those in the baseline pipe book. The inconsistencies between the ILI Report and baseline pipe book occurred on joints of pipe that had dual long seam welds. The current ILI Minimum Report Requirements Guide does not instruct ILI vendors how to report the long seam weld orientation for joints of pipe that have two long seam welds, thus the ILI vendor reported the long seam weld differently than that in the baseline pipe book. The threat integration assessment was able to be completed for this inspection by adjusting the long seam orientation in the ILI Report to that of the baseline pipe book. Enbridge is reviewing this issue for pipe segments with dual long seam welds and will update the ILI Minimum Report Requirements Guide accordingly to prevent this issue from occurring in the future.

Line 4 DR-FW DuDi UCM Corrosion (Tool Run ID 6486)

Enbridge requested that the ILI vendor review the classification of the internal corrosion features reported on the topside of the pipe from the Issue 1 ILI report. It was believed that these internal top side corrosion Enbridge Consent Decree Eighth Semi-Annual Report Page 16 of 72



features reported were likely manufacturing features that had been incorrectly classified as corrosion, since it is unlikely for pipelines to have internal corrosion on the topside of the pipe. As a result of this review, the ILI vendor revised the classification of 61 corrosion features to manufacturing related features, and 10 manufacturing related features to metal loss and provided an Issue 2 ILI Report. The list of revised classification features is provided in Section 4.3 – *Overview of features changed in report version 2* of the ILI report.

Line 4 DR-FW DuDi UCM Crack (Tool Run ID 6486)

There were 7 instances where the pendulum speed (rotation) of the tool could have had an impact on the discrimination capability of the tool. The ILI vendor concluded that there was no impact to the stated performance specification and no corrective action is required. In the 48" diameter section of this segment, there was a total coupling loss of 0.01% for the crack sensors due to 1 clockwise-oriented sensor recording intermittent low amplitude signals. Enbridge accepted the ILI run because the stated performance specifications was achieved over the entire pipeline length and circumference and is of sufficient quality to complete the required analysis.

Line 4 PL-CR DuDi MFL3 Corrosion (Tool Run ID 6737)

MFL sensor 276 was nonfunctional for the entire inspection. The ILI vendor concluded that there was no impact to the stated performance specification. No corrective action is required. Enbridge accepted the ILI run because the data is of sufficient quality to complete the required analysis.

Line 10 EB-ENR Eclipse Crack (Tool Run ID 6449) and Line 10 ENR-UT Eclipse Crack (Tool Run ID 6491)

An Issue 2 ILI Report was requested by Enbridge for both inspections to clarify the Technical Data of the Inspection Robot in the Issue 1 ILI Report. The Technical Data of the Inspection Robot did not clearly identify the tool specification based on the wall thicknesses of these inspections. The Eclipse minimum and maximum wall thickness values were added to the Technical Data of the Inspection Robot to clarify what the tool specification was for each of these ILIs. The Issue 2 ILI Reports only addressed the clarification to the Technical Data of the Inspection Robot in the ILI Report and there was no change to the ILI Data.

Line 10 WNR-EB USWM+ Corrosion (Tool Run ID 6728)

All but one of the ultrasonic sensors worked properly during the entire inspection. The ILI vendor concluded that there was no impact to the stated performance specification. No corrective action is required. Enbridge accepted the ILI run because the data is of sufficient quality to complete the required analysis.

Line 14 AM-MK Eclipse Crack (Tool Run ID 6742)

One of the ultrasonic sensors experienced low signal amplitudes throughout the inspection. The ILI vendor treated this sensor as having continuous coupling loss for the inspection. During the inspection, there were two instances of speed excursions above the specified tool maximum speed. This led to a decrease in the tools sizing accuracy from 66,604.84 m to 68,065.13 m and from 12,5492.28 m to 12,5579.06 m. Between the sensor experiencing low signal amplitudes and the speed excursions, the ILI vendors stated performance specification was achieved for 99.6% of the pipeline length and circumference. The ILI vendor reviewed the areas of the speed excursions and no features were reported in those areas, so a revised tool Enbridge Consent Decree Eighth Semi-Annual Report Page 17 of 72



specification was not required. No corrective action is required. Enbridge accepted the ILI run because the data is of sufficient quality to complete the required analysis. This issue was also reported in Paragraph 31 above.

Line 14 PE-AM MFL4 Corrosion and Geometry (Tool Run ID 6498)

During the inspection, the length of the receiver valve was observed to be stretched (tool observed the value to be longer than it truly was). The ILI vendor adjusted the length of the valve for the final report resulting in no data loss. No corrective action is required. Enbridge accepted the ILI run because the data is of sufficient quality to complete the required analysis.

Line 14 PE-AM Eclipse Crack (Tool Run ID 6553)

During the inspection, there were four instances of speed excursions above the specified tool maximum speed. This led to a decrease in the tools sizing accuracy from 68,685.04 m to 68,906.66 m, 115,064.06 m to 115,396.49 m, 116,600.44 m to 116,651.36 m, and from 184,081.53 m to 184,300.16 m. In these areas of speed excursions, the ILI vendor provided an updated minimum detection threshold length between 28 mm and 30 mm (typical minimum detection threshold length is 25 mm). The ILI vendors stated performance specification was achieved for 99.78% of the pipeline length and circumference. No corrective action is required. Enbridge accepted the ILI run because the data is of sufficient quality to complete the required analysis. This issue was also reported in Paragraph 31 above.

Line 65 GF-CR GEMINI Corrosion (Tool Run ID 6744)

During this inspection, some of the MFL sensor heads experienced lift-off intermittently throughout the inspection. Sensor lift-off can occur when internal debris or scale is present, in the proximity of welds, and in some cases as tools traverse pipeline fittings. It was estimated that 0.0003% of the inspection experienced the sensor head lift-off that may result in some reduction in the sizing and detection specification. The ILI vendor provided a revised tool specification for these areas as can be seen in the Summary DQA report, as detection and sizing was degraded. Enbridge accepted this ILI with the revised tool specification because the revised specification was sufficient to complete the required integrity assessment. No measures are required to prevent reoccurrence. This issue was also reported in Paragraph 31 above.

Line 65 GF-CR USCD+ Crack (Tool Run ID 6555)

There was an increase in the number of reported features and the feature severity between the 2016 USCD+ and 2020 USCD+ inspections. Several of the features from the 2016 inspection were below the analysis and reporting threshold, while in the current 2020 inspection, they were above the minimum threshold. The discrepancies between the two inspections, particularly the feature severity, has warranted an Investigative Dig Program to determine if there are any data quality concerns with this inspection. The details of the Investigative Dig Program can be found in section 34.f-g [Investigative Digs].

34.d [ILI Data Quality Evaluation Timelines]

As outlined in the CD, all ILI data quality evaluations must be completed within 180 Days after the ILI tool is removed from the pipeline at the conclusion of any ILI investigation. As outlined in **Table D-12**, Enbridge completed data reviews for the runs (see "Yes" in "Quality Evaluations Completed Within 180 Days" column), and data reviews were ongoing for the runs for which the 180 Day period was still open at the end Enbridge Consent Decree Eighth Semi-Annual Report Page 18 of 72



of this reporting period (see "FR" in "Quality Evaluations Completed Within 180 Days" column). Additional details regarding data review for some listed runs can be found in Paragraph 34.c of this report.

Line 2 CR-DR Proton Crack (Tool Run ID 4506)

An Issue 2 ILI Report was required to correct the depth percent nominal wall thickness and depth percent local wall thickness values listed in the Issue 1 report. Only the depth percent nominal wall thickness and depth percent local wall thickness values changed from Issue 1 to Issue 2. There were no changes with the depth of the crack-like features, therefore the Predicted Burst Pressure and Remaining Life calculations that were completed in the Issue 1 ILI Report did not need to be recalculated.

Line 3 CR-PW MFL4 Corrosion (Tool Run ID 6606)

An Issue 3 ILI Report was required for this inspection due to the ILI vendor not appropriately identifying corrosion features in close proximity to areas of the pipeline which have a significant change in wall thickness. Further details describing the data quality issues can be found in P34c [Resolution of Identified Data Quality Issues].

Line 3 GF-CR MFL4 Corrosion (Tool Run ID 10052)

An Issue 2 ILI Report was required for this inspection due to the ILI vendor not appropriately identifying corrosion features in close proximity to areas of the pipeline which have a significant change in wall thickness. Further details describing the data quality issues can be found in P34c [Resolution of Identified Data Quality Issues].

Line 4 DR-FW MFL DuDi Corrosion (Tool Run ID 6487)

An Issue 2 ILI Report was required for this inspection due to the ILI vendor not appropriately identifying corrosion features in close proximity to areas of the pipeline which have a significant change in wall thickness. Further details describing the data quality issues can be found in P34c [Resolution of Identified Data Quality Issues].

Line 4 GF-DN MFL DuDi Corrosion (Tool Run ID 6607)

An Issue 3 ILI Report was required for this inspection due to the ILI vendor not appropriately identifying corrosion features in close proximity to areas of the pipeline which have a significant change in wall thickness. Further details describing the data quality issues can be found in P34c [Resolution of Identified Data Quality Issues].

Line 10 EB-ENR Eclipse Crack (Tool Run ID 6449) and Line 10 ENR-UT Eclipse Crack (Tool Run ID 6491)

An Issue 2 ILI Report was requested by Enbridge for both inspections to clarify the Technical Data of the Inspection Robot in the Issue 1 ILI Report. The Technical Data of the Inspection Robot did not clearly identify the tool specification based on the wall thicknesses of these inspections. The Eclipse minimum and maximum wall thickness values were added to the Technical Data of the Inspection Robot to clarify what the tool specification was for each of these ILIs. The Issue 2 ILI Reports only addressed the clarification to the Technical Data of the Inspection Robot in the ILI Report and there was no change to the ILI Data. This issue was also reported in Paragraph 34.c above.



Line 10 ENR-UT MFL4 Corrosion (Tool Run ID 6095)

An Issue 3 ILI Report was required for this inspection due to the ILI vendor not appropriately identifying corrosion features in close proximity to areas of the pipeline which have a significant change in wall thickness. Further details describing the data quality issues can be found in P34c [Resolution of Identified Data Quality Issues].

Line 67 GF-CR MFL4 Corrosion (Tool Run ID 2369)

An Issue 3 ILI Report was required for this inspection due to the ILI vendor not appropriately identifying corrosion features in close proximity to areas of the pipeline which have a significant change in wall thickness. Further details describing the data quality issues can be found in P34c [Resolution of Identified Data Quality Issues].

34.e [Discrepancies between Two Successive ILI Runs]

Inspections with significant discrepancies in either feature population, severity, or type related to the previous assessment of the line segment were identified during Enbridge's preliminary review of the initial ILI Reports identified in **Table D-13**. Details of these discrepancies are reported below.

Line 2 DR-PW Proton Crack (Tool Run ID 4507)

This is the baseline inspection with the Proton tool on this pipeline and it was noticed that there was an increase in the feature severity and density when compared to the previous 2012 UC and 2013 DuoCD inspections. The 2012 UC and 2013 DuoCD crack tools did not perform consistently, and therefore a hydrotest was chosen to verify the integrity of the pipeline in 2015. The previous tools were different technologies and were run several years prior to the hydrotest and this inspection. For these reasons, there is minimal value in comparing the current crack inspections are explainable by the differences in the feature severity and density between these inspections are explainable by the differences in tools and data quality, and do not warrant any additional actions due to data quality issues with the Line 2 DR-PW Proton inspection.

Line 4 DR-FW DuDi UCM Corrosion (Tool Run ID 6486)

There was an increase in the total number of features reported compared to the previous 2018 UCM inspection due to areas of low-level corrosion detected during the analysis. Most of the changes are with respect to metal loss features below 20%. These changes in the quantity of shallow corrosion features that are near the tool detection threshold and/or less than the tool tolerance is anticipated as part of typical ILI data variability.

Line 4 DR-FW DuDi UCM Crack (Tool Run ID 6486)

There was an increase in the feature population and severity when compared to the previous 2018 UCM inspection. The change in feature population and severity was mainly visible for features with a reported depth between 1.0mm and 1.9mm. The features on average had a decrease in the reported depth between 0.25mm and 0.50mm, which is within the tool tolerance of +/- 1.0mm, between the 2018 and 2020 UCM inspections.



Line 4 VG-PL Deformation Geometry (Tool Run ID 6739)

There was an increase in the number of features reported from the previous 2016 Deformation inspection. The features were visible in the previous inspection, but they were not reported due to being below the reporting threshold.

Line 4 VG-PL MFL3 DuDi Corrosion (Tool Run ID 6740)

There was an increase in the total number of features reported compared to the previous 2016 MFL3 DuDi inspection due to areas of low-level corrosion detected during the analysis. The majority of the changes are with respect to metal loss features below 20%. These changes in the quantity of shallow corrosion features that are near the tool detection threshold and/or less than the tool tolerance is anticipated as part of typical ILI data variability.

Line 5 IR-NO USCD+ Crack (Tool Run ID 6593)

There was an increase in the feature population when compared to the 2017 USCD+ inspection. The change in feature population can be attributed to features near the detection threshold being reported due to inspection variability.

Line 5 IR-NO GEMINI Geometry (Tool Run ID 6743)

There was an increase in the number of reported features and the feature severity between the 2017 GEMINI and 2020 GEMINI caliper inspections. This is expected due to the reduced reporting threshold of 0.5% OD implemented in 2020. The reporting threshold in 2017 was 2.0% OD. The majority of the differences between the two runs were for features between 0.5% OD and 2% OD.

Line 6A PE-AM GeoPig Geometry (Tool Run ID 6578)

There was a decrease in the severity (depth) of the features when looking at the preliminary trending results. Enbridge determined that the pipe where these dents are located was previously excavated which results in the dents re-rounding/re-bounding thus reducing the depth of the dents. No action is required due to this change in severity (depth).

Line 10 WNR-EB USWM+ Corrosion (Tool Run ID 6728)

There was a decrease in the total number of features reported compared to the previous 2018 MFL4 inspection due to areas of low-level corrosion detected during the analysis. The majority of the changes are with respect to metal loss features below 10%. These changes in the quantity of shallow corrosion features that are near the tool detection threshold and/or less than the tool tolerance is anticipated as part of typical ILI data variability. The difference in feature population can also be attributed to technology differences between ILI tools and different reporting thresholds and sizing/classification algorithms.

Line 14 AM-MK Eclipse Crack (Tool Run ID 6742)

There was a decrease in the density of the reported ILI calls compared to the previous 2016 UCx inspection. The Eclipse crack tool leverages both pulse echo and pitch catch signals for feature sizing and classification, while the previous UCx tool only uses pulse echo. This allows the Eclipse tool to better discriminate between crack-like features and weld inhomogeneities. The 2016 UCx tool did not discriminate



between crack-like features and weld inhomogeneities as well, so the ILI vendor conservatively classified several weld inhomogeneities as crack-like features. This is the first inspection of this segment with the Eclipse technology.

Line 14 PE-AM MFL4 Geometry (Tool Run ID 6498)

There was an increase in the number of features reported from the previous 2016 MFL inspection. The features were visible in the previous inspection, but they were not reported due to being below the reporting threshold.

Line 14 PE-AM Eclipse Crack (Tool Run ID 6553)

There was an increase in the feature population when compared to the previous 2016 UCx inspection. The change in feature population can be attributed to using different ILI crack tools, and the knowledge and experience gained with the field information since the last inspection which has improved the categorization of features.

Line 65 GF-CR USCD+ Crack (Tool Run ID 6555)

There was an increase in the number of reported features and the feature severity between the 2016 USCD+ and 2020 USCD+ inspections. Several of the features from the 2016 inspection were below the analysis and reporting threshold, while in the current 2020 inspection, they are above the minimum threshold. The discrepancies between the two inspections has warranted an investigative dig program.

Line 65 GF-CR GEMINI Corrosion (Tool Run ID 6744)

There was a decrease in the total number of reported features when compared to the previous 2016 GEMINI corrosion inspection. The decrease in feature population is due to improvements of sizing algorithms, detection capabilities, and reclassification of features.

Line 65 GF-CR GEMINI Geometry (Tool Run ID 6744)

There was an increase in the number of reported features and the feature severity between the 2016 GEMINI and 2021 GEMINI caliper inspections. This is expected due to the reduced reporting threshold of 0.5% OD implemented in 2020. The reporting threshold in 2016 was 2.0% OD. The majority of the differences between the two runs were for features between 0.5% OD and 2% OD.

34.f-g [Investigative Digs]

There was one investigative dig program issued during the SAR reporting period. Details for the investigative dig program are reported below.

Line 65 GF-CR USCD+ Crack (Tool Run ID 6555)

There was an increase in the number of reported features and the feature severity between the 2016 USCD+ and 2020 USCD+ inspections. Several of the features from the 2016 inspection were below the analysis and reporting threshold, while in the current 2020 inspection, they are above the minimum threshold. The discrepancies between the two inspections, particularly the feature severity, has warranted an investigative dig program to determine if there are any data quality concerns with this inspection.



The Investigative Dig Program consists of:

25 Potential FRE's resulting in 14 Digs being issued. A total of 14 Digs were issued on April 21, 2021, with one dig requiring a 30 Day Repair deadline and 13 digs with a 180 Day repair deadline. All required Pressure Restrictions were imposed as per CD requirements.

The Investigative Dig Program will commence with 3 digs (GW's 37210, 87320 and 100330) to initially assess the Data Quality of the ILI. These pipe joints have a combined 14 features reported on them. The NDE results of those features will be compared with the ILI Data from current and prior inspections to determine if a Data Quality issue requires a corrective action. A sleeve repair was completed on 4/23/2021 for the 30 Day Repair deadline dig. The two 180 Day repair deadline digs are tentatively scheduled to be completed by June 2021. Based on the results of these investigative digs and potential corrective actions, the remainder of the pipe joints with "Features Requiring Excavation" will be evaluated.

(III) Identification of Features Requiring Excavation

35 [Evaluation of Each Feature in Initial ILI Report for Feature Requiring Excavation]

Following each ILI tool run, Enbridge evaluated each feature identified in the Initial ILI Report to determine if the feature was an FRE.

36 [Feature Requiring Excavation Definition]

With respect to crack and corrosion features, Enbridge applies three methods to identify an FRE:

- Enbridge estimates the lowest pressure at which the feature is predicted to rupture or leak (i.e. Predicted Burst Pressure) using the procedures set forth in Subsection VII.D.(IV) of the Consent Decree.
- 2. Enbridge estimates the amount of time remaining until the feature is predicted to rupture or leak (i.e. Remaining Life) using the procedures set forth in Subsection VII.D.(VI) of the Consent Decree.
- Enbridge considers other unique characteristics of a feature using the criteria set forth in Subsection VII.D.(V) of the Consent Decree. The records of these methods being applied are in the Assessment Sheets for each ILI tool run as well as Program Summary Documents and other detailed documentation which the ITP has access to.

With respect to Geometric and Intersecting or Interacting features, Enbridge applied the Fifth Modification analysis process to identify features requiring excavation and to set pressure restrictions for these features. Refer to Section IX Implementation of Fifth Modification of the Consent Decree for Geometric and Intersecting or Interacting Features for more details.

37 [Deadlines for Adding Features Requiring Excavation on the Dig List]

Following each successful Consent Decree ILI tool run, Enbridge identified all crack, corrosion, and geometric features detected by the ILI tool runs that are FREs. Enbridge added such features to an electronic list of features scheduled for excavation and repair or mitigation (i.e. Dig List) in accordance with the schedule outlined in Paragraph 37 of the Consent Decree. This listing does not include features that EPA/ITP may consider FREs due to differing interpretations of CD provisions such as those relating to circumferential crack features.



All FREs identified based on their Predicted Burst Pressure or their Remaining Life were added to the Dig List within 5 days of calculating the Predicted Burst Pressure and the Remaining Life of the features in accordance with Subsection VII.D.(IV) of the Consent Decree.

All FREs identified based on interacting or intersecting criteria were added to the Dig List within 5 days of completing the preliminary review of the initial ILI reports, in all cases where the preliminary review did not identify any data quality concerns related to the feature.

Table D-14 provides a list of the FREs that were identified during the reporting period of this SAR. Priority notification FREs are excluded from this table as they are included in Paragraph 33 **Table D-9** of this SAR. ILI tool runs that did not discover any FREs are excluded from this table.

L4 DN-VG 2021 MFL

On 5/27/2021, the ITP made an inquiry in regard to the possible omission of three Features Requiring Excavation from the Dig List for the 2021 Line 4, DN-VG, MFL ILI. Enbridge has confirmed that the original Assessment Sheet uploaded for ITP review on the ShareDrive was overwritten by an altered and incorrect Assessment Sheet. The Assessment Sheet was altered after the May 5, 2021 SME approval, but before the Assessment Sheet was reviewed by the ITP.

The alteration of the Assessment Sheet occurred as part of probability of failure (POF) analysis processes conducted by Enbridge after FRE approval and is outside the scope of the CD. All features within the SME approved version of the Assessment Sheet were properly matched to the previous 2015 MFL data and one step in the POF analysis pertains to the review and potential adjustment of corrosion growth rates using other metal loss ILI available, including from other technologies such as UTWM. During this process a total of 9 Corrosion Growth Rates, including the 3 FREs identified by the ITP, were altered (matched to the 2018 UTWM data versus the previous 2015 MFL data). At the time of the change, this process was not completed and was still under review when the altered Assessment Sheet was uploaded to the ShareDrive inadvertently.

An overwrite of the Assessment Sheet in the ShareDrive occurred due to a database upload issue. Upon resolving the error, the Assessment Sheet was re-uploaded. It was not known that the file being re-uploaded to the ShareDrive was a working document with altered information as part of the POF analysis. The re-upload over-wrote the approved Assessment Sheet intended for purposes of ITP review.

Enbridge has uploaded a copy of the Assessment Sheet that was approved on May 5, 2021 for ITP review. The three features identified by the ITP have a minimum remaining life greater than 2 times the planned reinspection interval and do not meet the CD requirements for an FRE based on the data matched to the 2015 MFL per Enbridge procedures.

A review of the POF process has been initiated to determine the appropriate mitigations to prevent this from re-occurring in the future.

38 [Establishing Excavation and Repair Deadlines for FRE's]

Enbridge has complied with the requirements of Paragraph 38, as set forth in the Subparagraphs below.

38.a [Excavation and Repair Deadlines]

For each FRE placed on the Dig List, Enbridge established excavation and repair deadlines that accounted for the level of threat posed by the feature and that complied with the dig criteria deadlines specified in Subsection VII.D.(V) of the Consent Decree. If a feature met more than one dig-selection criteria, Enbridge Enbridge Consent Decree Eighth Semi-Annual Report Page 24 of 72



set the excavation and repair deadline in accordance with the shortest applicable timetable set forth in Subsection VII.D.(V) of the Consent Decree. In some cases, dig deadlines were extended per the provisions provided in Paragraph 49 such as when completing a dig in the winter is less detrimental to the environment or when a dig was particularly complex.

L4 VG-PL 2021 MFLDUDI

In the SAR8 reporting period, Enbridge identified that some ILI assessments that were previously completed utilized HCA information that was not updated in OneSource. Enbridge determined that one ILI assessment utilized the non-current HCA values : L4 VG-PL 2021 MFLDUDI. Enbridge has reassessed the affected ILI and updated the affected repair deadlines based on the current HCA classifications. All of the deadlines were updated well in advance of the new 180 Day repair deadline.

Further details describing the HCA updates performed can be found in Paragraph144 [Section D] HCA Information Utilized for ILI Assessments – 38a and Other Various Paragraphs.

38.b [Establish Pressure Restrictions if Required]

All pressure restrictions (PRs) required for FREs are established pursuant to Subsection VII.D.(V) of the Consent Decree.

In cases where an FRE is subject to more than one PR under Subsection VII.D.(V) of the Consent Decree; Enbridge established the PR that results in the lowest operating pressure at the location of the feature.

The "Point Pressure Restriction (PPR) values" requirements were satisfied by implementing operating limits that use a combination of discharge and suction limits to manage pressures. These operating limits maintain pressures to a level that assured compliance with the PPR value at the location of the feature. On October 29,2020, Enbridge submitted revisions to responses previously submitted in the SARs 1 through 6 with respect to Paragraph 38.b of the Consent Decree. Historically in these reports Enbridge referred only to discharge pressure but rather should have referenced using an operating limit pair.

During the SAR6 reporting period, and at the request of the ITP, Enbridge started providing a monthly summary of implemented Consent Decree PPRs and the maximum pressure achieved during each month at PPR locations. Consent Decree PPRs include all PPRs based on Consent Decree requirements and does not include other PPRs set by Enbridge or other regulatory bodies. This update is provided at the Pipeline Control Systems and Leak Detection/Control Centre Operations ("PCSLD/CCO") monthly technical meetings. There were no exceedances of the Consent Decree PPRs in this SAR reporting period

39.a-b [Field Measurements of Excavated Features]

During the reporting period of this SAR, Enbridge followed its processes to excavate and repair or mitigate and record field measurements for all crack and geometry features, and all corrosion features with depths greater than 10% wall thickness in accordance with Subsection VII.D.(V) of the Consent Decree. Ten percent (10%) is the general corrosion ILI tool detection depth threshold.

During excavations for FREs and any additional segments of pipeline, including investigative digs pursuant to Subparagraph 34.e of the Consent Decree, Enbridge obtained and recorded field measurements of all applicable features on the excavated segments and these were stored in OneSource as per Paragraph 77. All approved Non-destructive examination ("NDE") reports were uploaded to the Enbridge Shared Drive for ITP access.



During the reporting period of this SAR, Enbridge did not discover any pipe segments that contained a high volume of unreported features as denoted in the Consent Decree. Hence, the requirements of Subparagraph 39.a are not applicable for this SAR.

During this SAR reporting period, the FREs repaired and planned for repair are listed in **Table D-15**. Please note that Priority Features that were repaired are reported in **Table D-9** under Paragraph 33.c-d, therefore they are not reported in **Table D-15**.

40 [Field Data Comparison to ILI Data]

Complete ILI programs with the associated Consent Decree digs completed within the reporting period for this SAR are listed in **Table D-16**.

Within 30 Days after completing excavation of all Features Requiring Excavation identified on a pipeline based on any Initial ILI Report, Enbridge completed an analysis of field data obtained during all excavations conducted and determined whether field data indicated that the ILI tool tended to understate the actual severity of features on the excavated sections of the pipeline ("ILI tool depth bias").

During the reporting period, Enbridge, the EPA and the ITP discussed refinements to when excavations of FREs would be deemed "completed." Enbridge and the ITP have provided an interpretation document to provide clarity around this issue and are awaiting further comments or concurrence from the EPA on this issue. This item is included in **Table IX-1** in P. 144 Problems Anticipated in Appendix 1.

NDE Report Upload Dates Being Overwritten in OneSource

During the SAR8 reporting period, Enbridge discovered an issue with how OneSource displays the upload dates of certain NDE reports. There were four NDE reports that had previously been uploaded into OneSource that required revisions. When the revised reports were re-uploaded into OneSource, the original NDE report upload date was overwritten with the upload date of the revised NDE report. To resolve this issue, OneSource has been updated to show both the original NDE report upload date and the most recent NDE report upload date. Both dates will appear the same in OneSource if an NDE report has only been uploaded once. If an NDE report has been uploaded multiple times to OneSource, the original NDE report upload date and the most recent NDE report upload date will both be listed in OneSource.

The 4 NDE reports for which the original NDE report upload date was overwritten with the upload date of the revised NDE report are shown in the **Table D-16a**.

41 [ILI Electronic Records]

For each ILI investigation conducted during this reporting period, Enbridge maintained electronic records relating to ILI data, including but not limited to all 14 categories of information listed in Paragraph 41 of the Consent Decree. Enbridge procedures require that such ILI data records be maintained for at least 5 years after termination of the Consent Decree.



(IV) Predicted Burst Pressure/Fitness for Service

42 [Predicted Burst Pressure]

Enbridge calculated the Predicted Burst Pressure of all crack⁴ and corrosion features identified by ILI tools, in accordance with the requirements of Subsection VII.D.(IV) of the Consent Decree.

43 [Predicted Burst Pressure Definition]

Enbridge calculated the Predicted Burst Pressure of ILI features in accordance with the inputs and procedures in Appendix B of the Consent Decree⁴. Enbridge calculated the Predicted Burst Pressure of NDE features, as described in SAR5 Paragraph 144 [Section D] crack and corrosion Field Burst Pressure Calculations per Appendix B in the Consent Decree – Paragraph 43.

The ILI Assessment Sheets document all ILI feature Burst Pressure calculations, including the methodology and all the inputs as stated above.

44.a-b [Initial Predicted Burst Pressure Calculations and Initial Remaining Life Calculations]

Table D-17 summarizes the timelines for completing initial Predicted Burst Pressure calculations and initial Remaining Life calculations for all crack⁴ or corrosion features identified in reports that were received within the reporting period. Refer to **Table D-7** under Paragraph 32.a-c for a list of all valid ILI runs with reports received within the reporting period.

As shown in **Table D-17**, all calculations were completed no later than the earlier of either: (1) eight weeks after completing data quality review with respect to the feature and/or pipeline section where the feature is located; or (2) 175 Days after the ILI tool was removed from the pipeline at the conclusion of the ILI run.

45 [Retention of Electronic Records]

Enbridge maintains electronic records documenting all Predicted Burst Pressure calculations, and all Remaining Life calculations, including inputs and dates the calculations were completed with respect to features, and will continue to do so until five years after termination of the Consent Decree.

(V) Dig Selection Criteria

46.a-d [Dig Selection Criteria]

Where Enbridge has identified features meeting dig selection criteria, it has within set timeframes, excavated, and repaired or mitigated such features in accordance with Tables 1 through 5 of the Consent Decree. A summary of each dig and the related timeframes are provided in **Table D-18**. The feature repair and mitigation of the Priority Notification features are reported in Subparagraphs 33.c-d **Table D-9** and therefore are not included in **Table D-18**.

During each excavation required under this Paragraph, Enbridge inspected all excavated portions of the pipeline and collected field measurements of features on excavated portions of the pipeline. Enbridge determined, based on an analysis of field measurement values of feature length and depth and other

⁴ Enbridge has not applied Appendix B to evaluate circumferential crack features as it is not suitable for such features.



relevant field observations, whether excavated portions of the pipeline contained any additional features not previously identified on the Dig List that satisfy one or more of the dig selection criteria.

At the time of excavation, Enbridge repaired or mitigated the features based on an analysis of field measurement values for feature length and depth or other field observations, regardless of whether the feature was placed on the Dig List based on an analysis of ILI-reported values for feature length and depth.

Where applicable, Enbridge established pressure restriction requirements and imposed PPRs in accordance with Consent Decree requirements⁵ as summarized in **Table D-20**. Note that when the imposition deadline of a PPR was a weekend or United States Federal holiday, the deadline was moved to the following business day in accordance with the definition of Day in Paragraph 10(m) of the Consent Decree.

During this reporting period, there were no cancelled digs as reported in **Table D-19**.

46.e [Alternate Plans and Alternate Interim Pressure Restrictions]

Enbridge submitted one new Alternate Plan during the reporting period of this SAR. The total number of Alternate Plans and Alternate Interim Pressure Restrictions submitted since the Effective Date of the Consent Decree to the end of this SAR reporting period are provided in **Table D-21**.

46.f [Saturated Signal Crack Feature]

Enbridge did not submit an Alternate Plan or an alternate pressure restriction for any saturated signal crack feature within the reporting period for this SAR.

46.g [Alternate Plans and Alternate Interim Pressure Restrictions]

Enbridge submitted one new Alternate Plan (AP 6) during the reporting period of this SAR. **Table D-22** reports the details related to this Alternate Plan.

46.h [Alternate Plans and Temporary Pressure Restrictions]

No Temporary Pressure Restrictions were imposed during the reporting period of this SAR.

46.i. [Compliance with applicable laws and regulations]

Enbridge submitted one new Alternate Plan during the reporting period of this SAR. During the implementation of Alternate Plans 5 and 6 which remain active, Enbridge complied with applicable laws and regulations.

46.j [Alternate Plans and Alternate Pressure Restrictions Implementation]

Enbridge has implemented each proposed Alternate Plan and each proposed alternate interim pressure restriction and timetable in accordance with the timetable for implementation of such Alternate Plan or alternate interim pressure restriction as set forth in the applicable notification submitted pursuant to



Paragraph 46.g.(2). Adjustments to Alternate Plans were communicated to the EPA and ITP via quarterly Alternate Plan or monthly Update meetings as required.

46.k [Documentation Maintenance]

Enbridge has maintained all documentation relating to the selection and implementation of the Alternate Plans. Enbridge is prepared to make such documents available to EPA upon request, consistent with the requirements of Section X (Information Collection and Retention). Information is being retained in an internal repository in conformance with this requirement.

46.I [Updates of Alternate Plans and Alternate Pressure Restrictions]

Alternate Plan updates during this report period have been summarized in **Table D-23**.

47 [Dig-Selection Criteria and Pressure Restriction Requirements for Crack Features]

Enbridge has set schedules for the excavation and repair or mitigation of each crack feature that meets one (or more) of the Dig Selection Criteria set forth in Table 1 of the Consent Decree, in accordance with the timeframes specified in column 2 of Table 1, and the PR requirements specified in column 3 of Table 1 of the Consent Decree. The crack features that meet the above criteria are summarized in **Table D-24** and PPRs of crack FREs are listed in **Table D-25**.

Enbridge also issued dig packages to excavate and repair or mitigate crack features that intersected or interacted with corrosion features, dents, or other Geometric features, and established appropriate pressure restrictions for such interacting features, as per Table 5 and Paragraph 59 of the Consent Decree, and associated Modifications to the Consent Decree⁶. For more information about these interacting features, see Paragraph 59 in this SAR. These features are not included in **Table D-24** and **Table D-25**, but they are detailed in Paragraph 58 and 59.

Table D-25 lists the pressure restrictions imposed due to these criteria as applicable to this SAR.

Enbridge and the ITP have identified a difference in interpretation regarding the incorporation of circumferential cracking within the CD. Enbridge has also identified difficulties encountered, from a technical perspective, of applying the Consent Decree as written to circumferential cracking features. Enbridge, the EPA, and the ITP continue to discuss ways to resolve this challenge and this item is included in **Table IX-1** in P. 144 Problems Anticipated in Appendix 1.

48 [Crack Feature Mitigation Timelines]

During this reporting period, Enbridge determined the deadline for each feature repair / mitigation as the shortest deadline specified in Tables 1, 3, or 5 of the Consent Decree, and Enbridge established the lowest operating pressure at the location of the feature which is subject to more than one pressure restriction.

49 [Dig Timeline Extensions]

During this reporting period, Enbridge did not extend the dig deadline for any FRE's from 180 Days to 365 Days based on environmental considerations per Paragraph 49.a.

⁶ Enbridge does not interpret the CD to cover interacting or intersecting circumferential crack features. Enbridge Consent Decree Eighth Semi-Annual Report Page 29 of 72



50 [Corrosion Features]

Enbridge has set schedules for the excavation and repair or mitigation of each corrosion feature that meets one (or more) of the Dig Selection Criteria set forth in Table 2 of the Consent Decree, in accordance with the timeframes specified in column 2 of Table 2 for corrosion features located in any HCA, and the timeframes specified in column 3 of Table 2 for corrosion features not located within an HCA. The corrosion features that meet the above criteria are summarized in **Table D-26** and the associated PPRs are listed in **Table D-27**.

Enbridge also issued dig packages to excavate and repair or mitigate corrosion features that intersect or interact with crack features, dents, or other Geometric features, and established appropriate pressure restrictions for such interacting features, as provided in Table 5 and Paragraph 59 of the Fifth Modification of the Consent Decree.⁷ For more information about these interacting features, see Paragraph 59 in this SAR. These features are not included in **Table D-26**.

51 [Corrosion Feature Mitigation Timelines]

During this reporting period, Enbridge determined the deadline for each feature repair / mitigation as the shortest deadline specified in Tables 2, 3, or 5 of the Consent Decree, and Enbridge established the lowest operating pressure at the location of the feature which is subject to more than one pressure restriction.

52 [Corrosion Feature Pressure Restrictions]

Enbridge established PRs within the timeframes identified in Paragraph 51 Table 2 of the Consent Decree and specified in Subparagraphs 52.a and 52.b (i.e. within 2 days after determining that any corrosion feature had a depth greater than 80 percent of the wall thickness of the joint where the feature is located, or within 2 days after determining that any feature had a RPR less than 1.00 or a Predicted Burst Pressure that is less than 1.39 x MOP).

Table D-27 lists the PRs imposed due to these criteria in this reporting period of the SAR. Note that where the imposition deadline for PPRs was on a weekend or United States Federal holiday, the imposition deadlines were moved to the following business day in accordance with the Definition of Day in Paragraph 10.m of the Consent Decree.

53 [Dig Selection Criteria for Axial Slotting, Axial Grooving, Selective Seam Corrosion and Seam Weld Anomaly A/B Features]

During this reporting period, there were no Axial Slotting, Axial Grooving and Selective Seam Corrosion, or Weld Anomaly A/B FREs identified, as referenced in **Table D-28**.

54 [Pressure Restrictions for Axial Slotting, Axial Grooving, Selective Seam Corrosion and Seam Weld Anomaly A/B Features]

There were no Pressure Restrictions required as a result of Axial Slotting, Axial Grooving, Selective Seam Corrosion features or Seam Weld anomaly A/B features, as referenced in **Table D-29**, in accordance with Table 3 of the Consent Decree.

 ⁷ Enbridge does not interpret the CD to cover interacting or intersecting circumferential crack features.
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55 [Dig Selection Criteria for Dents and other Geometric Features]

Enbridge excavated and repaired or mitigated each dent that met one or more of the Dig Selection Criteria set forth in Table 4 of the Fifth Modification and established pressure restrictions for identified interacting dents as provided in Paragraph 57.⁸ Enbridge met the timeframes specified in column 2 of Table 4 of the Consent Decree for features located within an HCA, or timeframes specified in column 3 of Table 4 in the Consent Decree for features not located within an HCA, where applicable.

56 [Dent and other Geometric Feature Mitigation Timelines]

Enbridge determined the deadline of a geometry feature repair or mitigation as the shortest deadline as identified in **Table D-30**. The same process provides that Enbridge will establish the PR resulting in the lowest operating pressure at the location of the feature that was subject to more than one pressure restriction.

57 [Dent and other Geometric Feature Pressure Restrictions]

Enbridge establishes PRs for dents within the timeframes identified in Paragraph 57 of the Consent Decree.

58 [Dig Selection Criteria for Interacting Features]

Within 30 days after receiving any Initial ILI Report, Enbridge reviewed OneSource (i.e. the integrated database specified under Paragraph 74 of this SAR) for the purpose of determining whether any feature reported by the ILI tool intersected or interacted with a feature of a different feature type that was detected during a previous ILI Tool Run but not repaired or mitigated.⁸ Enbridge excavated and repaired all such intersecting/interacting features that met the dig selection criteria set forth in Table 5 of the Fifth Modification of the Consent Decree, within the applicable timeframes identified in columns 2 and 3 of Table 5. Enbridge also established PRs as provided in Table 5 and Paragraph 59 of the Consent Decree. For more information, see the discussion in the following Paragraph (Paragraph 59) of this SAR. **Table D-31** lists the intersecting/interacting features that were identified for excavation.

Enbridge, the ITP, EPA and DOJ negotiated the Fifth Modification of the Consent Decree to resolve differences in interpretation in regard to this Paragraph. As a result of the settlement on the issues, Enbridge has requested that ILI vendors report all deformations down to the tool tolerance of the geometric ILI tool. Historical Consent Decree geometric ILI reports have been revisited by the ILI vendors to report all deformations down to the tool tolerance of the geometric ILI tool that were not previously reported. The details associated with the assessment of these Catch Up ILI reports was provided in SAR6.

Line 65 GF-CR UTCD Nov-2020

During the SAR8 reporting period, Enbridge discovered an issue related to the ILI report receipt date for the L65 GF-CR UTCD Nov-2020 ILI. It was determined that the ILI Analyst inadvertently entered the ILI Report receipt date incorrectly into Enbridge's system which is used for tracking and scheduling ILI-related task deadlines. This resulted in the Interacting Feature review being completed 2 Days later than the 30 Day Consent Decree deadline. All other Consent Decree requirements were met for this ILI.

Further details describing the data quality issues can be found in P.145 [Section D] Untimely Preliminary Quality Review and Interacting Feature Review on L65 GF-CR UTCD – P34a and 58.

⁸ Enbridge does not interpret the CD to cover interacting or intersecting circumferential crack features. Enbridge Consent Decree Eighth Semi-Annual Report Page 31 of 72



59 [Pressure Restrictions for Interacting Features]

Except when described in the discussion of Paragraph 46 above, Enbridge established the PRs within the timeframes identified in Table 5 and specified in Subparagraphs 59.a and 59.b of the Fifth Modification of the Consent Decree for each interacting feature identified during the period of this SAR. Within two days after determining that any intersecting or interacting crack, and/or corrosion feature had a Predicted Burst Pressure that is less than 1.25x Established MOP, Enbridge limited operating pressure at the location of the feature to not more than 80 percent of the Predicted Burst Pressure, as identified in **Table D-32**. Within two days after determining that any dent had an indication of cracking, metal loss or a stress riser, Enbridge limited operating pressure at the location of such feature to not more than 80 percent of the feature to not more than 80 percent of such feature to not more than 80 percent of such feature to not more than 80 percent of such feature to not more than 80 percent of such feature to not more than 80 percent of such feature to not more than 80 percent of such feature to not more than 80 percent of such feature to not more than 80 percent of the highest actual operating pressure at the location of such feature to not more than 80 percent of the highest actual operating pressure at the location of the feature over the last 60 days.

Pressure restrictions can be removed upon completion of feature repair. Pressure restriction removal is a safety critical process that is completed at Enbridge's discretion and there is no Consent Decree requirement to remove a pressure restriction within a certain period of time after a feature is repaired.

Line 5, IR-NO CD+ UC (axial crack) 2020

On 6/4/2021, the ITP made an inquiry in regard to a pressure restriction established for Line 5, IR-NO, GW 220240, that appeared to be 18 psi higher than the PPR determined for this location. Enbridge has confirmed that the pressure restriction of 490 psi that was implemented on GW220240 on April 12, 2021 is correct. The Assessment Sheet pressure restriction value of 472 psi was based on the preliminary 80% of last 60 day high obtained prior to Final Assessment approval. The 80% of last 60 day high PPR value was later confirmed to be 490 psi on the date of Final Assessment approval on April 9, 2021. The Assessment Sheet was updated with the correct value of 490 psi on April 12, 2021; however, it was not re-uploaded to the ShareDrive and was unavailable for ITP review. The Assessment Sheet that was updated on April 12, 2021 has been uploaded to the ShareDrive and is available for ITP review.

(VI) Remaining Life Determinations/Re-inspection Intervals

60 [Remaining Life]

Enbridge completed the Remaining Life calculation for all detected crack and corrosion features that did not meet any of the dig selection criteria. These calculations are in the ILI Assessment Sheets. As reported in Paragraph 44.a-b of this SAR, all Remaining Life calculations were completed no later than the earlier of either: (1) eight weeks after completing data quality review with respect to the feature and/or pipeline section where the feature is located; or (2) 175 Days after the ILI tool was removed from the pipeline at the conclusion of the ILI run. **Table D-33** summarizes the remaining life calculations completed during this reporting period.

61 [Remaining Life Calculations]

Paragraph 61 provides instances where the remaining life does not need to be calculated for a feature. Pursuant to Paragraph 61, Enbridge does not always calculate the remaining life for repaired or mitigated crack features. Enbridge does not utilize the other exception criteria provided in Paragraph 61.



62 [Operating Pressure Used when Determining the Remaining Life of Crack Features]

Enbridge monitors and records the actual operating pressures of pipeline segments for each month to be used in the crack feature Remaining Life Calculation as outlined in the Lakehead System Integrity Remediation process:

a. In determining the number and magnitude of pressure cycles, Enbridge uses the worst cycling quarter between the most recent valid crack ILI tool run and the immediately prior valid crack ILI run. The worst cycling quarter reflects the worst combination of cycling frequency and cycling magnitude for the applicable line or line segment during the period between the successive ILI runs.

b. Enbridge did not increase the operating pressure limit in any segment of a Lakehead System pipeline after determining the Remaining Life of unrepaired crack features in accordance with this Paragraph 62.

63 [Crack Feature Remaining Life Calculations]

Enbridge used a fatigue crack growth model and a Stress Crack Corrosion ("SCC") crack growth model and determined the remaining life with the model yielding the fastest projected growth rate and the shortest Remaining Life.

The application of fatigue crack growth model and SCC growth model to yield the fastest projected growth rate and the shortest Remaining Life is illustrated in the ILI Assessment sheets which the ITP has access to for verification purposes.

Paragraph 44 of the Consent Decree discusses how all calculations were completed within the required timeframes. **Table D-34** summarizes the remaining life calculations completed during this reporting period.

64 [Corrosion Growth Rate]

Enbridge used a Corrosion Growth Rate ("CGR") based on back-to-back corrosion runs (if available), or a historical CGR estimate for newly constructed pipeline or pipeline segments with no less than 0.005 inch per year. The application of a CGR based on back-to-back corrosion runs, or a historical CGR estimate for newly constructed pipeline or pipeline segments with no less than 0.005 inch per year, is illustrated in more detail in the ILI Assessment sheets which the ITP have access to for verification purposes.

65 [Maximum Interval between Successive ILIs Based on Half-Life Criteria]

Other than crack inspections for Line 2, the maximum interval between successive ILIs to assess crack and corrosion features did not exceed one-half of the shortest Remaining Life of any unrepaired crack or corrosion feature in the pipeline, calculated as described in Subsection VII.D.(VI) as of the end of the reporting period for this SAR. Crack inspections for Line 2 are governed by the Stipulation filed with the Court on May 2, 2018. Under the Stipulation, crack inspections on Line 2 were due in 2020 and have been completed as required in the Stipulation.

Since the new Proton UC (NGCT) ILI tool collects such a large volume of data, the L2 GF-CR segment requires two passes of the ILI tool in order to inspect the entire segment. The tool is run initially to gather the data from the start of the pipeline segment to the approximate midpoint. The tool is then run again, with the recording starting from the approximate midpoint of the segment and continuing until the end of the segment. This is a new tool for Enbridge and the use of two passes for a single line segment is unique to this segment of the Lakehead system. Initially Enbridge was scheduling the segment as a single ILI with Enbridge Consent Decree Eighth Semi-Annual Report Page 33 of 72



two separate passes and was determining the reinspection interval for the entire segment based on the shortest reinspection interval between the two passes. Enbridge has decided to consider each of the two ILI passes as individual ILI runs, with unique assessments and reinspection intervals, to avoid any confusion or discrepancies going forward. Enbridge has conservatively decreased the reinspection interval for each of the two passes to less than the maximum allowed, in order to run the ILI tool at a higher frequency to increase our understanding of this new tool's capabilities. The reinspection intervals for the two Line 2 GF-CR segment passes have been adjusted to 3 years as a result.

66 [Maximum Interval between Successive ILIs – Not to Exceed Five Years]

Other than crack inspections for Line 2, Enbridge determined the interval between successive crack, corrosion and Geometry ILIs. The maximum interval between successive ILIs does not exceed 5 years for all Lakehead pipeline segments. The 12-month ILI schedule is included in Paragraph 29 Table D-3 of this SAR and the ILI runs completed during the reporting period of this SAR are included in Paragraph 28 Table D-1. Crack inspections for Line 2 are governed by the Stipulation filed with the Court on May 2, 2018. Under the Stipulation, crack inspections on Line 2 were due in 2020 and have been completed or planned as required in the Stipulation.

Section E – Measures to Prevent Spills in the Straits of Mackinac

67 [Applicability]

A discussion of Enbridge's implementation of the requirements of Subsection VII.E (Paragraphs 67 to 73) to the two Line 5, 4.09-mile, 20-inch diameter pipelines (referred to herein as the "Dual Pipelines") that cross the Straits of Mackinac ("Straits") is set forth in the following sections.

68 [Span Management Program and Anchor Strike Mitigation]

Protection from Currents and Ice

Enbridge operates and maintains the Dual Pipelines to ensure that neither ice nor currents impair the integrity of either pipeline, as reported in SAR7. During the SAR8 reporting period, Enbridge implemented the same mitigation measures that are specified in SAR7.

Continuous Coverage

On February 25, 2021, ITP issued a Supplemental Information Request to ITP's Report on SAR7 seeking additional information to allow the ITP to verify whether Enbridge's SAR7 entry regarding continuous coverage of all sections of the Dual Pipelines located within 65-feet of water or less satisfied Consent Decree requirements.

Enbridge's March 10, 2021, response reaffirmed its position that the Dual Pipelines are continuously covered in depths of 65-feet or less. This is supported by the "The Project Overview section of the Ballard Marine Construction Inc. (BMC) 2020 Straits of Mackinac Pipeline Inspection Report, dated October 26, 2020 and shared with EPA on December 22, 2020, which indicates that "Both lines are buried from the shoreline extending out to water depths between 66 and 69 ft". The ITP released its Verification Status



Record of reporting period 7 on March 11, 2021, indicating that Enbridge's SAR7 Paragraph 68 entry does not discuss whether Enbridge has ensured that all sections of the Dual Pipelines located in water depth of 65 feet or less are continuously covered in a buried trench.

On March 18, 2021 the ITP issued Grocery List Request E-023 requesting that Enbridge provide "verifiable evidence from the 2016, 2018, and 2020 underwater visual inspections that ensures all sections of the Dual Pipelines within 65-feet of water or less are continuously covered in a buried trench on the floor of the Straits". On April 19, 2021, Enbridge submitted Digital Terrain Model ("DTM") to the ITP, which confirms that all portions of the Line 5 Dual Pipelines located in less than 65-feet of water for which survey data is available are buried.

On May 18, 2021, the ITP provided its Verification Issue Record ("VIR"), in which the ITP concluded that "Enbridge has not provided to the ITP objective evidence upon which the ITP may verify, independently and objectively, that Enbridge conducted periodic underwater visual inspections which, in turn, demonstrate that all sections of the Dual Pipelines within 65-feet of water or less are continuously covered in a buried trench on the floor of the Straits."

Enbridge responded to the VIR on June23, 2021, disagreeing with the ITP's conclusion and providing further information to verify that Enbridge has confirmed coverage of those portions of the Line 5 Dual Pipelines located in less than 65 feet of water based on available inspection data. Also, to address the ITP's concerns regarding prior SAR reporting and as reflected in Table IX-1, Enbridge agreed to revise its prior statements under Paragraph 68 concerning continuous coverage of the Dual Pipelines in less than 65-feet of water as follows:

"Visual underwater inspections performed in 2016, 2018, and 2020 confirm that the Dual Pipelines are buried at a water depth of approximately 65-feet and they remain continuously covered from that point to a point nearer to the shoreline for which inspection data was gathered and used to generate a Digital Terrain Model. No exposed segment of the Dual Pipelines has been identified as a result of such inspections."

On May 28, 2021, Enbridge completed an additional survey to confirm that all sections of the Dual Pipelines located in less than 65-feet of water are buried. The ITP was present during that inspection.

Following video quality and metadata review, Enbridge plans to submit the geo-referenced video footage to ITP as a revised response to GL E023.

Management of Spans

Enbridge operates and maintains the Dual Pipelines to ensure the pipelines are well-supported in areas where the pipeline is suspended above the lakebed ("spans"), in accordance with Paragraph 68.

Span Inspections

As reported in SAR7, Enbridge has completed all inspections required under Paragraph 68.f of the Consent Decree to confirm that span lengths do not exceed prescribed thresholds.

Screw Anchor Installations

As reported in SAR7 (**Table E-1**), Enbridge has completed all screw anchor installations required under the Consent Decree. All anchors were installed per the requirements set forth in the Third Modification of the Consent Decree, with location deviations at sites: WAP-21, EAP-6, EAP-12, and EAP-28. Modification to



the locations were completed in consultation with the ITP and Enbridge's marine contractor, as outlined in the Screw Anchor Work Plan ("SAWP").

Enbridge will continue with coating repair activities relating to screw anchor installations through the 2021 work season and further update EPA and ITP on its progress in future reporting.

Screw Anchor Report

As reported in SAR7, pursuant to the Consent Decree P. 68.e. requirements, Enbridge submitted its 2020 SAWP Final Report to EPA/ITP on December 3, 2020, summarizing the anchor installation activities since the Consent Decree's Effective Date. In ITP's May 14, 2021 Report on SAR7, ITP acknowledges Enbridge submission of the SAWP Final Report and "finds SAR7 68 Management of Spans, Screw Anchor Installations, and Screw Anchor Reports, and SAR7 Table E-1 with the additional information Enbridge provided meets the requirements for a SAR".

Protection from Vessel Anchor Strikes

Enbridge operates and maintains the Dual Pipelines to reduce the risk of a vessel's anchor puncturing, dragging or otherwise damaging the pipelines. Prior to and since the Effective Date of the Consent Decree, Enbridge has led and supported a number of initiatives aimed at reducing the risk of a vessel anchor strike within the Straits.

Enbridge Coordinated System

As explained in detail in SAR7, Enbridge has, in satisfaction of Paragraph 68.b, implemented the "Coordinated System" to reduce the risk of a vessel's anchor puncturing, dragging or otherwise damaging the Line 5 Dual Pipelines. The Coordinated System is specifically designed to monitor, observe, and communicate with vessels of significant size to identify any vessel activity that may pose an anchor strike risk to the Line 5 Dual Pipelines and to resolve such risk, or if such risk cannot be resolved, to direct the shutdown of the Pipelines. As reported in SAR6, the Coordinated System is implemented through the "Protocols" by the Enbridge Straits Maritime Operations Center ("ESMOC").

From the beginning of the SAR8 reporting period to date, Enbridge continues to implement the Coordinated System Protocols to reduce the risk of an anchor strike. On May 13, 2021, the ITP issued Grocery List Request E024, which sought information from Enbridge concerning the anchor threat drill, training of Marine Pollution Control ("MPC") staff, and suggested revisions to the Protocols. In response to E024, Enbridge has revised the Protocols to clarify how MPC is to request shutdown of the Line 5 Dual Pipelines if an anchor strike risk remains unresolved. Protocol 8 has been specifically revised to provide a script for MPC staff to call the Enbridge CCO to request a shutdown. The CCO emergency telephone number has also been updated, as well as the equipment list, as recommended by the ITP.

Further, in an effort to continue to enhance the effectiveness of the Protocols, Enbridge revised Protocol 10, which concerns monitoring by a patrol boat placed in proximity to the Line 5 Dual Pipelines 24 hours per day, 7 days per week, weather permitting. Enbridge has specifically revised Protocol 10 to provide for the use of installed cameras/radar to monitor the Line 5 Dual Pipelines' crossing of the Straits for anchor strike risk, in lieu of the patrol boat. Mr. Patrick Lawson-Earley, an independent maritime expert concluded that the use of cameras/radar is at least as effective, if not more effective, than the patrol boat given the patrol boat's limited viewing range and inoperability during adverse weather. The cameras/radar allow for monitoring of anchor strike risks posed by all vessel operating in proximity to the Line 5 Dual Pipelines.


A copy of the revised Protocols was provided to the EPA on July 12, 2021.

Contractor Anchoring Guidelines

Enbridge reported on its implementation of the Contractor Anchoring Guidelines in SAR7. From the beginning of the SAR8 reporting period to date, Enbridge continues to implement the Contractor Anchoring Guidelines for all vessels contracted by Enbridge to perform maintenance activities in proximity to the Line 5 Dual Pipelines. The anchoring plans for the contractor performing coating repairs in 2021 were reviewed and approved by Enbridge pursuant to the Contractor Anchoring Guidelines. Enbridge will continue to implement the Guidelines for all future contractor work requiring anchoring that is scheduled in the Straits.

69.a [Biota Investigation]

As reported in SARs1 through 4, this item is complete.

69.b [Biota Investigation Work Plan ("BIWP")]

Enbridge's compliance with Paragraph 69.b was previously reported in Enbridge's first SAR.

69.c [Biota Work Plan Implementation]

As reported in SARs 1 through 4, this item is complete. Enbridge implemented the BIWP in accordance with the schedule approved by EPA, and in accordance with Subparagraph 69.c, Enbridge submitted a final report to EPA on March 29, 2018, summarizing the results of the Biota Investigation. Enbridge provided responses to subsequent ITP information requests related to the Biota Investigation and subsequently, on March 11, 2019, Enbridge submitted revisions to the BIWP report to the EPA addressing the ITP's recommendations. On March 12, 2019, the ITP recommended to the EPA that the agency approve Enbridge's submitted revisions. As of the end of this reporting period the EPA has not provided a response to the ITP's recommendation.

70 [In-Line Inspections of the Dual Pipelines]

Enbridge's compliance with Paragraph 70 was previously reported in the first SAR. This requirement is complete.

71 [Investigation and Repair of Axially-aligned Features]

Enbridge's compliance with Paragraph 71 was previously reported in SAR1. This requirement is complete.

72 [Pipeline Movement Investigation]

Enbridge's compliance with Paragraph 72 was previously reported in SAR1. Enbridge continues to conduct annual circumferential crack inspections in accordance with the Pipes Act. No Features Requiring Excavation have been identified as a result of those inspections in this Covered Period.



73 [Quarterly Inspections Using Acoustic Leak Detection Tool]

During the SAR8 reporting period and as shown in **Table E-2**, Enbridge conducted inspections on each of the Dual Pipelines using an acoustic ILI tool that is capable of detecting sounds associated with small leaks as the tool travels through the pipelines, as shown in the following table.

The acoustic inspections of the Dual Pipelines conducted during this reporting period did not identify any auditory signals that are indicative of small leaks on the Dual Pipelines.

Section F – Data Integration

74 [Feature Integration Database]

Enbridge has operated and maintained the feature integration database, referred to as "OneSource," for all pipelines in the Lakehead System since August 14, 2013. OneSource integrates information about corrosion, crack and geometry features from multiple in-line investigations of the pipelines and field measurement devices. OneSource enables pipeline integrity-management personnel to identify and track any changes to any feature detected by an ILI tool on successive investigations (i.e. Tool Runs) of the pipeline. In addition, the Feature Match Macro tool uses data from OneSource and permits pipeline integrity personnel to identify and track changes to features detected by successive tool runs, including enabling personnel to evaluate features detected by different types of ILI tools that may overlap or otherwise interact.

75 [Integrity Management Personnel Access to Feature Integration Database]

Enbridge integrity management personnel, including, but not limited to, personnel responsible for identifying FREs, are able to access and view OneSource from their desktop computers and laptops. Personnel are able to search for and view a schematic image of each joint of each Lakehead System pipeline. The information provided with each schematic image has not changed from the information as presented in SAR1.

A difficulty encountered when implementing this requirement is related to the ITP's access to the OneSource data. Currently, data covering all of the Enbridge-owned pipelines is included in OneSource – it is not limited only to the Lakehead System Pipelines that are subject to the terms of the Consent Decree. While this allows Enbridge to access and store the OneSource data consistently across its entire pipeline system, Enbridge is unable to provide a gateway to the ITP that is limited to OneSource data for Lakehead System Pipelines covered by the Consent Decree. Enbridge has demonstrated that the data required under Paragraph 75 is readily accessible to personnel responsible for identifying FREs.

[Section D] Data for Schematic Image Not in OneSource on L78, GT-SK – P. 75

Enbridge has previously stated that the data associated with the 10/10/2014 Caliper, 10/10/2014 MFL, and 6/26/2015 UC inspections was in OneSource but was listed under Line 6B which was deactivated with the Line 78 pipe replacement. When these inspections were completed, portions of the pipeline were still known as Line 6B and had not yet been replaced by Line 78. As a result, these three runs were uploaded to OneSource under Line 6B and did not get updated upon the official completion of Line 78 and the deactivation of Line 6B. As Line 6B is deactivated, the data associated with it cannot currently be viewed in the Joint Fact Sheet used by the ITP. The ILI data, although not accessible to the ITP, was in OneSource in accordance with CD P. 75 requirements and accessible to Enbridge integrity management personnel. The correct ILI data were used in the most recent Line 78 program assessments.



Enbridge completed transitioning the ILI data associated with these ILIs from Line 6B to Line 78 to allow the ITP to view the data via the Joint Fact Sheet. Enbridge informed the ITP that the Line 78 data was updated in OneSource and is available in the Joint Fact Sheet at the May 4, 2021 PI ITP EPA Technical Meeting.

76 [Successive ILI Data Sets]

Enbridge's compliance with this Paragraph is fully explained in SAR1 and has not changed since that submission. As explained in SAR1, with respect to each type of ILI Tool, OneSource includes at least two successive ILI data sets – one data set from the most recently completed ILI Tool Run and another data set from the second most-recently completed ILI Tool Run.

77 [Update of OneSource Database]

As per Paragraph 77.a, Enbridge completed an update of OneSource and compliance with this Paragraph was reported in SAR1. Enbridge provided a demonstration of compliance regarding Paragraph 77.a-c on October 23, 2018. Enbridge has completed the requirements for Paragraph 77.a-c.

Enbridge continues to update the OneSource database with information collected from new NDE investigations as per Subparagraph 77.d of the Consent Decree. Enbridge completed all field investigations of the Consent Decree excavations related to the particular ILI Tool Runs and uploaded the NDE reports within 60 Days into OneSource after the field excavation report was quality reviewed and approved by Enbridge. The OneSource NDE updates for this covered period are summarized in **Table F-1**.

During this reporting period, Enbridge has fully complied with Paragraph 77 by timely uploading to OneSource all NDE data for FRE digs and investigative digs that are subject to Consent Decree requirements. Enbridge's discussions with EPA concerning the parties' interpretation of Paragraph 77 remain ongoing. Although Enbridge disagrees that the CD was intended to incorporate excavations that are not governed by the CD, Enbridge is prepared to agree that NDE reports from all integrity dig excavations issued from CD ILI programs, including CD FRE, investigative digs and non-CD digs, would be uploaded into OneSource within 60 days after completing the last field investigation related to an ILI, on a going-forward basis. The parties are nearing finalization of an interpretation to provide clarity around this issue. This item is included in **Table IX-1** in P. 144 Problems Anticipated in Appendix 1.

78 [Mandatory Use of Data Integration Database to Prepare Dig List]

78.a [OneSource ILI Updates]

All new ILI reports were uploaded to OneSource within 29 days after Enbridge's receipt of the Initial ILI report for this reporting period. The dates upon which the various ILI reports were received by Enbridge and uploaded to OneSource during this SAR reporting period are listed in **Table F-2**.

78.b [OneSource Interacting Features]

Enbridge completes ILI data review for the purpose of identifying any overlapping, or otherwise interacting, features that may qualify as FREs (in reference to Paragraph 35), within 180 days after the ILI tool is removed from the pipeline, as outlined in the "Lakehead System Integrity Remediation Process" Table 2, Step 7.0. The FREs resulting from this review are summarized in Paragraph 58. **Table F-3** summarizes



the reviews completed during this reporting period for axial cracking, corrosion and geometry features. All interacting feature reviews were completed within 180 days after the ILI tool was removed from the pipeline.

Section G – Leak Detection and Control Room Operations

(I) Assessment of Alternative Leak Detection Technologies

79-80 [Create and Submit ALD Report]

This requirement had been met and considered complete. No further update is required at this time or in future SARs.

(II) Report on Feasibility of Installing External Leak Detection System at the Straits of Mackinac

81-83 [Create and Submit ALD Mackinac Report]

This requirement had been met and considered complete. No further update is required at this time or in future SARs.

(III) Requirements for New Lakehead Pipelines and Replacement Segments

84 [Applicability]

Line 93 is considered a "New Lakehead Pipeline" as defined in Paragraph 84.a. Design requirements set forth in Subsection VII.G.(III) were applied to Enbridge's mainline leak detection equipment standard, which was followed in the design engineering phase of the Line 3 Replacement project ("L3R").

On April 30, 2021, Enbridge provided additional information to the ITP, which includes evidence that indicates the location of pressure transmitters where column separation would be expected to occur, process instrumentation diagrams that indicate temperature transmitters for select remotely-controlled valves, and relevant purchase orders that indicate model information for flow meters, pressure and temperature transmitters at specific locations. Further to this, Enbridge also provided clarification on the American Petroleum Institute ("API") 1149 test results as part of the same information request response. As of this reporting period, ITP review of the information provided is still in-progress.

Other than the ongoing L3R project, there were no other Replacement Segments or New Lakehead Pipeline projects executed during this reporting period.

85 [Installation of Flowmeters]

The L3R project designed Line 93 to include flow meters which will be installed at all locations where oil (a) enters into the pipeline, (b) leaves the pipeline, or (c) passes through a pump station. Once the flowmeters are installed, they will be commissioned in the field and to the Supervisory Control and Data Acquisition ("SCADA") system and integrated into the Material Balance System ("MBS") and Rupture Detection System ("RDS"), to continuously monitor flow data under all conditions, including during Startup and Shutdown.

As required by Paragraph 89.a, Enbridge conducted the API 1149 MBS Leak Detection performance estimation based on L3R project design available at the time. The inputs for the estimation are confirmed to be accurate for this reporting period. Based on the results of the API 1149 calculation, additional flow



meters are not required on segments that are expected to hold volumes of oil exceeding 45,000 cubic meters ("m³"). Details on MBS segmentation and API 1149 performance estimation are available in Paragraphs 88 through 89 below.

Enbridge will perform the requirements specified in Paragraph 90 to demonstrate compliance with Leak Detection sensitivity design and construction within the timing specified therein.

86 [Installation of Flowmeters on Pipelines that Utilize In-line Batch Interface Tools]

Line 93 has been designed to operate without the use of batch interface tools for the purpose of physically separating products in the pipeline; therefore, the requirement set forth under this Paragraph will not be applicable to the L3R project.

87 [Installation of Other Instrumentation]

Line 93 has been designed to include installation of the following instrumentation:

- Pressure transducer/transmitter will be installed at locations and segments as required by Paragraph 87.a.
- Skin-based temperature transducer/transmitter will be installed at locations and valve segments as required by Paragraph 87.b.

Once the instrumentation is installed on Line 93, they will be commissioned in the field, to the SCADA system, and integrated into the Material Balance System (MBS) and the Rupture Detection System (RDS) to continuously provide real-time pressure and temperature data, including during Startup and Shutdown periods.

88 [Establishment of Material Balance System ("MBS") Segments]

Enbridge's definition of "MBS Segment" aligns with the definition in Paragraph 88.

Line 93 will have MBS segments that are expected to have volumes of oil exceeding 45,000 m³. Enbridge has conducted API 1149 calculations to estimate the sensitivity performance of the MBS Leak Detection System on Line 93 during periods when fluid in the segment is in a steady state. The API 1149 calculations conducted were based on L3R project design data available at the time, which remains accurate for this reporting period. The complete set of input data used for the API 1149 calculation and an example calculation was provided to the ITP on March 11, 2020 for verification and Enbridge responded to ITP's additional information request to clarify the API 1149 calculation on April 30, 2021.

At this time, the established MBS segments remain as designed, which demonstrates compliance with the leak detection sensitivity requirements in Paragraph 89 below.

89 [Leak Detection Sensitivity Requirements]

Enbridge used the criteria set forth in API Publication 1149, November 1993 ("Pipeline Variable Uncertainties and Their Effects on Leak Detectability") to estimate the ability of the MBS Leak Detection System to achieve each of the targets during periods when the fluid in the MBS Segment is in Steady State. The API 1149 calculation conducted was based on L3R project design available at the time, which remains accurate for this reporting period. The API 1149 calculation used conservative inputs from the design and the results demonstrated that the MBS Leak Detection System would achieve each of the targets set forth in the Leak Detection Design and Construction Target for Line 93 table under this Paragraph of the Consent



Decree. The complete set of input data used for the API 1149 calculation and an example calculation was provided to the ITP on March 11, 2020 for verification and Enbridge responded to ITP's additional information request to clarify the API 1149 calculation on April 30, 2021.

Paragraph 89.b is not applicable for this reporting period as there were no Replacement Segments or New Lakehead Pipelines other than the L3R project.

90 [Demonstration of Compliance with Leak Detection Sensitivity Design and Construction Requirements]

There is nothing to report on this Paragraph until the construction of Line 93 is complete and initial line fill is commenced. Line 93 is constructed and commissioned, Enbridge will prepare and coordinate the planning and execution of testing.

There are no Replacement Segments or New Lakehead Pipelines for this reporting period other than the L3R project.

91 [Establishment and Optimization of Alarm Thresholds]

There is nothing to report on this Paragraph until the construction of Line 93 is complete and commissioned into the pipeline control and leak detection systems. Other than the L3R project, there are no Replacement Segments or New Lakehead Pipelines for this reporting period.

Once Line 93 is constructed and commissioned, Enbridge will undertake the appropriate steps to ensure that requirements set forth in this Paragraph are met.

(IV) Leak Detection Requirements for Pipelines within the Lakehead System

92 [Operation of MBS Leak Detection System]

Enbridge maintains continuous and uninterrupted leak detection capability at all times on active Lakehead System Pipelines, including during periods of start-up and shutdown, except as exempted under Paragraph 93. Enbridge's continuous and uninterrupted leak detection capability is achieved through several measures including architectural, procedural, and quality controls. Since the Effective Date of the Consent Decree, leak detection alarm thresholds for steady state operations have been met and continue to meet the minimum alarm thresholds set forth in the table at Subparagraph 91.a, with the exception of seven lines that did not meet 24-hour alarm thresholds.

Due to a significant change in operations the 24-hour alarm thresholds for Lines 02, 14 and 64 ("14/64"⁹) fell below the 95% confidence level during lower flow conditions. This is a similar event to Line 78 that was reported in SAR6, and Lines 1, 5, and 10 reported in SAR7, which required re-optimization per Subparagraph 103.g. The same exercise will be undertaken for the three lines. Refer to Paragraphs 103 and 144 for details about this event.

On December 18, 2020, a SCADA based MBS Health Monitoring System Failed alarm was generated on Line 5. This health alarm indicates a potential degradation of the MBS system and does not indicate a potential leak or rupture. Internal Enbridge procedure requires that a pipeline be shutdown within 10 minutes if a health alarm is not resolved. In this event the time to shutdown was 13 minutes. Although this

⁹ Lines 14 and 64 reside on the same leak detection model.



is not a violation of CD requirements, Enbridge reported to the ITP the details of the event in addition to actions implemented to prevent re-occurrence.

93 [Temporary Suspension of MBS Leak Detection Capabilities]

Enbridge continues to track the three categories of temporary MBS suspension that are specified in Subparagraphs 93.a-c. Ultrasonic flowmeter maintenance and flowmeter outage workflows are monitored to track and coordinate planned (i.e., scheduled maintenance or repairs) and unplanned (i.e., unexpected failures beyond Enbridge's control) outages from start to finish. The ILI tool run procedure also ensures tracking of station flowmeter bypasses when in-line tools are being run, consistent with Paragraph 93.

Please refer to **Table G-1** for a list of occurrences of each type of instrumentation outage during this reporting period, including the reason(s) for any such outages.

94 [Overlapping MBS Segments]

Enbridge's overlapping volume balance algorithm automatically establishes and maintains leak detection capability in the event of a temporary loss or suspension of MBS leak detection capability within one or more MBS segments due to intermediate flow meter (i.e., flow meters not located in either injection or delivery) outage. The overlapping volume balance algorithm continues to maintain leak detection capability in overlapping MBS segments impacted by the outage until the leak detection capability is restored in all MBS segments.

95 [Alternative Leak Detection Requirements]

Enbridge implements and maintains an API RP 1130¹⁰-compliant alternative leak detection ("ALD") procedure in the event of any outage of MBS leak detection capability occurring as a result of the circumstances described in Subparagraphs 95.a and 95.b. Enbridge continuously operates the ALD method until the flowmeter outage is resolved and the MBS segments are restored to operation. Enbridge provided additional information to the ITP on September 20, 2019 following the SAR4 review. ITP has reviewed the information provided and found this paragraph to be meeting the requirements with the additional information.

96 [Reporting of MBS Outages]

Enbridge ensures that it restores leak detection capability as soon as practicable following any outage in an MBS segment even though the overlapping section continues to provide leak detection capability. This is achieved by following and continually improving Enbridge procedures and processes to track and manage planned and unplanned flow meter outages and ILI tool runs.

97 [Reporting Requirements]

Refer to **Table G-1** for a table identifying the number of occurrences by type where MBS was temporarily suspended.



98 [Tolling Requirements]

In accordance with Paragraph 98, Enbridge tolls the 4-hour time period for restoring the MBS segment to operation (as specified in and allowed under the table at Paragraph 97 in the CD) during any occurrence of an unplanned shutdown during the in-line tool run. The tolling period applied by Enbridge begins when the pipeline is shut down and ends when pipeline operation is resumed. To comply with this Paragraph, Enbridge tracks station flowmeter bypasses when in-line tools are being run. There were no events in this reporting period.

99 [Installation of New Equipment at Remotely-Controlled Valves]

There were no excavations identified during the reporting period that met the defined criteria for Paragraph 99 and, therefore, there were no new installations of pressure or temperature transmitters. None of the previously identified projects installed the instruments during this reporting period. As agreed with the ITP, the updated Paragraph 99 Project Logbook will be provided within two weeks after release of SAR8 and will have details of those projects.

100 [Requirements for Valve Excavation]

During this reporting period, no projects or excavations were applicable per the criteria defined in this paragraph.

101 [Transient-State Sensitivity Analysis]

Enbridge performed the transient-state sensitivity analysis required under Paragraph 101 on November 19, 2017, which was within 180 days of the Effective Date as reported in SAR1. Enbridge considers this to be complete and no further reporting is required for this SAR and in future SARs.

102 [Rupture Detection System Alarm]

The intent of the Rupture Detection System ("RDS") is to focus on detecting large releases with a quick onset. Enbridge continuously operates the RDS on all Lakehead System Pipelines during both Steady-State and Transient State conditions. The RDS is integrated with Enbridge's SCADA system and MBS Leak Detection System.

As reported in previous SARs, Enbridge, EPA, and ITP agreed to establish a solution to address the concern in Subparagraph 102.a, as it relates to clause (c) "an abnormal increase in the flow rate". On December 10, 2019, Enbridge successfully completed the implementation of the Rupture Flow-based Solution ("RFBS") on all Lakehead pipelines. ITP concluded that the RFBS implementation meets the intent of the CD by fulfilling the requirements of Subparagraph 102.a.(c) to monitor for and detect an abnormal increase in the flow rate, and further, the ITP found that the combination of RDS and RFBS meet the entirety of the rupture detection requirements in Paragraph 102.

Enbridge has continuously operated the combined RDS solution on all Lakehead pipelines in accordance with this Paragraph.

103.a-b ["24-hour" Alarm]

Enbridge implemented the 24-hour volume balance alarm, also known as the Automated Volume Balance or "AVB" alarm on the Lakehead system. AVB operates with MBS and was integrated with Enbridge's SCADA system in advance of the 270-day deadline specified in Paragraph 103, and has since continuously



monitored, tracked, and modeled the volume of oil for each MBS Segment over any rolling 24-hour period. AVB operates continuously to alarm, if it cannot detect, or otherwise account for, 3 percent (or within the set threshold per optimization study¹¹) of oil pumped or injected into the MBS Segment over any rolling 24-hour period. When an AVB alarm occurs, each member of the Alarm Response Team ("ART") is notified in accordance with Paragraphs 106 and 107 and executes the appropriate procedures in accordance with Paragraphs 108 and 109.

103.c ["24-hour" Alarm Optimization Study within one year of establishing the new 24-Hour alarm]

Enbridge conducted and completed a 24-hour Alarm optimization study on February 13, 2019, to optimize the alarm thresholds for each active pipeline that is part of the Lakehead system. Enbridge submitted the results of the study to the EPA on April 12, 2019 for review and approval. The report set forth the results of the study and proposed alarm thresholds, which are within the 3% sensitivity requirement. Enbridge has implemented and continuously maintains the new thresholds for each Lakehead pipeline, except for those segments affected by the operational issue described in Paragraph 144, [Section G] January 22, 2021 Optimization of 24-hour alarm thresholds due to lower flow rates on Lines 2, 14/64 - P. 103.

On April 17, 2020, Enbridge obtained the ITP's evaluation of the 24-Hour Alarm and Related Reports for Alarm Threshold Optimization and Testing which found that the proposed thresholds were appropriate and they were supported by the facts and best engineering judgment. As such, the ITP recommended the EPA to approve the proposed Alarm thresholds.

103.d ["24-hour" Alarm Optimization Study within one year of Initial Linefill of Line 93 or any other New Lakehead Pipeline or Replacement Segment]

This requirement does not apply at this time as Line 93 has not yet completed construction and linefill.

103.e [Simulated testing of the 24-hour alarm optimized threshold on two separate MBS segments]

As reported in SAR5, this requirement was completed and submitted to the EPA and ITP within the required timeframe. The report produced from this test was utilized by the ITP as part their evaluation of the 24-Hour alarm.

103.f [Submission of proposed plan and schedule for unsuccessful testing]

The testing as required by Paragraph 103.e was successful; therefore, the corrective action plan and schedule required by this Subparagraph is not required.

103.g(1)-(5) [Compliance and exceptions of compliance to 24-hour alarm optimized threshold and reporting]

Enbridge continuously complies with the optimized thresholds on each Lakehead pipeline in accordance with the study completed per Subparagraph c. Enbridge has not seen a significant increase of false alarms that could trigger relaxing of the optimized alarm thresholds. However, during the review of the Q4 2020 performance testing, it was discovered that three Lakehead lines - Lines 2, 14/64 fell below the 95% confidence level for their optimized leak sizes. A technical analysis was performed and subsequently completed on January 22, 2021, confirming that the issue was caused by a decrease in flow rate during the

¹¹ 2019.04.12 Enbridge 24-Hour Alarm Threshold Optimization Study Results – per P.103.c Enbridge Consent Decree Eighth Semi-Annual Report



Q3-Q4 2020 periods. These rates were lower than the rates used in the original 24-Hour alarm optimization study (per P.103c). Refer to Paragraph 144, [Section G] January 22, 2021 Optimization of 24-hour alarm thresholds due to lower flow rates on Lines 2, 14/64 – P. 103, describing the details of re-optimization of these lines as required by Subparagraph 103.g(5).

The 24-hour alarm re-optimization study of Lines 2, 14/64 was completed and implemented the revised thresholds on February 22, 2021 and February 19, 2021 respectively. On March 18, 2021, Enbridge presented the result of the re-optimization study to the ITP. The re-optimization report of these lines were submitted to the ITP and EPA on April 16, 2021, in accordance with Subparagraph 103c.

In regard to the previously reported Lines 1, 5, and 10 re-optimization in SAR7, Enbridge has since implemented the re-optimized thresholds, and submitted to the ITP and EPA the Line 1,5,10 24-Hour Alarm Re-optimization report on February 11, 2021, in accordance with Subparagraph 103c.

The two 24-Hour Alarm Re-optimization reports are under evaluation by the ITP at the time of this SAR.

(V) Leak Detection Requirements for Control Room

104 [Applicability]

In order to ensure compliance with Section VII.G.V of the CD, Enbridge applies the term "alarm" or "alarms" to mean any and all alarms that are generated by the MBS and AVB leak detection systems and by the RDS.

105 [Alarm Response Team]

Enbridge established and implemented an Alarm Response Team ("ART") within 180 days of the Effective Date of the Consent Decree as reported in SAR1. All alarms that occurred in the SAR8 reporting period were addressed by the ART.

106 [Remote Notification of Alarm Response Team]

Enbridge implemented the remote notification system that is specified under Paragraph 106 within 180 days after the Effective Date of the Consent Decree as reported in SAR1. Remote notification capabilities were in place for all alarms that occurred in the SAR8 reporting period as required by this paragraph.

107 [Audible and Visual Alarms]

Enbridge implemented the audible and visual alarms required under Paragraph 107 within 180 days after the Effective Date of the Consent Decree as reported in SAR1. Audible and visual alarm capabilities have remained compliant with the requirements of this paragraph through the SAR8 reporting period.

108.a-f [Alarm Clearance Procedures]

Enbridge implemented the Alarm Clearance procedures required under Paragraph 108.a-f within 180 days of the Effective Date of the Consent Decree as reported in SAR1. Alarm Clearance procedures have been employed and adhered to throughout the SAR8 reporting period as described below.



108.a [Alarm Clearance Requirements]

The requirements of Subparagraph 108.a are incorporated into Enbridge's procedures to ensure that all alarms remain active unless and until: (1) the appropriate ART member(s) accounts for any cumulative imbalances (in which case the team member may invalidate the alarm); (2) all of the ART members independently rule out the possibility of a leak; or (3) the pipeline is shutdown.

108.b [Alarm Clearing Restrictions]

Enbridge procedures prohibit the ART from resolving or clearing an alarm through a manual, one-time adjustment to any alarm system or the inputs into any alarm systems. As per Subparagraph 108.b, Enbridge procedures require that all leak alarms be analyzed until an investigation has been completed and an alarm is terminated in accordance with the requirements of Subparagraph 108.a.

108.c [Confirmation of Leak Detection System Functioning]

Enbridge implemented procedures to require the LDA to analyze and determine whether the leak detection system that generated the alarm is functioning properly. This process consists of determining whether any leak alarms have been caused by data errors input into the leak detection systems, system malfunctions, or other factors that could lead to an invalid leak alarm.

108.d [Independent Alarm Investigation]

Enbridge requires the CRO, in conjunction with the STA, to complete an investigation of the alarm, which is an investigation that is completed independently from the investigation that was conducted by the LDA. This analysis is conducted in conjunction with the Ten-Minute Rule to ensure that a final decision to invalidate the alarm is made within ten minutes after the alarm is generated. If a final decision to invalidate the alarm is not made within the ten-minute period following the alarm, the pipeline is shutdown. The final decision is made by the CRO, with the concurrence of the STA.

108.e [ART Procedures for Column Separation]

ART members are required to employ Enbridge column separation procedures when determining the cause of an alarm. Enbridge procedures accordingly mandate that a determination that an alarm was caused by Column Separation is not a permissible basis for clearing an Alarm unless the ART follows the procedures specified in Subparagraphs 109.b and 109.c.

108.f [Electronic Records of Alarm Response]

Enbridge implemented an electronic record keeping system for managing ART response information. All ART member responses are recorded and are documented as required by this Paragraph (see Appendix 2: Lakehead Leak Alarm Report). Each record – which is created at the end of each shift by each ART member choosing from specified alarm categories that are identified on an electronic menu – includes details of the alarm event including the type of alarm, reasons for clearing the alarm, and the procedures executed by members of the ART. Review of leak alarms are required by all incoming ART members during a shift change (i.e. subsequent shift). All records of alarms are retained for a minimum of five years.



109.a-d [Unscheduled Shutdown in Response to an Alarm]

Within 50 days after the Effective Date of the Consent Decree, Enbridge implemented all the procedures specified in Subparagraphs 109.a-d, as explained in SAR1. Unscheduled Shutdown procedures have been employed and adhered to throughout the SAR8 reporting period as described below.

109.a [Ten-Minute Rule]

Enbridge implemented operating procedures that require the CRO to shut down and sectionalize the pipeline immediately without further consultation or notification if the ART is unable to rule out the possibility of a leak or rupture within ten minutes of the start of an alarm.

109.b [Column Separation – Running Pipeline]

Enbridge implemented column separation procedures that require the CRO to shut down and sectionalize a running pipeline if within ten minutes from the start of the alarm the column separation continues or the appropriate ART members have not: (1) determined the cause of the column separation, (2) accounted for any cumulative imbalances that triggered the alarm, and (3) ruled out a possibility of a leak or rupture. The procedures are not applicable where the alarm is caused by column separation that occurs during or after the shutdown of the pipeline, consistent with Paragraph 109.c.

109.c [Column Separation – Pipeline Shutdown]

Enbridge has implemented column separation procedures in accordance with Paragraph 109.c and appropriate alarm clearance procedures caused by column separation. Specifically, the calculation of the amount of time needed to fill the column separation and obtaining appropriate authority review and approval prior to restart in accordance with the table provided in this Subparagraph. Upon restart of any pipeline where the column fill time is exceeded, the CRO is immediately required to shut down and sectionalize the line. Upon shutdown, steps to investigate and verify the condition of the pipeline will be taken as required by this Paragraph.

109.d [Confirmed Leak Rule]

Enbridge implemented confirmed leak procedures, which require the CRO to immediately shut down and sectionalize the pipeline in the event that the ART determines that an Alarm is a confirmed leak or rupture, as defined under Subparagraphs 109.d.1-4. Unless a leak is ruled out, the CRO will shut down within ten minutes if leak conditions are observed upstream or downstream at a given location from SCADA data.

109.e [Shutdown and Restart Record]

Enbridge is compliant with this Paragraph and has not observed any instances where pipeline operations were resumed without meeting the requirements of this Subparagraph.



110 [Certification of Compliance with 10-Minute Rule and other Requirements of this Subsection]

110.a [Weekly List of Alarms]

In accordance with Subparagraph 110.a, Enbridge prepares an electronic weekly list of alarms ("WLOA") as part of the Lakehead Leak Alarm Report. That WLOA is provided in Appendix 2. The WLOA includes the pipeline, the type of alarm, date of the alarm, the time at which the alarm began, and the time when the alarm was cleared.

110.b [Record of Alarms]

Enbridge complies with this requirement by preparing an electronic Record of Alarms ("ROA") when an unscheduled shutdown occurs. The ROA includes critical facts relating to the Alarm, such as the positions of the Alarm Recipients (i.e., CRO, STA, LDA), the time that the alarm was received, the actions of the ART, when the shutdown commenced, when the shutdown was completed, the root cause, the type of alarm, the procedures executed to determine the cause of the alarm, the justification for resumption of pumping operations, and the time that pumping operations resumed.

110.c [Alarm Submittal to EPA]

Enbridge complies with this requirement by including the WLOAs and ROAs occurring during the reporting period for all Lakehead System Pipelines as part of the Lakehead Alarm Report, enclosed hereto as Appendix 2. The Lakehead Leak Alarm Report also includes the Summary of Alarms ("SOA") noting the pipeline, the total number of alarms and the alarms that did not comply with Enbridge's Ten-Minute Rule. During this reporting period, Enbridge has complied with the Ten-Minute Rule and other requirements in Subsection VII.G. (V) when responding to leak detection system alarms. Therefore, no corrective actions needed to be taken.

110.d [Certification of Reporting Period]

To certify compliance for the reporting period of 180 days after the first SAR, the Vice-President, Pipeline Control has signed the Lakehead Leak Alarm Reports. This includes the information contained in the SOA, WLOA and ROA, which warrants that the information contained therein is true and accurate and that Enbridge has complied with the Ten-Minute Rule and other requirements of this subsection VII.G.(V), except for any non-compliances specifically listed in the SOA, which is none for this reporting period.

111 [Unscheduled Shutdown Procedures in Response to Other Events]

Enbridge has implemented procedural controls that ensure that all emergency phone calls received by the Control Center concerning a potential leak or rupture from a source other than an alarm are investigated within ten minutes of receipt of the call. In the event that the investigation uncovers evidence consistent with a leak or rupture by a Lakehead System pipeline, the CRO for the pipeline is required to immediately and without further consultation or notification to shut down and sectionalize the pipeline. Further, in addition to the requirements of the Consent Decree, Enbridge procedures independently require that while the investigation is required to be conducted as expeditiously as possible, if the investigation is not completed in ten minutes or if a potential leak is identified, the CRO will commence an emergency shutdown and sectionalize the affected pipeline or pipelines. Enbridge is compliant with this Paragraph and has not observed any instances where pipeline operations deviated from the requirements of this Paragraph. Enbridge Consent Decree Eighth Semi-Annual Report Page 49 of 72



112 [Reporting of Events from Paragraph 111]

Information related to all incidents during this reporting period where Enbridge received information concerning a potential leak or rupture, including the information provided with each such notice, the start and end times of each respective investigation, and the conclusion and findings of each investigation, is provided in Section G **Table G-3** to this SAR: Lakehead System Pipeline Incident Reporting.

Section H – Spill Response and Preparedness

113 [Immediate Action to Confirmed Pipeline Leak or Rupture]

Enbridge had no confirmed pipeline leaks or ruptures of any harmful quantity that reached the waters of the United States or adjoining shorelines during this reporting period.

Although not required in this reporting period, Enbridge was prepared to proceed without delay to dispatch trained personnel to the location of a leak and would take action to prevent migration of the oil into waters of the United States.

114 [Required Actions]

Enbridge's compliance with Paragraph 114 is demonstrated by its compliance with Paragraphs 115 to 119, as explained below.

115 [Agreed Exercises]

Planning is currently underway for the Stockbridge, Michigan Agreed Exercise, which is scheduled to occur between July 14-16, 2021. For each agreed exercise, Enbridge conducts three planning meetings in accordance with Subparagraph 115.e(1). As part of its Exercise Program, Enbridge conducts additional exercise meetings where appropriate, such as a Concept and Objectives meeting and/or Master Scenario Events List meeting. Enbridge also conducts periodic touchpoint meetings via Microsoft Teams to respond to and address any questions that may arise between the planning meetings. Additional information regarding each of these Agreed Exercises is provided below.

Cass Lake Agreed Exercise

Details about the Cass Lake Agreed Exercise were reported in SAR1, SAR2, SAR3, and SAR4; this activity is complete.

Des Plaines Agreed Exercise

Details about the Des Plaines Agreed Exercise were reported in SAR2, SAR3 and SAR4; this activity is complete.

Wisconsin River Agreed Exercise

Details about the Wisconsin River Agreed Exercise were reported in SAR3, SAR4, SAR5; this activity is complete.

Stockbridge Agreed Exercise

In accordance with Subparagraph 115.b(4), Enbridge originally scheduled the Stockbridge Agreed Exercise to occur on September 22 and 23, 2020. Due to the COVID-19 pandemic and at the request of the EPA, the Stockbridge Exercise was rescheduled to July 2021. Planning for the Stockbridge Agreed Exercise Enbridge Consent Decree Eighth Semi-Annual Report Page 50 of 72



was initiated in July 2019 via the Concepts and Objectives meeting and in accordance with Subparagraph 115.e(1), the Initial Planning Meeting was conducted on November 5, 2019, more than 10 months before the Stockbridge Agreed Exercise. In accordance with Subparagraph 115.e(3), Enbridge coordinated with the planning participants during the Initial Planning Meeting to develop the objectives, scenario, and participant list for the Stockbridge Agreed Exercise. The specific dates of the planning meetings are as follows:

- Concept and Objectives on June 19, 2019;
- Initial Planning Meeting on November 5, 2019;
- Midterm Planning Meeting on March 2, 2020;
- Master Scenario Events List meeting on May 13, 2020; and,
- Final Planning Meeting on May 5, 2021.

Based on input provided by the initial planning meeting attendees, Enbridge prepared a draft exercise plan for the Stockbridge Agreed Exercise, which included the scope, objectives, scenario, and participant list for the exercise. In accordance with Subparagraph 115.e(4), Enbridge submitted the Draft Stockbridge Exercise Plan to EPA on December 5, 2019 and re-submitted a revised draft exercise plan on April 6, 2020, October 29, 2020, and March 18, 2021. The final plan was submitted on May 11, 2021, more than 60 days in advance of the scheduled final exercise date.

Information about problems encountered or anticipated in implementing Consent Decree Requirements due to the COVID-19 pandemic is further discussed in Paragraph 144 under the heading [Section H] Stockbridge Agreed Exercise - P. 115.

116 [Field Exercises, Table-Top Exercises, and Community Outreach]

116.a [Annual Field Exercise and Table-Top Exercise Requirements]

In accordance with Subparagraph 116.a, Enbridge conducted the following Field Exercises ("FDE") during this reporting period:

- Au Sable River, MI on May 11, 2021
- Oklee, MN on May 18, 2021

In accordance with Subparagraph 116.a, Enbridge conducted the following Table Top Exercises ("TTXs") during this reporting period:

- Cass Lake, MN on February 9, 2021
- Darien, WI on March 25, 2021
- Grayling, MI on April 6, 2021
- Mio, MI on April 20, 2021
- Carlton, MN April 20, 2021

Information about problems encountered or anticipated in implementing Consent Decree Requirements due to COVID-19 restrictions is further discussed in Paragraph 144 under the heading Various Paragraphs [Section H] COVID-19 Restriction Impacts to FDE, TTX, Community Outreach.

Additionally, the Doan Creek Workshop in Dansville, MI (Great Lakes) was conducted on May 6, 2021.



116.b [Field Exercise Requirements]

In accordance with Subparagraph 116.b, each of the Field Exercises identified above consisted of training exercises conducted in the field to test and practice specific oil spill emergency response tactics used in the initial hours of an oil spill of at least 1,000 gallons into water.

Field deployment exercises test and practice the emergency response actions and tactics of both Enbridge and Government (Federal, Tribal, State, County, and Local) response personnel and equipment, in relation to a release of crude oil from an Enbridge pipeline. A scenario is required to initiate the appropriate level of emergency response within the organizations participating in the exercise. An after-action review (hot wash) is conducted at the conclusion of the exercise to identify areas that went well and areas that need improvement.

The standard schedule for a field exercise is as follows:

- Welcome and Safety Moment
- Operations and Safety Briefing
- Field Deployment
- Equipment Retrieval/Decontamination
- After Action Review (Hot Wash)
- Closing Comments

Each Field Exercise included the following:

- A deployment of select equipment and personnel to water;
- A review of locations downstream of a spill where containment and recovery operations can occur; and
- Implementation of one or more containment and collection measures from the Enbridge's "Inland Spill Response Guide" at locations downstream of the potential spill entry point.

Further, in accordance with Subparagraph 116.b, an after-action review and discussion was held after each of the Field Exercises. Specific details for each exercise are summarized in the following sections.

Au Sable River, MI on May 11, 2021

This exercise was attended by 13 Enbridge employees and 13 external participants. The exercise took place at Mio Pond on the Au Sable River in Mio, MI. The objectives of this field exercise were as follows:

Objective 1: Demonstrate the ability to deploy on-water containment and mitigation (recovery) tactics by the end of the exercise.

Objective 2: Test containment and recovery tactics.

Objective 3: Utilize the Incident Command System to manage equipment deployment.

Equipment used included: Boom, anchors, Boom truck and Emergency Response ("ER") trailers, boats, PPE including life jackets, and 'Exercise in Progress' signs.

During the after-action review, discussion of both positive observations and areas for improvement were identified and documented. Positive observations included:



- Field Response Team (FRT) members from two crews participated. FRT members felt they were able to effectively exercise the control point, indicating that the training program is consistent and effective.
- The prescribed control point described a collection point that was inaccessible for product recovery. This collection point was inaccessible due to lack of road access. The Emergency Response Specialist (ERS) and Pipeline Maintenance (PLM) supervisor devised an alternate boom configuration utilizing cascading deflection boom to guide product to the collection point. Deployment of the new tactic was successful.
- External participants were genuinely inquisitive and indicated that the exercise was informative.

Areas for Improvement included:

- Quick release mechanism for setting anchors was not available for this deployment but would be beneficial in reducing slack in anchor lines when setting boom.
- The Mackinaw PLM initially intended to provide a larger vessel from which boom could be staged and deployed. The vessel was not operational at the time of the deployment, but a working platform design would benefit any deployment.
- Control point tactics require update to reflect the revised location of the collection point ensuring accessibility.

Oklee, MN on May 18, 2021

This exercise was attended by 24 Enbridge employees and 5 external participants. The exercise took place on Swan Lake. The objectives of this field exercise were as follows:

Objective 1: Demonstrate the ability to deploy on-water containment and mitigation (recovery) tactics by the end of the exercise.

Objective 2: Test containment and recovery tactics.

Objective 3: Utilize the Incident Command System to manage equipment deployment.

Equipment used included: Boom, Emergency Response ("ER") trailer, bridle, PPE including life jackets, skimmer, rope, waders, and walking sticks.

During the after-action review, discussion of both positive observations and areas for improvement were identified and documented. Positive observations included:

- The location was ideal as it allowed the team to complete tasks efficiently and effectively. For instance, the team could utilize trees for anchoring and the area is mowed during the summer resulting in minimal insects.
- The boom angle was set up as expected and appropriate for the water conditions.

Areas for Improvement included:

- All seasons life jackets were not ideal due to the heat. Enbridge will examine using the inflatable life jackets for summer exercises and responses.
- Due to the size and limitations of the Jon Boat, the team was unable to use it. In the future, a more appropriately sized boat is required that can hold more weight.



• As part of the exercise, the rope had to be thrown to the other side of the watercourse. Having *A Throw Weight Launcher* may be a more ideal tool to ensure that the rope gets across in one try.

All items identified under the two "Areas for Improvement" categories above are reviewed and addressed prior to the next Field Deployment Exercise as they improve the response capabilities of the Midwest Region Field Response team in both field exercises and the unlikely event of a release.

116.c [Table-Top Exercise Requirements]

In accordance with Subparagraph 116.c, the Table-Top Exercises identified under Subparagraph 116.a above were conducted to test and practice non-field oil spill emergency response processes and procedures.

The scope of each Table-Top Exercise is to review the response capabilities of Enbridge, local first response agencies and community participants in relation to a release of crude oil from a pipeline. It utilizes multiple Emergency Response Plans to map out the combined response to the incident using the Incident Command System ("ICS") and is based on a simulation of a realistic emergency situation that included a description of the situation (scenario) with communications between players and facilitator. It identifies all responding agencies, resources, the establishment of a Unified Command, and situational assessment, and how the incident would be documented during the initial response.

The Table-Top Exercise structure consists of two modules; Module 1: Initial Notifications and Response (Reactive Phase) and Module 2: Mobilization and Sustained Response (Proactive Phase). Each module begins with a multimedia update that summarizes key events occurring within that time period. After the updates, participants review the situation and engage in group discussions of appropriate response issues. A formal hot wash and or after-action reports are not required for Table-Tops, however discussions are held during the exercise and discussion points are captured during or after the exercise.

Information about problems encountered or anticipated in implementing Consent Decree Requirements due to COVID-19 restrictions is further discussed in Paragraph 144 under the heading Various Paragraphs [Section H] COVID-19 Restriction Impacts to FDE, TTX, Community Outreach, and Coordination with Government Planners.

The exercises included the following:

- A minimum spill scenario of at least 1,000 gallons from a Lakehead System Pipeline located in close proximity to water;
- Notifications of the spill to all the government entities, including tribal authorities, that are identified in the Enbridge Integrated Contingency Plan ("ICP");
- Both near and long-term response actions to address the spill;
- Anticipated response times for Enbridge equipment and personnel;
- The risks that the spill scenario could pose to public health and the environment;
- Potential resources at risk; and
- Protective measures for the local community, including evacuation procedures, as identified in the Enbridge ICPs.

Specific details for each exercise included in the following sections.



Cass Lake, MN (Midwest) on February 9, 2021

The hybrid virtual/in person exercise was attended by 25 Enbridge members and 14 external participants. There were 12 in-person participants. Discussion points included:

- The Minnesota State Duty officer is notified through the National Response Centre (NRC) call. An additional notification beyond the NRC call is required to meet the regulatory reporting requirement.
- Traffic management can be a challenge and as such Enbridge needs to work closely with the county to develop traffic plans and implement these plans as soon as possible, especially to ensure weight restricted roads are not utilized.
- The EPA notified every one of their viewer resources that is available and can be requested if needed for initial response.

Darien, WI (Midwest) on March 25, 2021

The exercise was attended by 10 Enbridge members and 14 external participants (2 external participated virtually). The exercise was primarily conducted face to face however the virtual participants were also accommodated. Discussion points included:

- Potential challenges exist with shutting down Highway 11. Logistics will need to develop a traffic plan early in the response.
- Walworth County Metropolitan Sewage District can provide the flow rate of Turtle Creek in real time.
- There is a dam that controls the flow to Turtle Creek from Delavan Lake that can be adjusted in the event of an emergency.
- Kettle Corner has a large amount of open space and could be used as a staging area.
- Turtle Creek is used for recreation. Wisconsin Department of Natural Resources (DNR) should be contacted to help keep people off the watercourse during the response.

Grayling, MI (Great Lakes) on April 6, 2021

The hybrid virtual/in person exercise was attended by 4 Enbridge members and 7 external participants inperson and 3 external participants virtually. Discussion points included:

- Local fire departments and emergency managers "double-hat"; in that they serve in more than one capacity (i.e. the Emergency Manager is also the Fire Chief; Fire Department personnel are also EMS).
- The discussion facilitated understanding of local resources and identified gaps in response equipment.
- The scenario was effective at illustrating potential impacts to an economically, recreationally, and biologically important waterway.
- There are several branches of multiple watercourses in the area, increasing potential for widespread impact. There is very limited access to the watercourses and would require the use of heavy equipment to conduct inland excavation and construction of roads to reach remote areas that are impacted.



- The local fire department does not have spill response equipment; however, they have an existing Memorandum of Understanding with neighboring counties for resources and personnel.
- The nearest spill response company does not have existing contract with Enbridge. They do have oil spill response capabilities as well as excavation equipment. They could be sub-contracted by an Enbridge Oil Spill Removal Organization (OSRO) to improve response times to this area.

Mio, MI (Great Lakes) on April 20, 2021

The hybrid virtual/in person exercise was attended by 4 Enbridge personnel (2 in-person, 2-virtual), 13 external participants in-person, and 9 external participants virtually. This exercise facilitated in-depth discussions among several stakeholder and responding entities.

- Communications in the area are limited due to poor network coverage. Response to remote locations would require utilization of the Enbridge communications trailer, that boosts internet and cellular network bandwidth.
- Local fire departments have limited oil spill response equipment. They have boom, but little knowledge how to effectively deploy boom. A line launcher would greatly assist in deploying boom across watercourses, as they do not have vessels.
- There is a wide range of use and understanding of ICS. An initial response and pro-active response workshop would benefit this area.
- Tribal participation indicated that their knowledge and expertise would be able to assist in the identification of sensitive sites (species or habitat) as well as identify Tribal Lands. This information would be used to deploy protection tactics at the respective locations.

Carlton, MN (Midwest) on April 20, 2021

The hybrid virtual/in person exercise was attended by 17 Enbridge members and 18 external participants. There were 7 people that attended in person. Discussion points included:

- Minnesota Power hydroelectric dam is near the control point and as such should be notified in the event of a release.
- Possible staging areas include a nearby trucking lot and the Four Seasons Sports Complex.
- There are multiple utilities in the area including Enbridge pipelines and other pipeline companies. Notifications to other utilities would be part of the initial response actions.
- The county Emergency Operations Centre (EOC) is a potential ICP location.
- The Atkinson Town Hall may be a good location for a JIC.
- Coast Guard will need notification if there are potential impacts to the Great Lakes.

Doan Creek workshop Dansville, MI (Great Lakes) on May 6, 2021

There were 23 participants at the workshop (7 Enbridge and 16 external participants).

This exercise is a component of the Stockbridge FSE. The goal of the workshop was to test a minimum of two response tactics specific to a small water course. This workshop demonstrated Enbridge response equipment and contracted OSRO equipment. It was a quick and efficient set up of equipment.



Equipment deployed included the Watergate Dam, Turner Valley dam, mini-boom (3" skirt), mini-skimmer and the sheen machine.

Positive observations include:

- Smooth deployment of never-before deployed Enbridge response equipment (Turner Valley dam and Watergate dam).
- Good coordination of a joint deployment between Enbridge FRT and OSRO. The workshop facilitated relationship building and cross familiarity of equipment.
- The mini boom proved to be ideal for small/shallow water courses.
- Conversations with external partners and first responders was a great opportunity to explain how and when certain equipment is used. The deployment provided a good visualization of applicability.
- Although a bit cumbersome, the Turner Valley dam was very stable and blocks debris, ultimately enhancing recovery efforts.

Areas for improvement include:

- Shoreline protection measures were not deployed upstream of the collection equipment. The shoreline has grassy banks, and would benefit from protection, as it would reduce contamination and reduce subsequent sheening.
- The Watergate Dam could use a float or other mechanism at the top to keep it above the water surface. A grommet tool could be used to secure a float to the vinyl material.

116.d [Field and Table-Top Invitees]

In accordance with Subparagraph 116.d, prior to conducting the Field and Table Top Exercises identified under Subparagraph 116.a above, Enbridge sent out invitations for the scheduled 2021 Table Top and Field Exercises on December 21, 2020, to community, state and local first responders listed in CD Appendix C, as well as first responders located within 5 miles of the exercise scenario, resulting in a total of 481 invitations mailed. On February 22, 2021, an additional mailing occurred to one agency that was identified as being within a five-mile radius of the amended Point of Entry for the Niles FDE scheduled for May 26, 2021. The other Point of Entry change (Grayling, April 6, 2021) did not trigger any additional mailings.

The invitations provided recipients with more than four weeks' notice of the exercise date. The invitation also indicated that Enbridge would provide meals to persons who attended each exercise, and that the training would be provided at no cost to the invitees, excluding travel costs. Interested respondents were directed in the letter to an external-facing website (<u>http://emergencyresponderexercises.com/</u>) wherein they could register, and were also provided with a contact telephone number and e-mail address. During the reporting period 27 registrations were submitted using the online system, zero calls were received using the telephone system, and two e-mail requests for additional information were received and responded to.

Three improvements were made to the exercise registration program during the reporting period. First, three EPA Region 5 planners were added to the annual invitation list. Second, county and regional state-level emergency management offices were added to the annual invitation list. Third, the registration report generated by the external-facing website was updated in November to display additional registrant details which enabled Enbridge to directly communicate with registrants.

Due to COVID-19 impacts, the postcard mailings (which were a supplemental effort not required by the CD) were placed on hold, as exercise locations and formats were fluid due to evolving state and local restrictions. Information regarding the virtual exercises was updated on the website as appropriate with Enbridge Consent Decree Eighth Semi-Annual Report Page 57 of 72



regional Emergency Response Coordinators conducting follow up as needed with invitees, including providing situation manuals as needed.

The 2021 exercise dates and locations were posted on the website on November 10, 2020.

116.e [Community Outreach Sessions]

During the reporting period, Enbridge continued to comply with Subparagraph 116.e of the Consent Decree regarding the required Community Outreach Sessions.

Enbridge conducted the following Community Outreach sessions during this reporting period:

Pembina, ND on March 9, 2021 Park Rapids, MN on March 10, 2021 Walker, MN on March 11, 2021 Ashland, WI on March 24, 2021 Hurley, WI on March 25, 2021 Aitkin, MN on April 20, 2021 Cloquet, MN on April 21, 2021 Mio, MI on May 4, 2021 Bay City, MI on May 5, 2021 Tonawanda, NY on May 6, 2021

For the community outreach sessions identified above a total of 35,937 invitations were sent to landowners, elected officials, the general public, and community leaders. Print and digital advertising campaigns were placed to invite general public participants to the meetings and to help boost overall meeting attendance. Traditional print advertising was placed in 13 total publications within or near virtual host communities, and each campaign was set to run for two weeks prior to each meeting. In addition, targeted (by zip code) digital advertising campaigns were placed via Facebook and also ran two weeks prior to each meeting. Finally, additional stakeholder outreach was completed via phone calls, emails, and Enbridge corporate communications channels such as e-Newsletters encouraging stakeholder attendance. In total, 124 documented external attendees participated in these 10 sessions.

Information about problems encountered or anticipated in implementing Consent Decree Requirements due to COVID-19 is further discussed in Paragraph 144 under heading Various Paragraphs [Section H] COVID-19 Restriction Impacts to FDE, TTX, Community Outreach, and Coordination with Government Planners.

Historically, each Community Outreach session has been conducted in an open-house format with exhibitstyle booths that provided attendees with valuable information on pipeline operations, product information, safety, preventative maintenance, integrity, emergency response, public awareness, damage prevention/right-of-way, and Enbridge's involvement in local communities. Due to COVID-19 restrictions, all 10 of the specified sessions listed above were held virtually. During the virtual meetings, attendees were provided multiple resources. Some of the informational materials available for download include:

• Potential hazards of different crude oils transported by the Lakehead System;



- The location of Enbridge pipelines in proximity to the communities where the sessions were conducted;
- How Enbridge's pipelines are marked;
- How the community should respond in the event of a spill;
- How the community can obtain information in the event of a spill from Enbridge and government agencies; and
- How the community can report spills to Enbridge, EPA, and the National Response Center.

The informational materials shared during the virtual community sessions are included in Appendix 3.

At each virtual Community Outreach Session Enbridge solicited feedback from attendees through an online poll. After each session, there was a post session debrief with the Enbridge teams to review the poll results. The overwhelming majority of the feedback received during the reporting period, whether through the poll or follow-up conversations, was positive. Attendees stated they appreciated having access to Enbridge and the information provided.

117 [Control Point Plans]

In accordance with Subparagraph 117.a and b, Enbridge has updated and maintained the information for the Control Point locations set forth in Appendix D of the Consent Decree.

The Control Point information was submitted to the EPA on May 21, 2020 by Enbridge and was provided in the electronic formats specified in Subparagraph 117.e. Information about Subparagraph 117 c, d, f and g have been addressed in previous SARS reports. This activity is complete.

118 [Response Time]

Enbridge completed a review of personnel and equipment available to respond to an oil spill in the times allotted in the ICPs in accordance with Paragraph 118.a and b on May 6, 2020, Enbridge electronically submitted a draft report to the EPA on May 12, 2020 which is within 180 days of completion of the review in accordance with Paragraph 118.c. The EPA reviewed the draft report and submitted their comments to Enbridge on August 10, 2020. Enbridge met with the EPA on October 14, 2020 to discuss Enbridge's proposed responses to the EPA's comments. As per Sub-paragraph 119 e., Enbridge submitted the final report to the EPA on October 22, 2020, which is within 90 days of having received the EPA's comments. The letter of transmittal accompanying the report outlined the actions Enbridge would take as a result of the findings of the final report. Enbridge also provided electronic copies of the report to Sub-Area committees, USCG, PHMSA and Enbridge OSROs. This activity is complete.

119 [Coordination with Governmental Planners]

Enbridge's coordination with governmental planners is described in its response to Subparagraphs 119.a to 119.k below.

119.a [Planning Meeting Participation]

In accordance with Subparagraph 119.a, Enbridge attended the following Area and Sub-Area Committee planning meetings that were held during this reporting period, virtually, due to COVID-19 restrictions:



Northern Michigan Area Committee December 10, 2020

A variety of topics were covered including the following: (a) US Venture in Rogers City, MI summarized their virtual Table Top Exercise (TTX) from September, (b) the National Oceanic and Atmospheric Administration (NOAA) indicated that they can provide trajectory information to onwater oil spills on behalf of the US Coast Guard, (c) the tug and barge PML 2501 ran aground in the St. Mary's River in June 2020. Although the vessel took on water, there was no pollution discharged, as the vessel previously underwent modifications to double-line the hull, (d) Lake Superior State University (LSSU) is in the construction phase of their Freshwater Research Center, (e) The Northern Michigan Area Committee (NMAC) disseminated a survey to elicit feedback from committee members regarding their interpretation of severity, impact, and probability of a of Worst Case Discharge (WCD).

Northwest Indiana Sub Area Committee February 2, 2021

A variety of topics were covered including the following: (a) The EPA is in the process of refining virtual response capabilities to real-world events. They have developed a training schedule for Region 5 to enhance their overall performance, (b) The EPA is currently reviewing the RCP (Regional Contingency Plan) and ACP (Area Contingency Plan) to ensure it aligns with OPA 90 (Oil Pollution Act of 1990) & the NCP (National Contingency Plan). They've identified areas for improvement and will incorporate WCD (worst case discharge) information as well as cover all facilities in the area that could impact the inland zone (EPA jurisdiction).

Northern Michigan Area Committee February 25, 2021

 A variety of topics were discussed including: (a) Methods for Collection and Tracking of Air/Water/Soil Samples, (b) Risk Analysis Results, (c) Balcom Marine Crane Barge Response & Tug Sinking in Marquette, MI, (d) Update from Coast Guard Research and Development and Great Lakes National Center of Excellence. Additionally, a representative for Senator Gary Peters addressed the committee.

Duluth Houghton Sub Area Committee March 16, 2021

• The meeting focused on Cyber Security and included information on cyber security risk management.

Duluth Houghton Sub Area Committee April 15, 2021

• The meeting discussed various topics including: (a) a discussion about future exercises, (b) there was a briefing of Western Lake Superior pollution events from the previous 6 months, (c) the US Coast Guard examination of the viability of in-situ burning of oil spilled on the Great Lakes, (d) Enbridge provided update on upcoming Table Top Exercises.

Detroit Sub Area Committee Meeting May 13, 2021

 The meeting discussed a number of topics including: (a) the US Coast Guard (USCG) responding to a vessel running a ground, on the bow, in the Livingstone Channel of the Detroit River, (b) Michigan Environment Great Lakes and Energy (EGLE) reported that due to the COVID restrictions EGLE is still mostly in a telecommuting status with the exception of ongoing field work and Ohio



EPA indicated they are working similar to Michigan EGLE where their field personnel are responding from their homes, (c) The Canadian Coast Guard continues to operate in a virtual environment due to COVID with no date set to return to the office (d) The U.S. Fish and Wildlife Service (USFWS) has been working with Tri-State Bird Rescue and Rehabilitation, Inc. to try to exercise the permitting process for moving oiled wildlife back and forth across the U.S.- Canada border as part of this week's CANUSLAK Isle Royale spill response drill. (e) NOAA has hired a new SSC for the Northeast Region, who will also be acting as SSC for our region when D9 SSC is deployed elsewhere, (f) NOAA and EPA are collaborating on sharing files in the NOAA ERMA system.

Enbridge also attended the spring Regional Response Team meeting held on April 14, 2021. This meeting was held virtually due to COVID-19 restrictions. This meeting fell outside of the Sub-Area planning meetings.

119.b(1) and (2) [Sub-Area Activities Participation]

Enbridge was invited and attended the following field exercises and other training events during this reporting period:

PHMSA HAZMAT Training February 23, 2021

• The course covered the following topics: guidance on referencing the 40 Code of Federal Regulation, Part 100-185, identification for shipper responsibilities and understanding of where and how to use the Hazardous Material table.

CISA RV Critical Manufacturing Roundtable March 10, 2021

• This roundtable is held by the US Department of Homeland Security (DHS) Cybersecurity and Infrastructure Security Agency (CISA) and held in collaboration with State, Local and regional partners. A menu of services and training that can be used for security were discussed that can help develop how to improve facility security.

Virtual oil spill response workshop Intermediate Booming Strategies and Techniques, March 24, 2021

• The EPA reviewed standard boom deployment tactics. This included the construct of various type of boom, when to use the different types/kinds of boom, examples of boom failures, and anchoring strategies. Boom tactics included the different uses for boom, including diversion tactics, exclusion boom, containment configurations, and collection boom configurations.

Inland Oil Spill for DOI Response Webinar Series: Alaska's Updated Wildlife Protection Guidelines for Spill Response April 21, 2021

• The webinar gave an overview of the Alaska's new Wildlife Protection Guidelines. These guidelines provide guidance to responders on protection of wildlife and habitats during an oil spill.



Great Lakes Climate & Water Levels Webinar May 10, 2021

• A number of topics were discussed including: precipitation, temperature, and water level trends in the Great Lakes region. Weather services perspectives were also discussed. Finally, water levels on the coast, impacts on habitat and economic and social impacts were discussed.

119.c [Response Requirements to Sub-Area or Area Committee Recommendations]

No Sub-Area Committee or Area Committee for the Lakehead System has made written recommendations to Enbridge regarding its emergency preparedness plans and implementation thus, Enbridge had no obligation under Subparagraph 119.c to respond and/or revise its emergency preparedness plans or implementation during this reporting period.

119.d [Response Planning Meetings Requirements]

Enbridge did not receive a request to meet and discuss response planning strategies to ensure consistency with the Area Plan.

119.e-g [Plans and Prepositioned Emergency Response Locations and Equipment]

Requirements for Subparagraphs 119.e-g were fully satisfied during the first SAR reporting period, as explained in the first SAR, accordingly this activity is complete.

119.h [Emergency Response Equipment]

Enbridge continues to maintain, in good working order, its prepositioned emergency response equipment and materials. No equipment was moved during this reporting period.

119.i [Inland Spill Response Tactics Guide on Website]

In accordance with Subparagraph 119.i, the "Inland Spill Response Tactics Guide" has been available on Enbridge's website since May 23, 2017, at <u>https://www.emergencyresponderinfo.com/</u>. Accordingly, this activity is complete.

119.j [Inland Spill Response Guide to EPA]

EPA requested a copy of the "Inland Spill Response Guide" on November 1, 2018, and Enbridge fulfilled this request on November 2, 2018. Accordingly, this activity is complete.

119.k [Electronic Submittal of Documents]

Enbridge has provided electronic copies of all documents that are required to be submitted under Paragraph 119 in accordance with the electronic submittal requirements specified under Subparagraph 119.k.

120 [Incident Command System Training]

Enbridge's compliance with ICS training requirements is described in Enbridge's response to Subparagraphs 120.a to 120.c below.



120.a [Incident Command System Training Requirements]

Enbridge has ensured that, upon assigning a person to take on the following roles, each person has completed the training identified below prior to beginning such duties or within the timeframe specified under Subparagraph 120.a:

- Incident Commanders, Deputy Incident Commanders or Alternative Incident Commanders of any Regional Incident Management Team in any Lakehead ICP: ICS 100B - 400 and position- specific training;
- All other personnel listed as members of any Regional Incident Management Team in any Lakehead ICP: ICS 100B 300 and position-specific training;
- Regional Emergency Response Specialist Coordinators: ICS 100B 400 training;
- All emergency management department personnel: ICS 100B 300 training within 90 days of being assigned;
- Any person designated as Vice President of U.S. Operations, or in an equivalent capacity: ICS 402 training;
- Any other manager or executive who give direction to field personnel, or is responsible for making funding, personnel, or resource decisions during a spill response (if ICS 100B – 400 has not been taken): ICS 402 training.

During this reporting period, 21 personnel were added or changed positions on the Regional Incident Management Teams. All received or had ICS training prior to being appointed.

120.b [ICS Training and Incident Management Team Personnel]

In accordance with Subparagraph 120.b, Enbridge has trained at least one employee for each Incident Management Team position as indicated in its ICP.

120.c [Training Requirements and Electronic Certification Documents]

In accordance with Subparagraph 120.c, Enbridge maintains electronic certification documents that confirm personnel training as described in Subparagraph 120.a.

Section I – New Remotely Controlled Valves

121-122. [Installation of 14 Remotely Controlled Valves]

Between the SAR 1 and SAR 7 reporting periods, Enbridge successfully installed and commissioned 14 new, remotely controlled valves on Lines 5, 6A, and 14 within the MP ranges specified under Paragraph 122. The as-built site layout drawings for the 2020 sites were complete during this SAR period and all asbuilt site layout drawings were provided to the ITP for verification. The 2019 site L14 MP 430 has reached final restoration and the environmental permit has been closed. Monitoring of 2020 sites (Line 6A, MP 80 and MP 198) is in progress and will continue until the sites reach final restoration/revegetation. Enbridge considers Paragraph 121 and 122 to be complete.



123. [Enbridge Computer Modeling for Valve Locations]

Enbridge identified the optimal locations for the 14 valves listed in Paragraph 122 by employing our Intelligent Valve Placement ("IVP") methodology to meet the requirements of Paragraph 123. The details of this methodology have been explained in past SARs, information requests, and a live demonstration to the ITP. Enbridge considers Paragraph 123 to be complete and no further reporting is required in this SAR, nor in future SARs.

124. [Valve Design and Closure]

During each instance of valve commissioning, valve closure timing tests were conducted and recorded to show each valve fully closed and sealed within three minutes of the operator engaging the valve-closure control on the control panel. After commissioning of each valve, Enbridge provided the commissioning forms to the ITP for their verification of closure timing of the valves installed in that reporting period. All the commissioning forms for the 14 valves have been provided to ITP for verification. Enbridge considers Paragraph 124 to be complete and no further reporting is required in this SAR, nor future SARs.

Section J – Independent Third Party Consent Decree Compliance Verification

As reported in the first SAR dated January 2018 and the second SAR dated July 2018 Enbridge retained O.B. Harris, LLC as the ITP on January 11, 2017 to conduct a comprehensive verification of Enbridge's compliance with the requirements set forth in Section VII (Injunctive Measures), except for subsection VII.H (Spill Response & Preparedness) which Paragraph 125 excludes from the verification activities that are required to be performed by the ITP. Therefore, Enbridge's obligations under Paragraphs 125, 127-132.a and 134 have been satisfied. Enbridge will continue to report on required updates and/or changes to this injunctive measure in future SARs.

126. [ITP Access to Enbridge Lakehead System]

Enbridge continues to provide the ITP with full access to all facilities that are part of Enbridge's Lakehead System, including any personnel, documents and databases to allow them to fully perform all activities and services required by the requirements of the Consent Decree.

132. [Enbridge – ITP Agreement Tasks 2, 3, 4, and 5]

In accordance with Paragraph 132, Enbridge continues to support the ITP in providing them additional information and responding to their requests to assist the ITP in completing the tasks required by Subparagraphs 132.b, c, d, and e.

133.b [Enbridge Response to ITP Verification Report]

The agreement between Enbridge and the ITP requires, as per Subparagraph 133.a, that the ITP prepare a written verification report that sets forth the findings, conclusions and recommendations, if any, as to each of the requirements of Section VII of the Consent Decree, excluding Subsection VII.H (Spill Response and Preparedness). There is nothing additional to report in this covered period. If there are further developments related to this Paragraph, Enbridge will provide an update in future reports.



134.I [General Requirements – ITP Annual Certification]

On January 4, 2021, the ITP provided its annual certification to the United States, verifying that it complies with the General Requirements of Subparagraphs 134.g-k.

135. [Enbridge Enforcement of the Agreement]

As reported in the first through seventh SARs, Enbridge is prepared to enforce the terms of its written agreement with the ITP if needed to ensure compliance with Section VII.J of the Consent Decree, but to date has not been required to take such action.

136. [ITP Replacement]

This Paragraph of the Consent Decree addresses replacement of the ITP, which is an issue that has not arisen since the Effective Date.

IX. – Reporting Requirements

144. [SAR Requirements]

This section summarizes information required by Paragraph 144 to the extent that the information is relevant to Enbridge's compliance with a requirement of the Decree and has not been reported separately above. Enbridge also recognizes that all of the matters listed in Paragraph 144 will not always be applicable relative to each of the Decree's requirements. Among matters listed in Paragraph 144 are the following:

- i. Completion of milestones
- ii. Problems encountered or anticipated in implementing the requirement (together with implemented or proposed solutions)
- iii. Status of permit applications
- iv. Operation and maintenance issues
- v. Reports to State Agencies
- vi. Number by types, of features repaired or mitigated during the reporting period and the number, by type, planned for future repair or mitigation
- vii. Any significant changes or issues since the previous SAR

In many cases, the matters listed above have been reported in previous sections of the Report that relate to specific Decree requirements. However, Enbridge has selected the activities reported below to draw specific attention to challenges encountered during the reporting period, pursuant to Paragraph 144.

In support of transparency about interpretation issues with the Consent Decree as well as problems encountered, Enbridge included a table listing the interpretation issues (details below) as well as a bulleted list of problems encountered with a discussion for each following the list.

Consent Decree Interpretation Issues

There are a number of Consent Decree interpretation issues that Enbridge has resolved or is working to resolve with the ITP and EPA. Enbridge is proceeding using the Enbridge interpretation in areas where the interpretation has not been agreed on by all parties. Refer to **Table IX-1** for a list of interpretation issues.



Problems Encountered or Anticipated in Implementing Consent Decree Requirements

The following is a list of the problems encountered or anticipated in implementing Consent Decree requirements for reporting period 8. Each of these are discussed in more detail in the sections below and are referenced in the applicable injunctive paragraph.

- [Section D] Circumferential Cracking Engineering Assessment Process Various Paragraphs
- [Section D] ILI Assessments Utilizing MOP Values That Differed Slightly From the EMOP Values as Provided to the EPA on Jan. 25, 2017 Various Paragraphs
- [Section D] HCA Information Utilized for ILI Assessments 38a and Other Various Paragraphs
- [Section G] January 22, 2021 Optimization of 24-hour alarm thresholds due to lower flow rates on Lines 2, 14/64 – P. 103
- [Section G] March 2, 2021 Leak Detection Outage P. 92
- [Section H] Stockbridge Agreed Exercise P. 115
- [Section H] COVID-19 Restriction Impacts to FDE, TTX, Community Outreach, and Coordination with Government Planners Various Paragraphs

[Section D] Circumferential Cracking Engineering Assessment Process – Various Paragraphs

In earlier reporting periods Enbridge, and the ITP, and the government identified a difference in interpretation regarding how and whether circumferential crack ILI, which historically has not been used on the Lakehead system, was intended to be incorporated within the Consent Decree. Enbridge believes that the use of this technology is not required based on the level of risk to the Lakehead system and that technical assessment processes within the Consent Decree are not suitable to analyze circumferential crack features. As a result, Enbridge agreed to provide the ITP a total of three Engineering Assessments related to circumferential crack features. Two of these Engineering Assessments provide technical analysis of eleven circumferential crack features detected by circumferential crack ILI on two lines, and one Engineering Assessment that details the level of risk of circumferential crack hazards on the Lakehead system as a whole and the Enbridge approach to managing this threat.

The Parties retained a third party engineering consultant, selected by the ITP, to complete an evaluation of all three circumferential crack Engineering Assessments.

On May 25, 2021 the Third Party Consultant ("TPC") provided their evaluation of Enbridge's Engineering Assessment of Circumferential Crack Management on the Lakehead System and agreed with Enbridge's conclusion that circumferential cracking failures are a "low probability event" and "infrequent... in comparison to failures due to other threat types". Further the TPC "agrees that the information presented in the Programmatic EA suggests that no additional circumferential crack ILI runs on the Lakehead System are necessarily required at this time" and that the need for utilizing circumferential crack ILI "is dependent on the results of ongoing integrity assessments".

On June 11, 2021 the TPC provided their evaluation of Enbridge's two Engineering Assessments for eleven circumferential crack features. The TPC concluded that "the fitness-for-service (FFS) assessments conducted by Enbridge... are reasonable and... are currently an appropriate means of demonstrating adequate safety in operations. The assessments indicate that all features examined as part of this review... are currently fit for service."

Discussions between Enbridge, the government, and the ITP regarding treatment of circumferential cracks are ongoing.



[Section D] ILI Assessments Utilizing MOP Values That Differed Slightly from the EMOP Values as Provided to the EPA on January 25, 2017 – Various Paragraphs

As reported in SAR 6 P.144 [Section D] Minor Metal Loss Feature Truncation in Assessment Sheets – P. 35, P. 36, Assessment sheets for Corrosion programs were historically truncated given the large number of features reported, the limitations of the Excel file size and the large amount of analysis that would be required for minor non-intersecting Corrosion features that are known to be non-injurious to the pipeline. During the SAR6 reporting period, Enbridge completed the Remaining Life, Predicted Burst Pressure, and Safety Factor analysis on all reported Corrosion features less than the truncation threshold which demonstrated that no features triggered a CD FRE criterion.

In the SAR8 reporting period, Enbridge identified that some Corrosion ILI assessments that were previously completed utilized MOP values that differed slightly from the EMOP values as provided to the EPA on January 25, 2017. The MOP discrepancies resulted from the use of verified MOP values from the MOP Verification Project in these ILI assessments. These ILI assessments are being updated to use the EMOP values as provided to the EPA on January 25, 2017. Enbridge is working with the ITP, EPA and DOJ on a Sixth Modification of the Consent Decree to allow Enbridge to utilize all verified MOP related information from the MOP Verification Project. This Sixth Modification will ensure that the verified MOPs will be used for all CD requirements.

The ILIs, with truncated Assessment Sheets, that utilized MOP values that differed slightly from the EMOP values include: Line 4 CR-CS 2020 MFL Issue 1, Line 3 GF-CR 2020 MFL Issue 1, and Line 3 CR-PW 2020 MFL Issue 2. All the truncated Assessment Sheet features have been reassessed with none of the updated MOP's resulting in features meeting CD FRE criteria and no excavations were issued due to these MOP updates.

The ILIs, with Assessment Sheets for features less than the truncation threshold, that utilized MOP values that differed slightly from the EMOP values include: Line 4 CR-CS 2020 MFL Issue 1, Line 3 GF-CR 2020 MFL Issue 1, Line 3 CR-PW 2020 NDT UCMp Issue 1, and Line 6A AM-GT 2019 BHGE USWM+ Issue 2. Enbridge is still in the process of completing the ILI assessments for all reported Corrosion features less than the truncation threshold utilizing the EMOP values as provided to the EPA on Jan. 25, 2017. None of the updated ILI assessments are expected to result in features meeting CD FRE criteria and no excavations are expected to be issued due to these MOP updates as these are very shallow Corrosion features. Enbridge will inform the ITP upon completion of these assessments.

[Section D] HCA Information Utilized for ILI Assessments – 38a and Other Various Paragraphs

In the SAR8 reporting period, Enbridge identified that some ILI assessments that were previously completed utilized HCA information that was not updated in OneSource. The HCA discrepancies resulted from a minor delay in updates to the OneSource database after Enbridge was informed that the HCA classifications had been updated. Enbridge determined that one ILI assessment utilized the non-current HCA values: L4 VG-PL 2021 MFLDUDI.

Enbridge has reassessed the affected ILI and determined that none of the updated HCA's resulted in any additional features meeting CD FRE criteria and no excavations were issued due to these HCA updates. There were eight (8) FRE's that were initially issued to the Dig List that required updates to the repair deadlines based on the current HCA classifications. All eight (8) of these excavations initially had a 365 Day repair deadline, which was updated to a 180 Day deadline. All of the deadlines were updated well in advance of the new 180 Day repair deadline.



A review of the process for updating HCA information in OneSource has been initiated to determine the appropriate mitigations to prevent this from re-occurring in the future.

[Section G] January 22, 2021 Optimization of 24-hour alarm thresholds due to lower flow rates on Lines 2, 14/64 – P. 103

During the execution of the Q4 2020¹² sensitivity performance testing of the 24-Hour alarm, it was discovered that three Lakehead lines – Lines 2, 14, and 64 ("14/64"¹³) fell below the 95% confidence level for the leak sensitivity detection threshold of 2.9%, 2.2%, and 2.2% of nominal flow respectively.

On January 22, 2021, Enbridge completed technical analysis, which identified the root cause of the issue. It was determined that the lines were operating at a flow rate near the lower bound or lower than the range observed and used during the 24-Hour Alarm Optimization Study¹⁴ ("study").

Table IX-2: Lines 2,14/64 Flow Rates outlines the flow rates the subject pipelines were operated at during the Q3 through Q4 2020 periods versus the range of flow rates the pipelines were operated at during the study. This change in flow rates is considered as a "significant change in pipeline operation" as extensive flow at this minimum rate was not observed during the optimization study data set. As indicated in the study, this change in operation is considered significant, triggering the need for re-optimization of these lines.

Enbridge completed a re-optimization study for these lines to lower the threshold¹⁵ in order to meet the sensitivity requirement under persistent lower flow rate conditions and were implemented on February 19, 2021 for Line 14/64 and February 22, 2021 for Line 2. This re-optimization was carried out in accordance with Subparagraph 103.g(3) and to meet the sensitivity requirements per Subparagraph 103.g(4). Subparagraph 103.g(5) will not be applicable for this event as neither the sensitivity is relaxed, nor a temporary sensitivity is established.

On March 18, 2021, Enbridge presented the results of the re-optimization study to the ITP. The re-optimization report of these lines was submitted to the ITP and EPA on April 16, 2021, in accordance with Subparagraph 103c.

[Section G] March 2, 2021 Leak Detection Outage – P. 92

On February 28, 2021 a time synchronization issue between the Primary Domain Controller (PDC) and LP leak detection systems, located in Edmonton, was identified. While attempting to remediate this issue, a system time error was introduced into the PDC on March 2, 2021 at approximately 13:35 MST that resulted in unrecoverable data corruption to certain liquid pipelines Material Balance System (MBS) leak detection models. Additionally, the SCADA screens became unresponsive and were transitioned to the backup environment.

With the loss of leak detection capabilities, all pipelines and terminals operated by the Edmonton Control Centre were shut down in a controlled manner starting at 13:37 on March 2, 2021 and remained down until assessed as safe to restart. Pipelines were shut down in accordance with procedures and did not operate without leak detection. No compliance issues resulted from this event. Leak detection was restored at 16:50, at which time it was confirmed safe and pipelines were restarted. This event resulted in MBS 'no

¹² Q4 2020 performance testing covers Q3 to Q4 operating periods

¹³ Lines 14 and 64 are in the same leak detection system model

¹⁴ 2019.04.12 Enbridge 24-Hour Alarm Threshold Optimization Study Results – per P. 103.c

¹⁵ The term "threshold" in this context refers to the Enbridge definition, which is the flow range of when the alarm is triggered. "Threshold" per CD definition is synonymous to "sensitivity", as per Enbridge definition and CD's intent.



data' alarms generated at the time of failure, which were reported and described to the ITP during the April 22, 2021 technical meeting. To prevent reoccurrence, Enbridge has implemented enhancements to Management of Change processes, incident response and is reviewing its time synchronization architecture.

[Section H] Spill Response and Preparedness

The information below outlines problems encountered or anticipated in implementing Consent Decree requirements for Section H – Spill Response and Preparedness, due to COVID-19.

[Section H] Stockbridge Agreed Exercise - P. 115

Due to the COVID-19 pandemic and at the EPA's request, the Stockbridge Exercise required under P. 115 of the Consent Decree was postponed. The COVID-19 pandemic is an event beyond the control of Enbridge that prevented travel and face-to-face gatherings and therefore qualified as a Force Majeure event under Paragraphs 174 and 175 of the Consent Decree.

Following postponement of the September 14 and 15, 2020 exercise date, Enbridge reached out to exercise stakeholders for feedback on alternate dates and formats for the exercise. Stakeholders supported rescheduling the exercise to July 2021 and the majority agreed that the on-going pandemic may make face-to-face interactions unsafe and alternate formats for conducting the exercise, such as a hybrid exercise, should be considered. It was agreed at the Final Planning meeting on May 5th that the exercise would proceed as a hybrid exercise.

The Exercise postponement required Enbridge to revise the Stockbridge Exercise Plan to reflect the new date and included the option to conduct a part of it virtually, subject to the support of the EPA and stakeholders. The final exercise plan was submitted to the EPA on May 11, 2021. **Table IX-3** summarizes the meeting and exercise activities in the State of Michigan, related to the Stockbridge Agreed Exercise. Additional touchpoint meetings occurred and are scheduled.

[Section H] COVID-19 Restriction Impacts to FDE, TTX, Community Outreach, and Coordination with Government Planners - Various Paragraphs

The scheduling and format of several spill response and preparedness activities were impacted by COVID-19 restrictions. All Field Deployment Exercises were completed face to face. A number of TTXs were completed virtually. All Community Outreach were completed virtually. The EPA was notified of all changes per the Force Majeure notification process and approval for these changes was granted by the EPA. **Table IX-4** summarizes the TTXs and FDEs that occurred in this reporting period. Coordination with Government Planners, as required by Paragraph 119 of the Consent Decree, including meetings and training were held virtually. The Force Majeure notification process from Enbridge to the EPA is detailed in **Table IX-5**.

Reports to State Agencies

Enbridge is currently party to litigation involving Line 3 in Minnesota, Line 5 in Michigan and Line 5 in Wisconsin. In connection with these matters, the company periodically provides legal filings to agencies in those states. Enbridge does not consider those submissions, most of which are publicly available, to be "reports" of the type covered by the Consent Decree. Similarly, Enbridge is in the process of seeking state and federal permits relating to construction of a line replacement project on Line 5 in the vicinity of the Bad River Reservation in Wisconsin. As well, Enbridge has submitted materials to Michigan state agencies in



connection with the planned replacement of the Straits Pipelines at the Straits of Mackinac. Enbridge does not consider permit applications of this type to be "reports" covered by Paragraph 144.

In addition, Enbridge and the State of Michigan are currently engaged in a confidential mediation that relates to pending litigation in the Western District of Michigan regarding Line 5. The mediation is subject to confidentiality requirements imposed by the Court. Enbridge thus is not able to provide mediation materials exchanged with the State of Michigan and has not done so. In addition, Enbridge believes that these mediation materials generally are not the type of reports covered by P. 144.

Any significant changes or issues since the previous SAR

Any significant changes or issues since the previous SAR are addressed in the following summary.

Established MOP Modification Discussions

In 2015, Enbridge began an MOP Verification Project to verify the accuracy of information used in determining the MOP values previously established by the company, including the MOP values incorporated into the Consent Decree through Paragraph 10.s of the Consent Decree. As a result of its MOP Validation Project, Enbridge determined that a number of MOP values on the Lakehead Pipelines required updating. If revised information is considered, MOP values at a number of locations on the Lakehead System would be different than the values established pursuant to Paragraph 10.s of the Consent Decree. If features are identified at these locations, there is the possibility that if the corrected MOP is considered, the features may no longer meet excavation criteria under the CD.

In this reporting period, Enbridge, the ITP and EPA/DOJ engaged in discussions regarding a modification to the CD to address MOP values that have been updated by Enbridge as a result of the MOP Verification Project. The parties are in the process of executing the finalized Sixth Modification and will thereafter submit it to the Michigan District Court for approval.

145. [Non-Compliance]

The following is the potential non-compliance identified during the SAR8 reporting period (see **Table IX-6**). As noted in prior sections, Enbridge, the ITP and EPA/DOJ have different interpretations regarding how to implement certain sections of the CD. Discussions are ongoing in a number of these areas.

[Section D] Untimely Preliminary Quality Review and Interacting Feature Review on L65 GF-CR UTCD – P34a and 58

During the SAR8 reporting period, Enbridge discovered an issue related to the ILI report receipt date for the L65 GF-CR UTCD November 2020 ILI. It was determined that the ILI Analyst inadvertently entered the ILI Report receipt date incorrectly into Enbridge's system which is used for tracking and scheduling ILI-related task deadlines. The date entered into Enbridge's system was the ILI Report receipt date deadline (3/22/2021) and not the actual ILI Report receipt date (3/19/2021) which resulted in an incorrect Final Assessment Approval (SME) deadline being established. The incorrect Final Assessment Approval (SME) deadline being established. The incorrect Final Assessment Approval (SME) deadline resulted in the preliminary quality review and the Interacting Feature review being completed 2 Days later (4/21/2021) than the 30 Day Consent Decree deadline of 4/19/2021. All other Consent Decree requirements were met for this ILI including the addition of FRE's to the Dig List and the imposition of required PPR's. Enbridge does not consider this 2 Day delay to be a significant safety concern. Enbridge



has completed a full review of all current ILI report receipt dates and has determined that no other programs had similar data entry discrepancies.

146. [Discharges from a Lakehead System Pipeline]

Table IX-7 in Appendix 1 identifies one discharge from the Lakehead System at the Viking Station of one or more barrels of oil that occurred on March 2, 2021. Although not required to be reported here as this is not a Lakehead System Pipeline discharge, Enbridge has reported on facility discharges in all SARs. Enbridge confirms that this discharge did not reach any waterbody or waters of the United States or adjoining shoreline. There were no other instances of discharge of oil during the reporting period that reached any waterbody or waters of the United States or adjoining shoreline in a quantity as may be harmful. Enbridge has committed to report all Post Incident Reports that were not previously requested and provided during the current SAR reporting period. The report at issue is provided in Appendix 4.

During the reporting period, two releases occurred on the Lakehead System that triggered PHMSA reporting requirements, but do not meet the CD reporting threshold. Both of these releases met PHMSA reporting criteria for being 5 gallons or more. When applicable, releases are reported to PHMSA in accordance with either 49 C.F.R. § 195.50(b), which requires the reporting of any release of 5 gallons or more of hazardous liquid, or 49 C.F.R. § 195.50(e), which requires reporting if the initial estimated property damage, including the cost of clean-up and recovery, value of lost product, and/or damage to the property of the operator and/or others would exceed \$50,000. With respect to the releases, when they occur, Enbridge proceeds without delay to dispatch trained personnel to the location of the leak and takes action to prevent any migration of oil into waters of the United States, including shutting down the affected line.

147. [Update on Discharges from a Lakehead System Pipeline reported in SAR7]

There were no discharges from a Lakehead System Pipeline reported in SAR7 and no updates from past reports prior to SAR7 as shown in **Table IX-8**.

148. [Copies of all Post Incident Reports in SAR8]

A copy of the post incident report from the March 2, 2021 incident is provided in Appendix 4.



I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on any personal knowledge I may have and my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

FOR DEFENDANTS:

ENBRIDGE ENERGY, LIMITED PARTNERSHIP, ENBRIDGE PIPELINES (LAKEHEAD) L.L.C., ENBRIDGE ENERGY PARTNERS, L.P., ENBRIDGE ENERGY MANAGEMENT, L.L.C., ENBRIDGE ENERGY COMPANY, INC., and ENBRIDGE EMPLOYEE SERVICES, INC.,



FOR DEFENDANTS:

ENBRIDGE OPERATIONAL SERVICES, INC., ENBRIDGE PIPELINES INC., and ENBRIDGE EMPLOYEE SERVICES CANADA INC.

, Executive Vice President and President,
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Introduction

The following 3 pages are Table Intro-1: Implemented Requirements per P. 203(i).

Introduction

Table Intro-1: Implemented Requirements per P. 203(i)				
CD Section and Paragraph	Short description	Reported in	Enbridge status	
Section A P. 21	No operation of original US Line 6B	SAR1	Implemented	
Section B P. 23	Line 10 evaluation	SAR1-SAR4	Implemented	
Section D ILI Stipulation	Stipulation and Agreement Regarding Assessment and Payment of Stipulated Penalties Relating to Timeliness of Certain In-Line Inspection	SAR2-SAR7	Implemented	
Section D P. 46	Completion of Alternate Plans AP01, AP02, AP03, AP04	AP01 – SAR2 AP02 – SAR2 AP03 – SAR7 AP06 – SAR6	Implemented	
Section E P. 69.a; 69.b; 69.c	Biota Investigation Work Plan, report, and implementation	SAR1-SAR4	Implemented	
Section E P. 70.a; 70.b	Line 5 ILI corrosion, circumferential crack, and geometric features	SAR1	Implemented	
Section E P. 71.a; 71.b	Line 5 ILI axially- aligned crack features or hydrotest	SAR1	Implemented	
Section E P. 72.a; 72.b	If cracks identified pursuant to P. 70, investigate and report	SAR1	Implemented	
Section F P. 77.a-c	Updated OneSource within 365 days of CD Effective Date per requirements	SAR1	Implemented	
Section G P. 79.a-c; 80.a-d	Assessment of Alternative Leak Detection Technologies and report	SAR1	Implemented	
Section G P. 81-83	Report on Feasibility of Installing External Leak Detection System at the Straits of Mackinac	SAR1-SAR2	Implemented	
Section G P. 101	Transient-State Sensitivity Analysis	SAR1	Implemented	

Table Intro-1: Implemented Requirements per P. 203(i)				
CD Section and Paragraph	Short description	Reported in	Enbridge status	
Section G P. 102.a-d	Rupture Detection System Alarm	SAR7	Implemented	
Section G P. 103	"24-hour" Alarm within 270 days of Effective Date	SAR2	Implemented	
Section G P. 103.e-f	"24-hour" Alarm testing and results	SAR5	Implemented	
Section H P. 115.b(1), 115.b(2), 115.b(3)	Cass Lake, Des Plaines, and Wisconsin River Agreed Exercises	SAR1-SAR6	Implemented	
Section H P. 115.d	Invitations to the Agreed Exercises no later than 10 months prior to the Exercises	SAR5	Implemented	
Section H P. 117.b(1)- (4)	Control Point (CP) details	SAR6	Implemented	
Section H P. 117.c	Straits of Mackinac CPs	SAR3	Implemented	
Section H P. 117.d and 117.e	CPs for the Agreed Exercises no later than 6 months prior to the Exercise and in the format required by the CD	SAR5	Implemented	
Section H P. 118.a-e	Review of Response Times report and distribution EPA, Sub- Area Committees, USCG, PHMSA, and Enbridge OSROs	SAR6 and SAR7	Implemented	
Section H P. 119.e	Redacted Lakehead System Integrated Contingency Plans (ICPs) and Straits of Mackinac Tactical Response Plan to Area and Sub-Area Committees	SAR1	Implemented	
Section H P. 119.f	Unredacted electronic copies of the Lakehead ICPs	SAR1	Implemented	

Table Intro-1: Implemented Requirements per P. 203(i)				
CD Section and Paragraph	Short description	Reported in	Enbridge status	
Section H P. 119.g	Lakehead System map of prepositioned emergency response equipment and complete inventory to EPA, Area Committees, and Sub- Area Committees	SAR1	Implemented	
Section I P. 122-124	New Remotely Controlled Valves	SAR7	Implemented	
Section J P. 125	Retain ITP	SAR1	Implemented	
Section J P. 127.a-e	ITP candidates and eligibility terms	SAR1	Implemented	
Section J P. 129	EPA approves ITP	SAR1	Implemented	
Section J P. 131	Enbridge provides agreement to the ITP	SAR1	Implemented	
Section J P. 132.a	Initial Planning Meeting with Region 5 in Chicago	SAR1	Implemented	
Section J P. 133.b	Enbridge provides response to ITP's Verification Report	SAR4	Implemented	

Section A

There are no tables associated with Section A.

Section B

The following 7 pages are Table B-1: Permits/Approvals Required for Line 3 Replacement Project (U.S.).

Section B

Table B-1: Permits/Approvals Required for Line 3 Replacement Project (U.S.)				
Unit of Government	Type of Application	Reason Required	Permit Status	
U.S. Army Corps of Engineers ("USACE") – St. Paul District	Section 404/10 Individual Permit	Authorizes discharge of dredged and fill material into waters of the United States, including wetlands, and crossing of navigable waters of the United States; USACE has engaged Tribes through its regulatory process	MN: Received WI: Received	
	Section 408 Authorization	Authorizes crossing of USACE civil works projects	Received	
State Historic Preservation Office ("SHPO")	National Historic Preservation Act ("NHPA") Section 106 Clearance	Ensures adequate consideration of impacts to significant cultural resources but especially National Register of Historic Places ("NRHP")- eligible within the lead federal agency Area of Potential Effect ("APE"). SHPOs and Tribal Historic Preservation Offices are engaged through the USACE Section 404/10 process	MN: Consultation Complete ND: Consultation Complete WI: Consultation Complete	
U.S. Fish & Wildlife Service ("USFWS")	Section 7 Endangered Species Act ("ESA") Consultation (federal threatened or endangered species)	Establishes conservation measures and authorizes, as needed, take of ESA- listed species; the USFWS is engaged through the USACE Section 10/404 process	MN: Consultations Complete ND: Consultation Complete WI: Consultation Complete	
	Bald Eagle Nest Disturbance Permit	Allows for disturbance of a known bald eagle nest in proximity to construction activities	ND: Permit Received MN: Permit Received	

Table B-1: Permits/Approvals Required for Line 3 Replacement Project (U.S.)				
Unit of Government	Type of Application	Reason Required	Permit Status	
Bureau of Indian Affairs ("BIA")	Grant of Right-of - Way	Enbridge applied for easement approval to cross the Fond du Lac Reservation along the routing authorized by the MPUC's Route Permit order	Easement granted May 1, 2020 ¹	
Fond du Lac Band of Lake Superior Chippewa ("FdL")	Section 401 Water Quality Certification ("WQC")	Section 401 WQC required to issue the USACE Section 404/10 Permit	Received	
	Standard Wetland Activity Permit	Authorizes impacts to wetlands and waterbodies within the external boundaries of the Reservation	Received	
	Land Use Permit	Authorizes permitted uses in zoning districts within the Reservation	Received	
Minnesota Public Utilities Commission ("MPUC")	Certificate of Need	Determines need for the pipeline, including questions of size, type and timing	Previously issued, then deemed ineffective pending completion of the remand process to update EIS to include spill analysis required by Minnesota Court of Appeals' June 3, 2019 decision. Following completion of spill modeling, the MPUC deemed the second revised EIS adequate and restored the Certificate of Need by vote on Feb. 3, 2020 and by order issued on May 1, 2020. Construction authorization issued Nov. 24, 2020	

Table B-1: Permits/Approvals Required for Line 3 Replacement Project (U.S.)				
Unit of Government	Type of Application	Reason Required	Permit Status	
Minnesota Public Utilities Commission ("MPUC")	Route Permit	Authorizes construction of the pipeline along a specific route, subject to certain conditions	Previously issued, then deemed ineffective pending completion of the remand process to update the EIS to include spill analysis required by Minnesota Court of Appeals' June 3, 2019 decision. Following completion of spill modeling, the MPUC deemed the second revised EIS adequate and restored the Route Permit by vote on Feb. 3, 2020 and by order issued on May 1, 2020. Construction authorization issued Nov. 24, 2020	
	License to Cross Public Waters	50-year license that allows for crossing of public waters with proposed utility	Received	
	Work in Public Waters Permit	Authorizes in-water activities in public waters located on private lands	Received	
	License to Cross Public Lands	50-year license that allows for crossing of public lands with proposed utility	Received	
Minnesota Department of Natural Resources ("MDNR")	Short-term Leases	Authorizes activities such as construction dewatering, water appropriation, and discharge on MDNR- managed lands	Received	
	Access Roads Leases	Authorizes use of MDNR- managed access roads during construction and/or operation	Received	
	Endangered Species Permit	Outlines plans for avoidance, minimization, and mitigation of take of state-listed flora species and authorizes take of individuals	Received	

Table B-1: Permits/Approvals Required for Line 3 Replacement Project (U.S.)				
Unit of Government	Type of Application	Reason Required	Permit Status	
Minnesota Department of Natural Resources ("MDNR")	Gully 30 Calcareous Fen Management Plan ("FMP") Authorization	Outlines the site- specific construction, restoration, and monitoring requirements for this wetland crossing	Received	
	Individual Water Appropriation Permit for Construction Dewatering	Authorizes withdrawal of groundwater associated with dewatering of trench and excavations	Received	
	Individual Water Appropriation Permit for HDD/Hydrostatic Testing	Authorizes withdrawal and use of water from surf ace sources to support horizontal directional drills ("HDDs"), hydrostatic testing, and dust suppression	Received	
	Individual Water Appropriation Permit for Dust Suppression	Authorizes withdrawal and use of water from sources to support fugitive dust control	Received	
	Individual Water Appropriation Permit for Construction Dewatering at Gully 30 Calcareous Fen	Authorizes withdrawal of groundwater associated with dewatering of excavations at the Gully 30 Calcareous Fen in accordance with the FMP	Received	
Minnesota Pollution Control Agency ("MPCA")	Section 401 WQC and Antidegradation Assessment	Section 401 WQC required to issue the USACE Section 404/10 Permit	Received	
	Clearbrook Terminal Air Quality Permit – Capped Emissions Permit	Authorizes construction and operation at the modified Clearbrook Terminal	Received	

Table B-1: Permits/Approvals Required for Line 3 Replacement Project (U.S.)				
Unit of Government	Type of Application	Reason Required	Permit Status	
Minnesota Pollution Control Agency	National Pollutant Discharge Elimination System ("NPDES") Industrial Hydrostatic Discharge Permit and Antidegradation Analysis	Authorizes discharge of water from hydrostatic testing activities	Received	
	NPDES Measu Construction Soil error Stormwater General Permit on cor and re that m	Authorizes ground disturbance with approved protection measures to manage soil erosion and stormwater discharge on construction site; and removal of water that may accumulate in pipeline trench	Received	
Minnesota Department of Agriculture ("MDA")	Agricultural Protection Plan ("APP")	Establishes measures for agricultural protection	Approved by MDA	
Minnesota Department of Transportation ("MnDOT")	Road Crossing Permits	Authorizes crossings of state jurisdictional roadways	Received	
	Temporary access/entrance	Authorizes access to private lands during construction from state land	Received	
Red Lake, Two Rivers, and Middle-Snake Watershed Districts	Watershed District Permits	Authorizes crossing of legal drains and ditches within watershed	Received	
Mississippi Headwaters Board	Compatibility Evaluation	Submittal ensures project crossings align with Minnesota Statutes 116C.57 subd.2c	Consultation Complete	

Table B-1: Permits/Approvals Required for Line 3 Replacement Project (U.S.)				
Unit of Government	Type of Application	Reason Required	Permit Status	
Minnesota Department of Drinking Water Supply Management Areas ("DWSMAs")	Notification of crossing of DWSMAs	To ensure appropriate protective measures are implemented	Consultation Complete	
North Dakota State Water Commission ("NDSWC")	Sovereign Lands Permit	Authorizes crossing of state Sovereign Lands and navigable waters	Received	
North Dakota Department of Health ("NDDH")	Section 401 WQC	Section 401 WQC required to issue the USACE Section 404/10 Permit	Received	
	Construction Stormwater General Permit	Coverage under General Permit NDR10-0000 authorizes ground disturbance with approved protection measures to manage soil erosion and stormwater discharge on construction site	Received	
	Temporary Dewatering / Hydrostatic Discharge Permit	Coverage under General Permit NDG- 0700000 authorizes for temporary dewatering and hydrostatic test discharge activities	Received	
Pembina County	Pembina County Floodplain Permit	Authorizes crossing of Pembina County floodplains	Received	
North Dakota Game and Fish ("NDGF")	Duncklee Wildlife Management Area ("WMA") Consultation	Consult with NDGF to identify special seeding or restoration measures on WMA	Consultations Complete	

Table B-1: F	Table B-1: Permits/Approvals Required for Line 3 Replacement Project (U.S.)										
Unit of Government	Type of Application	Reason Required	Permit Status								
	Chapter 30 Wetland Individual Permit / NR 103 Wetland Permit / WQC	Authorizes impacts to wetlands and waterbodies; Section 401 WQC required to issue the USACE Section 404/10 Permit	Received								
Wisconsin Department of Natural Resources ("WDNR")	Protected Species Consultation and Incidental Take Permit	Outlines plans for avoidance, minimization, and mitigation of take of state-listed flora and fauna species and authorizes take of individual flora species	Received								
	Superior Terminal Air Permit	Authorizes construction and operation at the modified Superior Terminal	Received								
Wisconsin Coastal Management Program ("WCMP")	Consistency Review	Authorizes activities within the Coastal Management Zone	Received								
City of Superior	Land Disturbing Permit – Pipeline and Superior Terminal	Authorizes ground disturbance with approved protection measures to manage soil erosion and stormwater discharge on construction site	Received								
City of Superior	Post- Construction Stormwater Management – Pipeline	To establish long-term, post construction runoff management requirements	Received								

TABLE NOTE:

¹ This Grant of a Right-of-Way certificate extends and modifies an existing easement for Enbridge Energy pipeline numbers 1, 2, 3, 4, and 67, and Southern Lights Line 13, as well as the repair of Line 4 within the exterior boundaries of the Fond du Lac Reservation in Carlton and St. Louis Counties, Minnesota. Enbridge submitted cultural resources survey data, valuation appraisals, and allotment easement consents to BIA in support of the application.

The following 1 page is Table B-2: Line 3 Construction Milestone Schedule.

Table B-2: Line 93 Construction Milestone Schedule										
Line 93 Milestone	Status	Notes								
Mainline Design Reports	Completed before Q3, 2015									
Facilities Design	Completed Q1 2017	Design was updated to account for route modifications, changes to external codes and regulations, etc.								
Procurement for major items – pipe, valves, transformers, etc.	Complete									
Line 93 Construction – Segment 18 Wisconsin	Completed Q1 2018									
Segment 18 Tie-in	May 25, 2018	Commissioning of pipe segment completed May 25, 2018.								
Superior Terminal Construction	Substantially complete									
Execution of Mainline and Facilities Construction Contracts	Complete									
Line 93 Construction Start – North Dakota	August 2020	Complete October 2020 Note that a segment of Line 93 near the U.S Canada border in North Dakota was replaced prior to 2020.								
Line 93 Construction Start – Minnesota	December 1, 2020	In receipt of all authorizations for construction								
Line 93 Construction Complete	Q4 2021	Q4 2021								

The following 1 page is Table B-3: P. 22.d(3) Original US Line 3 Biocide Treatments.

Table B-3: P. 22.d(3) Original US Line 3 Biocide Treatments									
Segment	Type of Tool Run	Completion Date (MM/DD/YYYY)							
Gretna to Clearbrook	Biocide Treatment	03/23/2021 ¹							
Clearbrook to Superior	Biocide Treatment	03/25/2021							
Gretna to Clearbrook	Biocide Treatment	06/14/2021							
Clearbrook to Superior	Biocide Treatment	05/12/2021							

TABLE NOTE:

All Original US Line 3 Biocide Treatments to date meet the requirements set forth in Subparagraph 22.d.(3) of the Consent Decree

¹ The biocide injection started on 03/22/2021 but it was not completed until 03/23/2021.

Section C

There are no tables associated with Section C.

Section D

The following 2 pages are Table D-1: P. 28.a-b ILI Runs Completed During this Reporting Period.

Section D

Notes for Section D tables:

- 1. Dates below are in month/day/year format.
- 2. For all dates where the deadline fell on a weekend or US holiday the date required was adjusted to the next business day per Consent Decree Definition for "Day" under IV.10.m.

	Table D-1: P. 28.a-b ILI Runs Completed During this Reporting Period										
Tool Run ID	Line	Segment Tool		Pull Date	Threat Monitored	Required Completion Date					
10228	03		UC	3/5/2021	Crack	3/23/2021					
11019	03		MFL4	5/21/2021	Corrosion	5/7/2021					
11019	03		MFL4	5/21/2021	Geometry	6/1/2021					
10991	04		UCM	1/27/2021	Corrosion	2/5/2021					
10991	04		UCM	1/27/2021	Crack	2/5/2021					
6729	04		MFL DuDi	1/19/2021	Corrosion	2/5/2021					
6738	04		MFL DuDi	1/9/2021	Corrosion	2/6/2023					
6736	04		Deformation	1/14/2021	Geometry	4/6/2021					
6737	04		MFL DuDi	2/2/2021	Corrosion	3/29/2021					
6739	04		Deformation	1/13/2021	Geometry	4/5/2021					
6740	04		MFL DuDi	1/26/2021	Corrosion	5/5/2021					
6693	05		UCc	1/19/2021	Crack	2/4/2021					
6743	05		GEMINI	1/28/2021	Corrosion	4/11/2022					
6743	05		GEMINI	1/28/2021	Geometry	4/11/2022					
6666	05		UCc	1/20/2021	Crack	2/8/2021					
6668	10		GEMINI	3/16/2021	Corrosion	6/4/2021					
6668	10		GEMINI	3/16/2021	Geometry	6/4/2021					
6691	10		UMP	3/25/2021	Corrosion	6/28/2021					
6692	10		MFL4	3/17/2021	Corrosion	7/12/2021					
6692	10		MFL4	3/17/2021	Geometry	5/17/2021					
10986	10		MFL4	3/24/2021	Corrosion	5/14/2021					
10986	10		MFL4	3/24/2021	Geometry	5/14/2021					
6718	10		UCx	3/23/2021	Crack	5/14/2021					
6719	10		MFL4	3/10/2021	Corrosion	5/14/2021					
6728	10		USWM+	3/10/2021	Corrosion	5/14/2021					
6742	14		Eclipse	1/11/2021	Crack	7/26/2021					
6744	65		GEMINI	1/8/2021	Corrosion	5/3/2021					

Table D-1: P. 28.a-b ILI Runs Completed During this Reporting Period											
Tool Line Segment Tool Run ID				Pull Date	Threat Monitored	Required Completion Date					
6744	65		GEMINI	1/8/2021	Geometry	5/3/2021					

The following 1 page is Table D-2: P. 28.c Incomplete or Invalid ILIs and Rerun Dates.

	Table D-2: P. 28.c Incomplete or Invalid ILIs and Rerun Dates													
Tool Run ID	Line	Segment	ΤοοΙ	Threat Monitored	Inspection Deadline	Pull Date	Date of DQA Notification	Rerun Tool Run ID	Rerun Date					
10229	03		MFL4	Corrosion	5/7/2021	4/12/2021	4/16/2021	11019	5/21/2021					
10229	03		MFL4	Geometry	6/1/2021	4/12/2021	4/16/2021	11019	5/21/2021					
6719	10		MFL4	Corrosion	5/14/2021	3/10/2021	3/10/2021	10986	3/24/2021					
6719	10		MFL4	Geometry	5/14/2021	3/10/2021	3/10/2021	10986	3/24/2021					

The following 1 page is Table D-3: P. 29 12-Month Lakehead ILI Schedule (May 23, 2020 – May 22, 2021).

	Table D-3: P. 29 12-Month Lakehead ILI Schedule (May 23, 2021 – May 22, 2022)										
Run ID	Line	Segment	ΤοοΙ	Threat Monitored	Required Completion Date ¹						
6679	04		DuDi UCM	Corrosion	12/7/2021						
6679	04		DuDi UCM	Crack	9/21/2021						
10879	04		DuDi UCM	Corrosion	6/27/2022						
10879	04		DuDi UCM	Crack	6/27/2022						
10241	05	-	MFL4	Corrosion	8/24/2021						
10241	05		MFL4	Geometry	8/24/2021						
10901	05		MFL4	Corrosion	5/31/2022						
10901	05		MFL4	Geometry	5/31/2022						
10902	05		UCc	Crack	1/19/2022						
10240	05	-	MFL4	Corrosion	7/1/2021						
10240	05		MFL4	Geometry	7/1/2021						
10910	05	-	MFL4	Corrosion	5/31/2022						
10910	05		MFL4	Geometry	5/31/2022						
10911	05		UCc	Crack	1/20/2022						
10917	06A	-	Vectra	Corrosion	6/6/2022						
10918	06A		DUO CD	Crack	9/16/2022						
10919	06A		USWM+	Corrosion	3/28/2022						
10912	06A	-	Vectra	Corrosion	4/27/2022						
6662	06A		UMP	Corrosion	8/30/2021						
11028	62		GEMINI	Corrosion	12/31/2022 ²						
11028	62		GEMINI	Geometry	12/31/2022 ²						
11029	62		CD+	Crack	12/31/2022 ²						

TABLE NOTE:

¹ ILI tools will be scheduled/run prior to the Required Completion Date. The Required Completion Dates comply with all applicable laws and regulations in addition to the Consent Decree requirements and requirements found in the "Stipulation and Agreement Regarding Assessment and Payment of Stipulated Penalties Relating to Timeliness of Certain In-Line Inspection" filed with the Court on May 2, 2018

² Dependent upon actual ISD of Line 62, which is currently idle

The following 2 pages are Table D-4: P. 30 Changes to Previous 12-Month ILI Schedule (November 23, 2020 to November 22, 2021).

	Table D-4: P. 30 Changes to Previous 12-Month ILI Schedule (November 23, 2020 to November 22, 2021)											
Original Run ID	Revised Run ID	Line	Segment Name	ΤοοΙ	Threat Monitored	Required Completion Date	Schedule Revision Comments					
6719	10986	10		MFL4	Corrosion	5/14/2021	The geometry portion of Run 6719 failed. A re-run (Run ID 10986) for both geometry and corrosion technology was completed on 3/24/2021.					
6719	10986	10		MFL4	Geometry	5/14/2021	The geometry portion of Run 6719 failed. A re-run (Run ID 10986) for both geometry and corrosion technology was completed on 3/24/2021.					
6674	10991	4		DuDi UCM	Corrosion	2/5/2021	Run 6674 was a corrosion ILI run and it was replaced by a combo tool with both corrosion and crack. The new Run ID is 10991, the tool was pulled on 1/27/2021.					
N/A	10991	4		DuDi UCM	Crack	N/A	Run 6674 was a corrosion ILI run and it was replaced by a combo tool with both corrosion and crack. The new Run ID is 10991, the tool was pulled on 1/27/2021.					
10230	N/A	3		DUO CD	Crack	6/15/2021	Tool Run was cancelled due to expected in service date of New US L3 in Q4 of 2021. As per ¶ 66 of the CD, "Enbridge need not conduct ILIs during the final 12 months that Original US Line 3 is in operation".					
10231	N/A	3		MFL4	Corrosion	5/24/2021	Tool Run was cancelled due to expected in service date of New US L3 in Q4 of 2021. As per ¶ 66 of the CD, "Enbridge need not conduct ILIs during the final 12 months that Original US Line 3 is in operation".					
10231	N/A	3		MFL4	Geometry	5/24/2021	Tool Run was cancelled due to expected in service date of New US L3 in Q4 of 2021. As per ¶ 66 of the CD, "Enbridge need not conduct ILIs during the final 12 months that Original US Line 3 is in operation".					
10229	11019	3		MFL4	Corrosion	5/7/2021	Run ID 10229 failed. A re-run (Run ID 11019) was completed on 5/21/2021					

	Table D-4: P. 30 Changes to Previous 12-Month ILI Schedule (November 23, 2020 to November 22, 2021)											
Original Run ID	Revised Run ID	Line	Segment Name	ΤοοΙ	Threat Monitored	Required Completion Date	Schedule Revision Comments					
10229	11019	3		MFL4	Geometry	6/1/2021	Run ID 10229 failed. A re-run (Run ID 11019) was completed on 5/21/2021					
6725	11029	62		CD+	Crack	12/31/2021	Baseline run schedule date updated due to ISD of Line 62, which is currently idle. The new required completion date is changed to 12/31/2022 based on the estimated ISD of Line 62					
6735	11028	62		GEMINI	Corrosion	12/31/2021	Baseline run schedule date updated due to ISD of Line 62, which is currently idle. The new required completion date is changed to 12/31/2022 based on the estimated ISD of Line 62					
6735	11028	62		GEMINI	Geometry	12/31/2021	Baseline run schedule date updated due to ISD of Line 62, which is currently idle. The new required completion date is changed to 12/31/2022 based on the estimated ISD of Line 62					

The following 1 page is Table D-5: P. 31 Incomplete or Invalid ILIs and Rerun Dates.

	Table D-5: P. 31 Incomplete or Invalid ILIs and Rerun Dates													
Tool Run ID	Line	Segment	ΤοοΙ	Inspection Deadline	Pull Date	Date of DQA Notification	Rerun Tool Run ID	Rerun Date						
10229	03		MFL4	5/7/2021	4/12/2021	4/16/2021	11019	5/21/2021						
10229	03		MFL4	6/1/2021	4/12/2021	4/16/2021	11019	5/21/2021						
6719	10	-	MFL4	5/14/2021	3/10/2021	3/10/2021	10986	3/24/2021						
6719	10		MFL4	5/14/2021	3/10/2021	3/10/2021	10986	3/24/2021						

The following 1 page is Table D-6: P. 31 ILIs with Minor Tool Performance Deficiencies.

Table D-6: P. 31 ILIs with Minor Tool Performance Deficiencies ¹													
Tool Run ID	Line	Segment Tool		Inspection Deadline	Pull Date	ILI Tool Run Accepted?	Further Action Required?						
6742	14		Eclipse	7/26/2021	1/11/2021	Yes	No						
6553	14		Eclipse	1/19/2021	11/5/2020	Yes	No						
6744	65		GEMINI	5/3/2021	1/8/2021	Yes	No						

TABLE NOTE:

¹ Table includes ILIs that occurred in SAR7. The Data Quality Review and ILI assessment for these ILIs occurred in SAR8

The following 1 page is Table D-7: P. 32.a-c Valid In-line Inspection Runs with Initial ILI Report Received.
	Та	ble D-7: P. 32.	a-c Valid In-line Ins	pection Runs	with Initial ILI Rep	ort Received	
Tool Run ID	Line	Segment	ΤοοΙ	Report Type	Report Due Date	Report Received Date	Report Received On Time?
10991	04		UCM	Corrosion	4/27/2021	4/27/2021	Yes
6729	04		MFL DuDi	Corrosion	4/19/2021	4/19/2021	Yes
6738	04		MFL DuDi	Corrosion	4/9/2021	4/9/2021	Yes
6486	04		DuDi UCM	Crack	11/27/2020	11/27/2020	Yes
6736	04		Deformation	Geometry	4/14/2021	4/14/2021	Yes
6737	04		MFL DuDi	Corrosion	5/3/2021	4/22/2021	Yes
6739	04		Deformation	Geometry	4/13/2021	4/12/2021	Yes
6740	04		MFL DuDi	Corrosion	4/26/2021	4/22/2021	Yes
6593	05		CD+	Crack	3/11/2021	3/11/2021	Yes
6743	05		GEMINI	Corrosion	4/28/2021	4/22/2021	Yes
6743	05		GEMINI	Geometry	4/28/2021	4/22/2021	Yes
6578	06A		GeoPig	Geometry	1/20/2021	1/20/2021	Yes
6728	10		USWM+	Corrosion	6/8/2021	4/9/2021	Yes
6742	14		Eclipse	Crack	5/11/2021	4/30/2021	Yes
6498	14		MFL4	Corrosion	2/1/2021	1/29/2021	Yes
6498	14		MFL4	Geometry	2/1/2021	1/29/2021	Yes
6553	14		Eclipse	Crack	3/5/2021	3/5/2021	Yes
6555	65		CD+	Crack	3/22/2021	3/19/2021	Yes
6744	65		GEMINI	Corrosion	4/8/2021	4/8/2021	Yes
6744	65		GEMINI	Geometry	4/8/2021	4/8/2021	Yes

The following 1 page is Table D-8: P. 33.b ILIMRR Version 8.3 Table 5 Inside Diameter Priority Notification Criteria for Ovalities and Other Deformation Features.

Table D-8: P.	Table D-8: P. 33.b ILIMRR Version 8.3 Table 5 Inside Diameter Priority Notification Criteria for Ovalities and Other Deformation Features											
NPS (inch)	Actual OD (inch)	Actual OD (mm)	Min ID (inch)	Min ID (mm)								
6	6.625	168.28	5.2	131.2								
8	8.625	219.08	7.1	179.3								
10	10.75	273.05	9.1	230.3								
12	12.75	323.85	11.0	279.4								
16	16	406.4	14.3	362.0								
18	18	457.2	15.8	400.1								
20	20	508	17.9	454.7								
22	22	558.8	19.7	500.6								
24	24	609.6	21.5	546.1								
26	26	660.4	23.5	596.9								
30	30	762	27.1	687.8								
34	34	863.6	31.1	789.9								
36	36	914.4	33.0	837.0								
42	42	1066.8	38.6	981.2								
48	48	1219.2	44.4	1127.8								

The following 1 page is Table D-9: P. 33.c-d Priority Features.

	Table D-9: P. 33.c-d Priority Features												
Run ID	Line	Seg- ment	Tech- nology	Girth Weld (GW)	Date Priority Notifica- tion Received	Date Priority Notification Reviewed (Valid PN)	Date of Discovery/ Date Features Added to Dig List	Pres- sure Restric- tion Requir- ed?	Date Pressure Restrict- ion Imposed ¹	Repair/ Mitigation Deadline	Date of Repair/ Mitigation		
6743	5		GEMINI	143560	4/14/2021	4/15/2021	4/15/2021 ¹	No	N/A	N/A	N/A		

TABLE NOTE:

¹ Please see the paragraph story for further information

The following 2 pages are Table D-10: P. 34.a Preliminary Review of Initial ILI Reports.

	Table D-10: P. 34.a Preliminary Review of Initial ILI Reports												
Tool Run ID	Line	Segment	ΤοοΙ	Report Received Date	Report Type	Date Preliminary Review Required	Date Preliminary Review Completed ¹	Review Complet- ed on Time?	Data Quality Concerns?				
4507	02		Proton	11/19/2020	Crack	12/21/2020	12/17/2020	Yes	Yes				
10991	04		UCM	4/27/2021	Corrosion	5/27/2021	5/18/2021	Yes	Yes				
6729	04		MFL DuDi	4/19/2021	Corrosion	5/19/2021	5/5/2021	Yes	No				
6738	04		MFL DuDi	4/9/2021	Corrosion	5/10/2021	5/5/2021	Yes	No				
6486	04		DuDi UCM	10/28/2020	Corrosion	11/27/2020	11/25/2020	Yes	Yes				
6486	04		DuDi UCM	11/27/2020	Crack	12/28/2020	12/17/2020	Yes	Yes				
6736	04		Deformation	4/14/2021	Geometry	5/14/2021	5/10/2021	Yes	No				
6737	04		MFL DuDi	4/22/2021	Corrosion	5/24/2021	5/11/2021	Yes	Yes				
6739	04		Deformation	4/12/2021	Geometry	5/12/2021	5/7/2021	Yes	No				
6740	04		MFL DuDi	4/22/2021	Corrosion	5/24/2021	5/18/2021	Yes	No				
6593	05		CD+	3/11/2021	Crack	4/12/2021	4/9/2021	Yes	No				
6743	05		GEMINI	4/22/2021	Corrosion	5/24/2021	5/17/2021	Yes	No				
6743	05		GEMINI	4/22/2021	Geometry	5/24/2021	5/18/2021	Yes	No				
6578	06A		GeoPig	1/20/2021	Geometry	2/19/2021	2/16/2021	Yes	No				
6728	10		USWM+	4/9/2021	Corrosion	5/10/2021	5/3/2021	Yes	Yes				
6742	14		Eclipse	4/30/2021	Crack	6/1/2021	5/19/2021	Yes	Yes				
6498	14		MFL4	1/29/2021	Corrosion	3/1/2021	2/23/2021	Yes	Yes				
6498	14		MFL4	1/29/2021	Geometry	3/1/2021	2/24/2021	Yes	Yes				
6553	14		Eclipse	3/5/2021	Crack	4/5/2021	4/1/2021	Yes	Yes				
6555 ¹	65		CD+	3/19/2021	Crack	4/19/2021	4/21/2021 ¹	No	Yes				
6744	65		GEMINI	4/8/2021	Corrosion	5/10/2021	5/4/2021	Yes	Yes				
6744	65		GEMINI	4/8/2021	Geometry	5/10/2021	5/7/2021	Yes	No				

TABLE NOTE:

¹ Please see the Paragraph 145 [Section D] Untimely Preliminary Quality Review and Interacting Feature Review on L65 GF-CR UTCD – P34a and 58 for further information

The following 1 page is Table D-11: P. 34.c ILI Reports with Reporting and/or Data Quality Issues.

	Table D-11: P. 34.c ILI Reports with Reporting and/or Data Quality Issues												
Tool Run ID	Line	Segment	ΤοοΙ	Report Type	Initial Report Received Date	Date Preliminary Review of Initial ILI Report Required	Date Preliminary Review of Initial ILI Report Completed	Data Quality Concerns Identified and Resolved					
4507	02		Proton	Crack	11/19/2020	12/21/2020	12/17/2020	Yes					
10991	04		UCM	Corrosion	4/27/2021	5/27/2021	5/18/2021	Yes					
6486	04		DuDi UCM	Corrosion	10/28/2020	11/27/2020	11/25/2020	Yes					
6486	04		DuDi UCM	Crack	11/27/2020	12/28/2020	12/14/2020	Yes					
6737	04		MFL DuDi	Corrosion	4/22/2021	5/24/2021	5/11/2021	Yes					
6491	10		Eclipse	Crack	9/9/2020	10/9/2020	10/5/2020	Yes					
6449	10		Eclipse	Crack	9/8/2020	10/8/2020	10/5/2020	Yes					
6728	10		USWM+	Corrosion	4/9/2021	5/10/2021	5/3/2021	Yes					
6742	14		Eclipse	Crack	4/30/2021	6/1/2021	5/19/2021	Yes					
6498	14		MFL4	Corrosion	1/29/2021	3/1/2021	2/23/2021	Yes					
6498	14		MFL4	Geometry	1/29/2021	3/1/2021	2/23/2021	Yes					
6553	14		Eclipse	Crack	3/5/2021	4/5/2021	3/30/2021	Yes					
6744	65		GEMINI	Corrosion	4/8/2021	5/10/2021	5/4/2021	Yes					
6555	65		CD+	Crack	3/19/2021	4/19/2021	4/21/2021 ¹	No					

TABLE NOTE:

¹ Please see the Paragraph 145 [Section D] Untimely Preliminary Quality Review and Interacting Feature Review on L65 GF-CR UTCD – P34a and 58 for further information

The following 1 page is Table D-11a: ILI Reports with Data Quality Issues in Areas with Significant Changes in Wall Thickness – P. 34.c.

Table D-11	a: ILI Reports with Data Quali	ty Issues in Areas with Signifi	cant Changes in Wall Thickne	ess – P. 34.c
Inspection Year	Line name	Feature Count (New Clusters added following manual review)	Issue Number	Reissue Date
2020	Line 03:	2	3	May 10, 2021
2020	Line 03: Re-Run	1	2	May 3, 2021
2020	Line 04:	2	2	April 5, 2021
2020	Line 04:	1	3	March 29, 2021
2018	Line 67:	2	3	April 26, 2021
2018	Line 10:	1	3	April 12, 2021

The following 2 pages are Table D-12: P. 34.d Data Quality Evaluation Timelines.

Table D-12: P. 34.d Data Quality Evaluation Timelines											
Tool Run ID	Line	Segment	ΤοοΙ	Pull Date	Report Type	Deadline to Complete All ILI Data Quality Evaluations	Quality Evaluations Completed Within 180 Days? ¹				
4506	02		Proton	5/7/2020	Crack	11/3/2020	Yes ²				
4507	02		Proton	7/22/2020	Crack	1/19/2021	Yes				
6606	03		MFL4	5/7/2020	Corrosion	11/3/2020	FR ²				
10052	03		MFL4	5/22/2020	Corrosion	11/18/2020	FR ²				
10991	04		UCM	1/27/2021	Corrosion	7/26/2021	Yes				
6729	04		MFL DuDi	1/19/2021	Corrosion	7/19/2021	Yes				
6738	04		MFL DuDi	1/9/2021	Corrosion	7/8/2021	Yes				
6486	04		DuDi UCM	7/30/2020	Corrosion	1/26/2021	Yes				
6486	04		DuDi UCM	7/30/2020	Corrosion	1/26/2021	Yes				
6486	04		DuDi UCM	7/30/2020	Crack	1/26/2021	Yes				
6486	04		DuDi UCM	7/30/2020	Crack	1/26/2021	Yes				
6487	04		MFL DuDi	1/24/2020	Corrosion	7/22/2020	Yes ²				
6607	04		MFL DuDi	2/26/2020	Corrosion	8/24/2020	Yes ²				
6736	04		Deformation	1/14/2021	Geometry	7/13/2021	Yes				
6737	04		MFL DuDi	2/2/2021	Corrosion	8/2/2021	Yes				
6739	04		Deformation	1/13/2021	Geometry	7/12/2021	Yes				
6740	04		MFL DuDi	1/26/2021	Corrosion	7/26/2021	Yes				
6593	05		CD+	11/11/2020	Crack	5/10/2021	Yes				
6743	05		GEMINI	1/28/2021	Corrosion	7/27/2021	Yes				
6743	05		GEMINI	1/28/2021	Geometry	7/27/2021	Yes				
6578	06A		GeoPig	10/22/2020	Geometry	4/20/2021	Yes				
6449	10		Eclipse	5/11/2020	Crack	11/9/2020	Yes ²				
6491	10		Eclipse	5/12/2020	Crack	11/9/2020	Yes ²				
6095	10		MFL4	7/11/2018	Corrosion	1/7/2019	Yes ²				
6719	10		MFL4	3/10/2021	Corrosion	9/7/2021	FR				
6728	10		USWM+	3/10/2021	Corrosion	9/7/2021	Yes				
6742	14		Eclipse	1/11/2021	Crack	7/12/2021	Yes				
6498	14		MFL4	11/2/2020	Corrosion	5/3/2021	Yes				
6498	14		MFL4	11/2/2020	Geometry	5/3/2021	Yes				
6553	14		Eclipse	11/5/2020	Crack	5/4/2021	Yes				
6555	65		CD+	11/20/2020	Crack	5/19/2021	Yes				

	Table D-12: P. 34.d Data Quality Evaluation Timelines											
Tool Run ID	Line	Segment	ΤοοΙ	Puli Date	Report Type	Deadline to Complete All ILI Data Quality Evaluations	Quality Evaluations Completed Within 180 Days? ¹					
6744	65		GEMINI	1/8/2021	Corrosion	7/7/2021	Yes					
6744	65		GEMINI	1/8/2021	Geometry	7/7/2021	Yes					
2369	67		MFL4	4/5/2018	Corrosion	10/2/2018	Yes ²					

TABLE NOTE:

¹ "FR" indicates that this information is outside the reporting period of this SAR and will be included in a future SAR ² The data quality evaluation of the Initial ILI report was completed within 180 Days after the ILI tool was removed from the pipeline. Data quality issues related to this ILI were identified beyond 180 Days after the ILI tool was removed from the pipeline and Enbridge resolved these issues as soon as practicable. The ILI Data Quality Evaluation Completion Deadline shown is that for the Initial ILI report.

The following 2 pages are Table D-13: P. 34.e Discrepancies between Two Successive ILI Runs.

		T	able D-13: P. 34.e	Discrepancies	between Two Successive	ILI Runs	
Tool Run	Line	Segment	ΤοοΙ	Report Type	Severity Discrepancy?	Density Discropancy2	Feature Type
						Discrepancy?	Discrepancy
4506	02		Proton	Crack	Yes	Yes	No
4507	02		Proton	Crack	Yes	Yes	No
4507	02		Proton	Crack	Yes	Yes	No
10001	03		DUO CD	Crack	No	Yes	No
10991	04		DuDi UCM	Corrosion	No	No	No
6729	04		MFL DuDi	Corrosion	No	No	No
6738	04		MFL DuDi	Corrosion	No	No	No
6486	04		DuDi UCM	Corrosion	No	Yes	No
6486	04		DuDi UCM	Corrosion	No	Yes	No
6486	04		DuDi UCM	Crack	Yes	Yes	No
6486	04		DuDi UCM	Crack	Yes	Yes	No
6487	04		MFL DuDi	Corrosion	No	No	No
6736	04		Deformation	Geometry	No	No	No
6737	04		MFL DuDi	Corrosion	No	No	No
6739	04		Deformation	Geometry	No	Yes	No
6740	04		MFL DuDi	Corrosion	No	Yes	No
6593	05		CD+	Crack	No	Yes	No
6743	05		GEMINI	Corrosion	No	No	No
6743	05		GEMINI	Geometry	Yes	Yes	No
6578	06A		GeoPig	Geometry	Yes	No	No
6449	10		Eclipse	Crack	No	Yes	No
6491	10		Eclipse	Crack	No	Yes	No
6728	10		USWM+	Corrosion	No	Yes	No

			Table D-13: P. 34.e	Discrepancies	between Two Successive	ILI Runs	
Tool Run ID	Line	Segment	ΤοοΙ	Report Type	Severity Discrepancy?	Density Discrepancy?	Feature Type Discrepancy?
6742	14		Eclipse	Crack	No	Yes	No
6498	14		MFL4	Corrosion	No	No	No
6498	14		MFL4	Geometry	No	Yes	No
6553	14		Eclipse	Crack	No	Yes	No
6555	65		CD+	Crack	Yes	Yes	No
6744	65		GEMINI	Corrosion	No	Yes	No
6744	65		GEMINI	Geometry	No	Yes	No
2369	67		MFL4	Corrosion	No	Yes	Yes

The following 1 page is Table D-14: P. 37 Deadlines for Placing Features Requiring Excavation on the Dig List.

			Table	D-14: P. 3	7 Deadlines	for Placing	Features Re	quiring Exca	vation on th	e Dig List			
Tool Run ID	Line	Seg- ment	ΤοοΙ	Threat Type	Pull Date	Burst Pressure Calculation Date	Remaining Life Calculation Date	Other Features Identified Date	SQuAD and QuAD Complet- ion date	Number of Features Identified	Date All Features Added to Dig List	Within 180 Days of Tool Pull Date?	Within 5 Days of Calculat ions?
6729	L0004		MFLDUDI	Corrosion	1/19/2021	5/5/2021	5/5/2021	5/5/2021	5/5/2021	1	5/5/2021	Yes	Yes
10991	L0004		UCMUTWM	Corrosion	1/27/2021	5/18/2021	5/18/2021	5/18/2021	5/18/2021	1	5/18/2021	Yes	Yes
6738	L0004		MFLDUDI	Corrosion	1/9/2021	5/5/2021	5/5/2021	5/5/2021	5/5/2021	3	5/6/2021	Yes	Yes
6740	L0004		MFLDUDI	Corrosion	1/26/2021	5/18/2021	5/18/2021	5/18/2021	5/18/2021	42	5/18/2021	Yes	Yes
6593	L0005		CD+	Crack	11/11/2020	4/9/2021	4/9/2021	4/9/2021	4/9/2021	3	4/9/2021	Yes	Yes
6593	L0005		CD+	Interacting	11/11/2020	4/9/2021	4/9/2021	4/9/2021	4/9/2021	1	4/9/2021	Yes	Yes
6743	L0005		GEMINIMFL	Corrosion	1/28/2021	5/17/2021	5/17/2021	5/17/2021	5/17/2021	1	5/17/2021	Yes	Yes
6553	L0014		ECLIPSE	Crack	11/5/2020	4/1/2021	4/1/2021	4/1/2021	4/1/2021	28	4/1/2021	Yes	Yes
6555	L0065		CD+	Crack	11/20/2020	4/21/2021	4/21/2021	4/21/2021	4/21/2021	23	4/21/2021	Yes	Yes

The following 4 pages are Table D-15: P. 39.a-b FREs Repaired and Planned for Repair.

	Table D-15: P. 39.a-b FREs Repaired and Planned for Repair												
Dig ID	Line	Segmen t	Girth Weld	Tool Run ID	Date of Repair / Mitigation ¹	Crack Features	Corrosion Features	Axial Grooving Features	Interacting Features	Geometry Features			
28393	L0002		62670	4506	1/25/2021	1	0	0	0	0			
24805 ²	L0003		58670	3829	FR	0	1	0	0	0			
28194	L0003		153620	6581	1/8/2021	0	1	0	0	0			
28338 ³	L0003		58690	6606	FR	0	1	0	0	0			
28340	L0003		59780	6606	2/8/2021	0	1	0	0	0			
28341	L0003		59790	6606	2/16/2021	0	1	0	0	0			
28342	L0003		59810	6606	2/20/2021	0	1	0	0	0			
28343	L0003		59830	6606	2/26/2021	0	1	0	0	0			
28346	L0003		136280	6606	1/13/2021	0	1	0	0	0			
28926	L0003		71850	10001	FR	1	0	0	0	0			
28929	L0003		117440	10001	FR	1	0	0	0	0			
28932	L0003		153080	10001	FR	1	0	0	0	0			
28933	L0003		156430	10001	FR	1	0	0	0	0			
30153	L0004		27260	10991	FR	0	1	0	0	0			
30120	L0004		45560	6729	FR	0	1	0	0	0			
30129	L0004		38460	6738	FR	0	1	0	0	0			
30130	L0004		39000	6738	FR	0	1	0	0	0			
30131	L0004		45220	6738	FR	0	1	0	0	0			
27910	L0004		29830	6487	1/22/2021	0	1	0	0	0			
27913	L0004		34440	6487	1/23/2021	0	1	0	0	0			
27914	L0004		37340	6487	2/19/2021	0	4	0	0	0			
27915	L0004		42920	6487	2/17/2021	0	2	0	0	0			
27916	L0004		46160	6487	2/25/2021	0	1	0	0	0			
28039	L0004		18910	6488	3/5/2021	0	1	0	0	0			
30154	L0004		34710	6740	FR	0	1	0	0	0			
30155	L0004		35090	6740	FR	0	1	0	0	0			
30156	L0004		85100	6740	FR	0	1	0	0	0			

	Table D-15: P. 39.a-b FREs Repaired and Planned for Repair												
Dig ID	Line	Segmen t	Girth Weld	Tool Run ID	Date of Repair / Mitigation ¹	Crack Features	Corrosion Features	Axial Grooving Features	Interacting Features	Geometry Features			
30157	L0004		35670	6740	FR	0	1	0	0	0			
30158	L0004		35690	6740	FR	0	3	0	0	0			
30159	L0004		35830	6740	FR	0	10	0	0	0			
30160	L0004		35850	6740	FR	0	1	0	0	0			
30161	L0004		35970	6740	FR	0	1	0	0	0			
30162	L0004		36550	6740	FR	0	3	0	0	0			
30163	L0004		37560	6740	FR	0	1	0	0	0			
30164	L0004		37710	6740	FR	0	1	0	0	0			
30165	L0004		37750	6740	FR	0	4	0	0	0			
30166	L0004		38770	6740	FR	0	1	0	0	0			
30167	L0004		38780	6740	FR	0	3	0	0	0			
30168	L0004		38790	6740	FR	0	1	0	0	0			
30169	L0004		38800	6740	FR	0	1	0	0	0			
30170	L0004		38920	6740	FR	0	1	0	0	0			
30171	L0004		39000	6740	FR	0	1	0	0	0			
30172	L0004		39010	6740	FR	0	1	0	0	0			
30173	L0004		39170	6740	FR	0	1	0	0	0			
30174	L0004		39210	6740	FR	0	2	0	0	0			
30175	L0004		39600	6740	FR	0	1	0	0	0			
30176	L0004		39720	6740	FR	0	1	0	0	0			
30068	L0005		116570	6593	FR	1	0	0	0	0			
30069	L0005		213390	6593	FR	1	0	0	0	0			
30070	L0005		220240	6593	4/16/2021	0	0	0	1	0			
30071	L0005		220310	6593	4/17/2021	1	0	0	0	0			
30152	L0005		260790	6743	FR	0	1	0	0	0			
27264	L0006A		64280	4676	1/15/2021	1	0	0	0	0			
27265	L0006A		65420	4676	1/14/2021	1	0	0	0	0			

	Table D-15: P. 39.a-b FREs Repaired and Planned for Repair												
Dig ID	Line	Segmen t	Girth Weld	Tool Run ID	Date of Repair / Mitigation ¹	Crack Features	Corrosion Features	Axial Grooving Features	Interacting Features	Geometry Features			
30015	L0014		22220	6553	FR	1	0	0	0	0			
30016	L0014		22320	6553	FR	1	0	0	0	0			
30017	L0014		42750	6553	FR	2	0	0	0	0			
30018	L0014		57160	6553	FR	1	0	0	0	0			
30019	L0014		61350	6553	FR	1	0	0	0	0			
30020	L0014		70210	6553	FR	1	0	0	0	0			
30021	L0014		72140	6553	FR	1	0	0	0	0			
30022	L0014		100590	6553	FR	1	0	0	0	0			
30023	L0014		111300	6553	FR	1	0	0	0	0			
30024	L0014		112170	6553	FR	1	0	0	0	0			
30025	L0014		112840	6553	FR	1	0	0	0	0			
30026	L0014		118740	6553	FR	5	0	0	0	0			
30027	L0014		120350	6553	FR	1	0	0	0	0			
30028	L0014		121170	6553	FR	1	0	0	0	0			
30029	L0014		121180	6553	FR	1	0	0	0	0			
30030	L0014		131750	6553	FR	2	0	0	0	0			
30031	L0014		132340	6553	FR	1	0	0	0	0			
30032	L0014		148230	6553	FR	1	0	0	0	0			
30033	L0014		150780	6553	FR	1	0	0	0	0			
30034	L0014		168380	6553	FR	1	0	0	0	0			
30035	L0014		172430	6553	FR	2	0	0	0	0			
30077	L0065		2220	6555	FR	1	0	0	0	0			
30078	L0065		6410	6555	FR	1	0	0	0	0			
30079	L0065		7430	6555	FR	1	0	0	0	0			
30080	L0065		11540	6555	FR	3	0	0	0	0			
30081	L0065		14640	6555	FR	1	0	0	0	0			
30082	L0065		26780	6555	FR	1	0	0	0	0			

	Table D-15: P. 39.a-b FREs Repaired and Planned for Repair													
Dig ID	Line	Segmen t	Girth Weld	Tool Run ID	Date of Repair / Mitigation ¹	Crack Features	Corrosion Features	Axial Grooving Features	Interacting Features	Geometry Features				
30083	L0065		27830	6555	FR	1	0	0	0	0				
30084	L0065		32750	6555	FR	1	0	0	0	0				
30085	L0065		37210	6555	4/22/2021	1	0	0	0	0				
30086	L0065		60930	6555	FR	1	0	0	0	0				
30087	L0065		87320	6555	FR	4	0	0	0	0				
30088	L0065		100270	6555	FR	1	0	0	0	0				
30089	L0065		100330	6555	FR	6	0	0	0	0				
28360	L0067		53660	6504	2/27/2021	0	2	0	0	0				
28361	L0067		53700	6504	3/3/2021	0	2	0	0	0				
	Total: 132 61 70 0 1 0													

TABLE NOTE:

¹ "FR" indicates that this information is outside the reporting period of this SAR and will be included in a future SAR ² Dig Repair/Mitigation Deadline was requested to be extended, which was reported in SAR5

³ AP6

The following 1 page is Table D-16: P. 40 ILI Programs with all Features Requiring Excavation Repaired/Mitigated during the reporting period.

Table D-1	Table D-16: P. 40 ILI Programs with all Features Requiring Excavation Repaired/Mitigated during the reporting period												
Tool Run ID	Tool Run Line So ID		Tool	Report Type	Last NDE Report Approved Date	Analysis of Field Data/Statistical Analysis Date ^{1,2}							
4506	L0002		PROTON	UTCD&PHASED ARRAY	2/5/2021	2/10/2021							
6581	L0003		UCMPUT WM	UTWM	1/26/2021	2/22/2021							
6393	L0003		DUOCD	PHASEDARRAY	10/28/2020	11/24/2020							
10052	L0003		MFL4MFL	MFL	12/2/2020	12/18/2020							
6487	L0004		MFLDUDI	MFL	4/19/2021	4/14/2021							
6488	L0004		MFLDUDI	MFL	4/6/2021	4/15/2021							
6607	L0004		MFLDUDI	MFL	12/3/2020	12/31/2020							
6607	L0004		MFLDUDI	MFL	12/3/2020	12/31/2020							
4676	L0006A		DUOCD	PHASEDARRAY	2/5/2021	3/3/2021							
6504	L0067		GEMINIM FL	MFL	3/22/2021	4/5/2021							

TABLE NOTE:

¹ Enbridge and the ITP and EPA are working towards a mutual interpretation of the timing for Paragraph 40. For the purposes of this SAR the Stantec trending date is used to be consistent with previous SAR reporting 2 "FR" indicates that this information is outside the reporting period of this SAR and will be included in a future SAR

The following 1 page is Table D-16a: P. 40 Revised NDE Reports With Original NDE Report Upload Date Overwritten.

	Table D-16a: P. 40 Revised NDE Reports with Original NDE Report Upload Date Overwritten											
Dig ID	Line	Segment	GirthWeld	Original NDE Report Upload Date	Most Recent NDE Report							
				"NDEAssessmentIssueOneSourceLoadDate"	Upload Date							
					"FirstOneSourceLoadDate"							
28182	L0003		71080	7/27/2020	3/16/2021							
27310	L0006A		95750	9/1/2020	3/12/2021							
26243	L0006A		216270	3/4/2020	3/15/2021							
24098	L0006A		226360	6/15/2020	3/15/2021							

The following 2 pages are Table D-17: P. 44.a-b Initial Predicted Burst Pressure and Initial Remaining Life Calculations.

	Table D-17: P. 44.a-b Initial Predicted Burst Pressure and Initial Remaining Life Calculations												
Tool Run ID	Line	Segment	ΤοοΙ	Report Type	Pull Date	Date Preliminary Review Completed	Data Quality Concerns ?	Calculation Deadline (1) ¹	Calculation Deadline (2) ¹	Burst Pressure Calculation Date	Remaining Life Calculation Date		
4507	02		Proton	Crack	7/22/2020	12/17/2020	Yes	2/11/2021	1/13/2021	12/17/2020	12/17/2020		
6729	04		MFL DuDi	Corrosion	1/19/2021	5/5/2021	No	6/30/2021	7/13/2021	5/5/2021	5/5/2021		
10991	04		UCM	Corrosion	1/27/2021	5/18/2021	Yes	7/13/2021	7/21/2021	5/18/2021	5/18/2021		
6738	04		MFL DuDi	Corrosion	1/9/2021	5/5/2021	No	6/30/2021	7/6/2021	5/5/2021	5/5/2021		
6486	04		DuDi UCM	Corrosion	7/30/2020	11/25/2020	Yes	1/20/2021	1/21/2021	11/25/2020	11/25/2020		
6486	04		DuDi UCM	Crack	7/30/2020	12/17/2020	Yes	2/11/2021	1/21/2021	12/17/2020	12/17/2020		
6736	04		Deformati on	Geometry	1/14/2021	5/10/2021	No	7/6/2021	7/8/2021	5/10/2021	5/10/2021		
6737	04		MFL DuDi	Corrosion	2/2/2021	5/11/2021	Yes	7/6/2021	7/27/2021	5/11/2021	5/11/2021		
6739	04		Deformati on	Geometry	1/13/2021	5/7/2021	No	7/2/2021	7/7/2021	5/7/2021	5/7/2021		
6740	04		MFL DuDi	Corrosion	1/26/2021	5/18/2021	No	7/13/2021	7/20/2021	5/18/2021	5/18/2021		
6593	05		CD+	Crack	11/11/2020	4/9/2021	No	6/4/2021	5/5/2021	4/9/2021	4/9/2021		
6743	05		GEMINI	Corrosion	1/28/2021	5/17/2021	No	7/12/2021	7/22/2021	5/17/2021	5/17/2021		
6743	05		GEMINI	Geometry	1/28/2021	5/18/2021	No	7/13/2021	7/22/2021	5/18/2021	5/18/2021		
6578	06A		GeoPig	Geometry	10/22/2020	2/16/2021	No	4/13/2021	4/15/2021	2/16/2021	2/16/2021		
6728	10		USWM+	Corrosion	3/10/2021	5/3/2021	Yes	6/28/2021	9/1/2021	5/3/2021	5/3/2021		
6742	14		Eclipse	Crack	1/11/2021	5/19/2021	Yes	7/14/2021	7/6/2021	5/19/2021	5/19/2021		
6498	14		MFL4	Corrosion	11/2/2020	2/23/2021	Yes	4/20/2021	4/26/2021	2/23/2021	2/23/2021		

			Table D-1	7: P. 44.a-b li	nitial Predicte	d Burst Press	ure and Init	tial Remaining	Life Calculati	ions	
Tool Run ID	Line	Segment	ΤοοΙ	Report Type	Pull Date	Date Preliminary Review Completed	Data Quality Concerns ?	Calculation Deadline (1) ¹	Calculation Deadline (2) ¹	Burst Pressure Calculation Date	Remaining Life Calculation Date
6498	14		MFL4	Geometry	11/2/2020	2/24/2021	Yes	4/21/2021	4/26/2021	2/24/2021	2/24/2021
6553	14		Eclipse	Crack	11/5/2020	4/1/2021	Yes	5/27/2021	4/29/2021	4/1/2021	4/1/2021
6555	65		CD+	Crack	11/20/2020	4/21/2021	Yes	6/16/2021	5/14/2021	4/21/2021	4/21/2021
6744	65		GEMINI	Corrosion	1/8/2021	5/4/2021	Yes	6/29/2021	7/2/2021	5/4/2021	5/4/2021
6744	65		GEMINI	Geometry	1/8/2021	5/7/2021	No	7/2/2021	7/2/2021	5/7/2021	5/7/2021

TABLE NOTE:

¹ Calculation Deadline (1) – 8 weeks after completing data quality review with respect to the feature and/or pipeline section where the feature is located. Calculation Deadline (2) – 175 days after the ILI tool pull date.

The following 3 pages are Table D-18: P. 46.a, c Identified Digs.

Table D-18: P. 46.a, c Identified Digs												
Dig ID	Line	Segment	Girth Weld	Tool Run ID	Tech- nology	Date of Discovery / Feature Added to	Repair / Mitigation Deadline	Date of Repair / Mitigation ¹				
					UTCD&P	DIG LIST						
					HASEDA							
28393	L0002		62670	4506	RRAY	9/24/2020	9/24/2021	1/25/2021				
24805 ²	L0003		58670	3829	MFL	12/10/2018	4/17/2032 ²	FR				
28194	L0003		153620	6581	UTWM	7/16/2020	1/12/2021	1/8/2021				
28338 ³	L0003		58690	6606	MFL	9/3/2020	12/2/2026 ³	FR				
28340	L0003		59780	6606	MFL	9/3/2020	3/2/2021	2/8/2021				
28341	L0003		59790	6606	MFL	9/3/2020	3/2/2021	2/16/2021				
28342	L0003		59810	6606	MFL	9/3/2020	3/2/2021	2/20/2021				
28343	L0003		59830	6606	MFL	9/3/2020	3/2/2021	2/26/2021				
28346	L0003		136280	6606	MFL	9/3/2020	3/2/2021	1/13/2021				
28926	L0003		71850	10001	PHASED ARRAY	11/10/2020	11/10/2021	FR				
28929	L0003		117440	10001	PHASED ARRAY	11/10/2020	11/10/2021	FR				
28932	L0003		153080	10001	PHASED ARRAY	11/10/2020	11/10/2021	FR				
00000	1 0000		450400	10001	PHASED	44/40/0000	44/40/0004					
28933	L0003		156430	10001		11/10/2020	11/10/2021	FR				
30153	L0004		27260	10991		5/18/2021	11/15/2021					
30120	L0004		45560	6729		5/5/2021	5/5/2022					
30129	L0004		30400	6720		5/6/2021	5/4/2022					
20121	10004		45220	6720		5/0/2021	5/4/2022					
27010	10004		40220	6497		5/0/2021	5/19/2022	1/22/2021				
27910	1 0004		29030	6497		5/22/2020	5/18/2021	1/22/2021				
27913			37340	6487		5/22/2020	5/18/2021	2/10/2021				
27914			12020	6487		5/22/2020	5/18/2021	2/13/2021				
27915			42920	6/87		5/22/2020	5/18/2021	2/17/2021				
28039			18910	6488	MEI	6/4/2020	6/4/2021	3/5/2021				
30154	1 0004		34710	6740	MEL	5/18/2021	5/18/2022	5/5/2021				
30155	1 0004		35090	6740	MFI	5/18/2021	5/18/2022	FR				
30156	1 0004		35100	6740	MFI	5/18/2021	5/18/2022	FR				
30157	1 0004		35670	6740	MFI	5/18/2021	5/18/2022	FR				
30158	L0004		35690	6740	MFL	5/18/2021	5/18/2022	FR				
30159	L0004		35830	6740	MFL	5/18/2021	5/18/2022	FR				
30160	L0004		35850	6740	MFL	5/18/2021	5/18/2022	FR				
30161	L0004		35970	6740	MFL	5/18/2021	5/18/2022	FR				
30162	L0004		36550	6740	MFL	5/18/2021	11/15/2021	FR				
30163	L0004		37560	6740	MFL	5/18/2021	11/15/2021	FR				

Table D-18: P. 46.a, c Identified Digs												
Dig ID	Line	Segment	Girth Weld	Tool Run ID	Tech- nology	Date of Discovery / Feature Added to	Repair / Mitigation Deadline	Date of Repair / Mitigation ¹				
						Dig List						
30164	L0004		37710	6740	MFL	5/18/2021	11/15/2021	FR				
30165	L0004		37750	6740	MFL	5/18/2021	11/15/2021	FR				
30166	L0004		38770	6740	MFL	5/18/2021	11/15/2021	FR				
30167	L0004		38780	6740	MFL	5/18/2021	11/15/2021	FR				
30168	L0004		38790	6740	MFL	5/18/2021	11/15/2021	FR				
30169	L0004		38800	6740	MFL	5/18/2021	11/15/2021	FR				
30170	L0004		38920	6740	MFL	5/18/2021	11/15/2021	FR				
30171	L0004		39000	6740	MFL	5/18/2021	11/15/2021	FR				
30172	L0004		39010	6740	MFL	5/18/2021	11/15/2021	FR				
30173	L0004		39170	6740	MFL	5/18/2021	11/15/2021	FR				
30174	L0004		39210	6740	MFL	5/18/2021	11/15/2021	FR				
30175	L0004		39600	6740	MFL	5/18/2021	11/15/2021	FR				
30176	L0004		39720	6740	MFL	5/18/2021	11/15/2021	FR				
30068	L0005		116570	6593	UTCD	4/9/2021	4/11/2022	FR				
30069	L0005		213390	6593	UTCD	4/9/2021	4/11/2022	FR				
30070	L0005		220240	6593	UTCD	4/9/2021	6/8/2021	4/16/2021				
30071	L0005		220310	6593	UTCD	4/9/2021	4/11/2022	4/17/2021				
30152	L0005		260790	6743	MFL	5/17/2021	5/17/2022	FR				
27264	L0006A		64280	4676	PHASED ARRAY	1/24/2020	1/25/2021	1/15/2021				
27265	L0006A		65420	4676	PHASED ARRAY	1/24/2020	1/25/2021	1/14/2021				
30015	L0014		22220	6553	UTCD	4/1/2021	9/28/2021	FR				
30016	L0014		22320	6553	UTCD	4/1/2021	9/28/2021	FR				
30017	L0014		42750	6553	UTCD	4/1/2021	9/28/2021	FR				
30018	L0014		57160	6553	UTCD	4/1/2021	9/28/2021	FR				
30019	L0014		61350	6553	UTCD	4/1/2021	9/28/2021	FR				
30020	L0014		70210	6553	UTCD	4/1/2021	9/28/2021	FR				
30021	L0014		72140	6553	UTCD	4/1/2021	9/28/2021	FR				
30022	L0014		100590	6553	UTCD	4/1/2021	9/28/2021	FR				
30023	L0014		111300	6553	UTCD	4/1/2021	9/28/2021	FR				
30024	L0014		112170	6553	UTCD	4/1/2021	9/28/2021	FR				
30025	L0014		112840	6553	UTCD	4/1/2021	9/28/2021	FR				
30026	L0014		118740	6553	UTCD	4/1/2021	9/28/2021	FR				
30027	L0014		120350	6553	UTCD	4/1/2021	9/28/2021	FR				
30028	L0014		121170	6553	UTCD	4/1/2021	9/28/2021	FR				
30029	L0014		121180	6553	UTCD	4/1/2021	9/28/2021	FR				
30030	L0014		131750	6553	UTCD	4/1/2021	9/28/2021	FR				
30031	L0014		132340	6553	UTCD	4/1/2021	9/28/2021	FR				

Table D-18: P. 46.a, c Identified Digs												
Dig ID	Line	Segment	Girth Weld	Tool Run ID	Tech- nology	Date of Discovery / Feature Added to Dig List	Repair / Mitigation Deadline	Date of Repair / Mitigation ¹				
30032	L0014		148230	6553	UTCD	4/1/2021	4/1/2022	FR				
30033	L0014		150780	6553	UTCD	4/1/2021	9/28/2021	FR				
30034	L0014		168380	6553	UTCD	4/1/2021	9/28/2021	FR				
30035	L0014		172430	6553	UTCD	4/1/2021	9/28/2021	FR				
30077	L0065		2220	6555	UTCD	4/21/2021	10/18/2021	FR				
30078	L0065		6410	6555	UTCD	4/21/2021	10/18/2021	FR				
30079	L0065		7430	6555	UTCD	4/21/2021	10/18/2021	FR				
30080	L0065		11540	6555	UTCD	4/21/2021	10/18/2021	FR				
30081	L0065		14640	6555	UTCD	4/21/2021	10/18/2021	FR				
30082	L0065		26780	6555	UTCD	4/21/2021	10/18/2021	FR				
30083	L0065		27830	6555	UTCD	4/21/2021	10/18/2021	FR				
30084	L0065		32750	6555	UTCD	4/21/2021	10/18/2021	FR				
30085	L0065		37210	6555	UTCD	4/21/2021	5/20/2021	4/22/2021				
30086	L0065		60930	6555	UTCD	4/21/2021	10/18/2021	FR				
30087	L0065		87320	6555	UTCD	4/21/2021	10/18/2021	FR				
30088	L0065		100270	6555	UTCD	4/21/2021	10/18/2021	FR				
30089	L0065		100330	6555	UTCD	4/21/2021	10/18/2021	FR				
28360	L0067		53660	6504	MFL	9/8/2020	3/8/2021	2/27/2021				
28361	L0067		53700	6504	MFL	9/8/2020	3/8/2021	3/3/2021				

TABLE NOTES:

¹ "FR" indicates that this information is outside the reporting period of this SAR and will be included in a future SAR ² Dig Repair/Mitigation Deadline was requested to be extended, which was reported in SAR5 ³ AP6
The following 1 page is Table D-19: P. 46.a, c Identified Digs.

	Table D-19: P. 46.a Cancelled Digs											
Dig ID Line Segment Girth Weld Tool Run ID Technology Reason for Dig Cancella												
N/A ¹												

TABLE NOTE:

¹ This table is blank for SAR8

The following 4 pages are Table D-20: P. 46.b. d PPRs.

	Table D-20: P. 46.b, d PPRs											
PR ID	Line	Segment	Girth Weld	Date of Discovery	Repair / Mitigation Deadline ¹	PPR Imposition Date	Repair / Mitigation Date	PPR Removal Date ²				
31460	L0002		60210	5/5/2020	11/2/2020	5/7/2020	7/24/2020	11/26/2020				
30479	L0003		171730	12/12/2019	12/11/2020	12/13/2019	10/9/2020	2/25/2021				
34225	L0004		45560	5/5/2021	5/5/2022	5/7/2021	FR	FR				
34222	L0004		38460	5/6/2021	5/4/2022	5/7/2021	FR	FR				
34223	L0004		39000	5/6/2021	5/4/2022	5/7/2021	FR	FR				
34224	L0004	-	45220	5/6/2021	5/4/2022	5/7/2021	FR	FR				
31461	L0004		29830	5/22/2020	5/18/2021	5/22/2020	1/22/2021	4/26/2021				
31462	L0004		30950	5/22/2020	5/18/2021	5/22/2020	8/20/2020	3/11/2021				
31463	L0004		33090	5/22/2020	5/18/2021	5/22/2020	8/1/2020	3/11/2021				
31464	L0004	-	34440	5/22/2020	5/18/2021	5/22/2020	1/23/2021	4/26/2021				
31465	L0004	-	37340	5/22/2020	5/18/2021	5/22/2020	2/19/2021	4/26/2021				
31466	L0004	-	42920	5/22/2020	5/18/2021	5/22/2020	2/17/2021	4/26/2021				
31467	L0004		46160	5/22/2020	5/18/2021	5/22/2020	2/25/2021	4/26/2021				
31486	L0004	-	18910	6/4/2020	6/4/2021	6/5/2020	3/5/2021	4/26/2021				
31487	L0004		46130	6/22/2020	6/21/2021	6/24/2020	9/19/2020	12/4/2020				
31488	L0004		48450	6/22/2020	6/21/2021	6/24/2020	9/30/2020	12/4/2020				
31489	L0004		48510	6/22/2020	6/21/2021	6/24/2020	10/1/2020	12/4/2020				
31490	L0004		49560	6/22/2020	6/21/2021	6/24/2020	10/16/2020	12/4/2020				
31491	L0004		49600	6/22/2020	6/21/2021	6/24/2020	10/7/2020	12/4/2020				
31492	L0004		49640	6/22/2020	6/21/2021	6/24/2020	10/10/2020	12/4/2020				
31493	L0004		50230	6/22/2020	6/21/2021	6/24/2020	9/10/2020	12/4/2020				
31494	L0004		50260	6/22/2020	6/21/2021	6/24/2020	9/10/2020	12/4/2020				
31495	L0004		51010	6/22/2020	6/21/2021	6/24/2020	9/12/2020	12/4/2020				
31496	L0004		51120	6/22/2020	6/21/2021	6/24/2020	9/19/2020	12/4/2020				
31497	L0004		51450	6/22/2020	6/21/2021	6/24/2020	9/2/2020	12/4/2020				
31498	L0004		51530	6/22/2020	6/21/2021	6/24/2020	9/29/2020	12/4/2020				
31499	L0004		52450	6/22/2020	6/21/2021	6/24/2020	10/5/2020	12/4/2020				
31500	L0004		53250	6/22/2020	6/21/2021	6/24/2020	9/16/2020	12/4/2020				
31501	L0004		53300	6/22/2020	6/21/2021	6/24/2020	8/18/2020	12/4/2020				
31502	L0004		53820	6/22/2020	6/21/2021	6/24/2020	9/17/2020	12/4/2020				
31503	L0004		54110	6/22/2020	6/21/2021	6/24/2020	10/15/2020	12/4/2020				

	Table D-20: P. 46.b, d PPRs											
PR ID	Line	Segment	Girth Weld	Date of Discovery	Repair / Mitigation Deadline ¹	PPR Imposition Date	Repair / Mitigation Date	PPR Removal Date ²				
31504	L0004	_	54640	6/22/2020	6/21/2021	6/24/2020	10/6/2020	12/4/2020				
31505	L0004		55270	6/22/2020	6/21/2021	6/24/2020	9/29/2020	12/4/2020				
31506	L0004		56370	6/22/2020	6/21/2021	6/24/2020	10/29/2020	12/4/2020				
34260	L0004	-	34710	5/18/2021	5/18/2022	5/20/2021	FR	FR				
34261	L0004	-	35090	5/18/2021	5/18/2022	5/20/2021	FR	FR				
34262	L0004	-	35100	5/18/2021	5/18/2022	5/20/2021	FR	FR				
34263	L0004	-	35670	5/18/2021	5/18/2022	5/20/2021	FR	FR				
34264	L0004	-	35690	5/18/2021	5/18/2022	5/20/2021	FR	FR				
34265	L0004	-	35830	5/18/2021	5/18/2022	5/20/2021	FR	FR				
34266	L0004	-	35850	5/18/2021	5/18/2022	5/20/2021	FR	FR				
34267	L0004	-	35970	5/18/2021	5/18/2022	5/20/2021	FR	FR				
34268	L0004		36550	5/18/2021	11/15/2021	5/20/2021	FR	FR				
34269	L0004	-	37560	5/18/2021	11/15/2021	5/20/2021	FR	FR				
34270	L0004		37750	5/18/2021	11/15/2021	5/20/2021	FR	FR				
34271	L0004		38770	5/18/2021	11/15/2021	5/20/2021	FR	FR				
34272	L0004		38780	5/18/2021	11/15/2021	5/20/2021	FR	FR				
34273	L0004		38800	5/18/2021	11/15/2021	5/20/2021	FR	FR				
34274	L0004	-	38920	5/18/2021	11/15/2021	5/20/2021	FR	FR				
34275	L0004	-	39000	5/18/2021	11/15/2021	5/20/2021	FR	FR				
34276	L0004	-	39010	5/18/2021	11/15/2021	5/20/2021	FR	FR				
34277	L0004	-	39170	5/18/2021	11/15/2021	5/20/2021	FR	FR				
34278	L0004	-	39210	5/18/2021	11/15/2021	5/20/2021	FR	FR				
34279	L0004	-	39600	5/18/2021	11/15/2021	5/20/2021	FR	FR				
34280	L0004	-	39720	5/18/2021	11/15/2021	5/20/2021	FR	FR				
34201	L0005	-	220240	4/9/2021	6/8/2021	4/12/2021	4/16/2021	4/20/2021				
30696	L0006A	-	108890	1/28/2020	7/27/2020	1/29/2020	7/8/2020	11/25/2020				
30697	L0006A	-	113560	1/28/2020	7/27/2020	1/29/2020	6/24/2020	11/25/2020				
30700	L0006A	-	255180	1/28/2020	7/27/2020	1/29/2020	7/24/2020	11/25/2020				
30704	L0006A		291890	1/28/2020	7/27/2020	1/29/2020	5/22/2020	11/25/2020				
30705	L0006A		297890	1/28/2020	7/27/2020	1/29/2020	6/11/2020	11/25/2020				
30947 ³	L0006A		256490	5/11/2018	5/20/2024	3/23/2020	8/26/2020 ³	12/17/2020				

Table D-20: P. 46.b, d PPRs										
PR ID	Line	Segment	Girth Weld	Date of Discovery	Repair / Mitigation Deadline ¹	PPR Imposition Date	Repair / Mitigation Date	PPR Removal Date ²		
30683	L0006A		64280	1/24/2020	1/25/2021	1/27/2020	1/15/2021	4/27/2021		
30684	L0006A		65420	1/24/2020	1/25/2021	1/27/2020	1/14/2021	4/27/2021		
34072	L0014	-	22220	4/1/2021	9/28/2021	4/5/2021	FR	FR		
34073	L0014		22320	4/1/2021	9/28/2021	4/5/2021	FR	FR		
34074	L0014		42750	4/1/2021	9/28/2021	4/5/2021	FR	FR		
34075	L0014	-	57160	4/1/2021	9/28/2021	4/5/2021	FR	FR		
34076	L0014	-	61350	4/1/2021	9/28/2021	4/5/2021	FR	FR		
34077	L0014	-	70210	4/1/2021	9/28/2021	4/5/2021	FR	FR		
34078	L0014	-	72140	4/1/2021	9/28/2021	4/5/2021	FR	FR		
34079	L0014	-	100590	4/1/2021	9/28/2021	4/5/2021	FR	FR		
34080	L0014	-	111300	4/1/2021	9/28/2021	4/5/2021	FR	FR		
34081	L0014		112170	4/1/2021	9/28/2021	4/5/2021	FR	FR		
34082	L0014		112840	4/1/2021	9/28/2021	4/5/2021	FR	FR		
34083	L0014	-	118740	4/1/2021	9/28/2021	4/5/2021	FR	FR		
34084	L0014	-	120350	4/1/2021	9/28/2021	4/5/2021	FR	FR		
34085	L0014	-	121170	4/1/2021	9/28/2021	4/5/2021	FR	FR		
34086	L0014	-	121180	4/1/2021	9/28/2021	4/5/2021	FR	FR		
34087	L0014	-	131750	4/1/2021	9/28/2021	4/5/2021	FR	FR		
34088	L0014	-	132340	4/1/2021	9/28/2021	4/5/2021	FR	FR		
34089	L0014	-	150780	4/1/2021	9/28/2021	4/5/2021	FR	FR		
34090	L0014	-	168380	4/1/2021	9/28/2021	4/5/2021	FR	FR		
34091	L0014	-	172430	4/1/2021	9/28/2021	4/5/2021	FR	FR		
30398 ⁴	L0061	-	73610	10/7/2019	11/2/2020	10/9/2019	N/A ⁴	12/1/2020		
30399 ⁴	L0061	-	90360	10/7/2019	11/2/2020	10/9/2019	N/A ⁴	12/1/2020		
30400 ⁴	L0061	-	250590	10/7/2019	11/2/2020	10/9/2019	N/A ⁴	12/1/2020		
34203	L0065		2220	4/21/2021	10/18/2021	4/23/2021	FR	FR		
34204	L0065	-	6410	4/21/2021	10/18/2021	4/23/2021	FR	FR		
34205	L0065		7430	4/21/2021	10/18/2021	4/23/2021	FR	FR		
34206	L0065		11540	4/21/2021	10/18/2021	4/23/2021	FR	FR		
34207	L0065		14640	4/21/2021	10/18/2021	4/23/2021	FR	FR		
34208	L0065		26780	4/21/2021	10/18/2021	4/23/2021	FR	FR		

	Table D-20: P. 46.b, d PPRs											
PR ID	Line	Segment	Girth Weld	Date of Discovery	Repair / Mitigation Deadline ¹	PPR Imposition Date	Repair / Mitigation Date	PPR Removal Date ²				
34209	L0065		27830	4/21/2021	10/18/2021	4/23/2021	FR	FR				
34210	L0065		32750	4/21/2021	10/18/2021	4/23/2021	FR	FR				
34211	L0065		37210	4/21/2021	5/20/2021	4/23/2021	4/22/2021	4/27/2021				
34212	L0065		60930	4/21/2021	10/18/2021	4/23/2021	FR	FR				
34213	L0065		87320	4/21/2021	10/18/2021	4/23/2021	FR	FR				
34214	L0065		100270	4/21/2021	10/18/2021	4/23/2021	FR	FR				
34215	L0065		100330	4/21/2021	10/18/2021	4/23/2021	FR	FR				
33833	L0067		53660	9/8/2020	3/8/2021	9/9/2020	2/27/2021	FR				
33834	L0067		53700	9/8/2020	3/8/2021	9/9/2020	3/3/2021	FR				

TABLE NOTES:

¹ Repair/Mitigation Deadline was specified in Tables 1 to 5 of the Consent Decree

² PPR is removed after the Feature Requiring Pressure Restriction is repaired or mitigated. This PPR Removal Date can be before the Repair / Mitigation Date which is the repair and mitigation date of the entire dig package that may include other features not requiring pressure restriction. PPR is no longer required after the Feature Requiring Pressure Restriction is repaired

³ The target feature was mitigated in the HDD project of Alternate Plan 3. The Tie-in Date was 08/26/2020.

⁴ Digs were cancelled on 9/29/2020

The following 1 page is Table D-21: P. 46.e, 46.I Alternate Plans and Alternate Pressure Restrictions.

Table D-21: P. 46.e Alternate Plans and Alternate Pressure Restrictions							
46.e. Alternate Plan or Alternate Interim Pressure Restrictions submitted from effective date to the end of this SAR reporting period:	6 of maximum 40						
46.e. Cumulative Excavations of Joints	6 of maximum 200						
46.e. Maximum number of contiguous joints for each Alternate Plans or Alternate Interim Pressure Restriction	1 of maximum 10						

The following 2 pages are Table D-22: P. 46.g Alternate Plan #6.

Table D-22: P. 46.g A	Alternate Plan #6
Alternate Plan Line	3
Alternate Plan Tool Run	2020 MFL
Alternate Plan Joint	58690
46.I. (iv) Date Engineering Assessment was Completed OR the original feature repair/mitigation deadline	Original Feature Repair/Mitigation Deadline: March 2, 2021
46.I.(vii) Alternate Plan Implementation Date	2/18/2021
46.I.(iv) Alternate Plan Reporting/Notification Date	2/19/2021
Notification was within 10 days of EA completion or 10 days before Original Feature Mitigation Deadline	Yes
Recommended Alternative(s) to Repair/Mitigate the FRE	The target corrosion FRE is located within the Railway ROW in Leech Lake Reservation, Minnesota. The estimated depth of metal loss is 58% of NWT as measured by 2020 MFL Tool Run. The recommended alternative to repair/mitigate the FRE is replacement of the pipe section as part of the Line 3 Replacement Project, projected to be completed in 2021.
Number of Features Requiring Excavation covered by the Alternate Plan	1
46.c.(1) Extraordinary Scope or Complexity	No
46.c.(2) Replacement of Segment	Yes
46.c.(3) Alternate Plan submitted for 46.c.(1)(2)	Yes
46.d.(i) Significantly Impair Operability	No
46.d.(ii) Significant Adverse Effect on Pipeline Integrity	No

46.I(i) Alternate Plan Detailed Description:

This Alternate Plan (AP) is prepared as provided in Paragraph 46.c.(2) of the Consent Decree (CD). The Alternate Plan addresses issues relating to the excavation and mitigation of the Feature Requiring Excavation (FRE) as defined in Paragraph 36 of the Consent Decree.

The internal metal loss feature (FID 321900-CL315199) on Girth Weld (GW) joint 58690 for the Line 3 Clearbrook (CR) to Superior (PW) segment was reported by the 2020 MFL4 (Issue 1) in-line inspection (ILI) and was added to the dig list on September 3, 2020, and an original Excavation Deadline of March 2, 2021 (180 days) as the Feature is in an High Consequence Area (HCA).

The target corrosion FRE is located within the Railway ROW in the Leech Lake Reservation, Minnesota. The estimated depth of metal loss is 58% of NWT as measured by 2020 MFL Tool Run.

Engineering Assessment results shows that this feature will be safe until December 2, 2026. This segment of pipeline will be replaced as part of the Line 3 Replacement Project (L3RP). The FRE will be monitored in annual ILI inspection. The quarterly cleaning and biocide-treatment are scheduled on this line segment, which can significantly decrease the internal corrosion growth.

46.I.(iii) Basis for selection of the Alternate Plan and alternate timetables Enbridge is proposing to mitigate this feature with the Line 3 Replacement Project (L3RP).

Table D-22: P. 46.g Alternate Plan #6

46.I(v) Detailed description of the analysis comparing the level of safety achieved by each such Alternate Plan with the level of safety that would be achieved through compliance with the requirements of Subsection VII.D.(V)

There is a low likelihood of the target Feature being a safety threat until completion of the Line 3 Replacement Project (L3RP, projected to be completed in 2021). Engineering Assessment results shows that this feature will be safe until December 2, 2026 (half of remaining life of 2020 feature). Internal Corrosion Feature 321900-CL315199 was reported as a 58% nominal wall thickness (NWT) metal loss feature with a Safety Factor of 2.66 to MOP. High Safety Factor values indicate that an interim pressure restriction is not required for this feature.

Internal Corrosion Feature 321900-CL315199 matches Feature 287809-CL281058 of 2019 MFL inspection by relative distance and orientation. Feature 287809-CL281058 is a 49% nominal wall thickness (NWT) internal loss feature with a Safety Factor of 2.72 to MOP. A low CGR was confirmed on this joint.

Internal Corrosion Feature 321900-CL315199 has no interacting or intersecting threats, such as crack or dent.

The Feature is monitored annually by running a high-resolution corrosion ILI tool. The scheduled quarterly cleaning and biocide injection can also decrease the internal corrosion growth rate. This joint also had a low operating pressure with an MOP of 372 psi, and the last 60-day high and the last 365-day high at 261 psi (approximately 30% SMYS).

Supplemental monitoring of internal corrosion processes is accomplished using a permanent wall loss monitor installed at MP 950 (approximately 1.5 miles upstream of the subject Feature). The long-term trend of this monitor since installation in 2007 indicates low CGR.

46.l(vi) Description of activities undertaken by Enbridge during the reporting period to implement Alternate Plan

This segment is monitored annually by running a high-resolution corrosion ILI tool (next run scheduled for April 6, 2021) and has quarterly cleaning and biocide injections. This segment of pipeline will be replaced as part of the Line 3 Replacement Project (L3RP).

Enbridge provided an update on May 13, 2021 to the LLBO as follow: Enbridge completed the yearly Line 3 Clearbrook to Superior corrosion inspection on April 12th. The tool performance review determined some of the corrosion sensors did not function properly. As a result, Enbridge elected to rerun the tool to ensure a complete data set is available for analysis. We anticipate completing the re-run the week of May 17th and, pending a successful re-run, will be in a position to review the expedited reporting for the features of interest within the LLBO reservation in late-June.

Enbridge completed the re-run on May 21, 2021. As a result of the data quality issues associated with the initial inspection and the re-run inspection, the data from both of the inspections is being stitched together where necessary to provide a complete ILI data set for feature analysis and assessment.

The following 1 page is Table D-23: P. 46.I Previous Alternate Plan Status Update.

	Table D-23: P. 46.I Previous Alternate Plan Status Update					
	<u>11/30/2020</u>					
	 Q4 AP Meeting cancelled. Feature is stable from the run in April 2020. Next tool launch scheduled for April 6, 2021. Mitigation for AP# 5 remains the Line 3 Replacement Project (L3RP). Communicated ISD for L3RP is currently Q4 2021 					
	<u>3/10/2021</u>					
	 Enbridge updated ITP/EPA on the L3R project. 					
	<u>5/13/2021</u>					
Alternate Plan #5	• Enbridge provided an update to the LLBO as follow: Enbridge completed the yearly Line 3 Clearbrook to Superior corrosion inspection on April 12th. The tool performance review determined some of the corrosion sensors did not function properly. As a result, Enbridge elected to re-run the tool to ensure a complete data set is available for analysis. We anticipate completing the re-run the week of May 17th and, pending a successful re-run, will be in a position to review the expedited reporting for the features of interest within the LLBO reservation in late-June.					
	<u>5/23/2021:</u>					
	• Enbridge completed the re-run on May 21, 2021. As a result of the data quality issues associated with the initial inspection and the re-run inspection, the data from both of the inspections is being stitched together where necessary to provide a complete ILI data set for feature analysis and assessment.					

The following 2 pages are Table D-24: P. 47 Crack Features Requiring Excavation.

Table D-24: P. 47 Crack Features Requiring Excavation										
Dig ID	Line	Segment	Girth Date Features Weld Added to Dig List		Repair / Mitigation Deadline	Date of Repair / Mitigation ¹				
28393	L0002		62670	9/24/2020	9/24/2021	1/25/2021				
28926	L0003		71850	11/10/2020	11/10/2021	FR				
28929	L0003		117440	11/10/2020	11/10/2021	FR				
28932	L0003		153080	11/10/2020	11/10/2021	FR				
28933	L0003		156430	11/10/2020	11/10/2021	FR				
30068	L0005		116570	4/9/2021	4/11/2022	FR				
30069	L0005		213390	4/9/2021	4/11/2022	FR				
30071	L0005		220310	4/9/2021	4/11/2022	4/17/2021				
27264	L0006A		64280	1/24/2020	1/25/2021	1/15/2021				
27265	L0006A		65420	1/24/2020	1/25/2021	1/14/2021				
30015	L0014		22220	4/1/2021	9/28/2021	FR				
30016	L0014		22320	4/1/2021	9/28/2021	FR				
30017	L0014		42750	4/1/2021	9/28/2021	FR				
30018	L0014		57160	4/1/2021	9/28/2021	FR				
30019	L0014		61350	4/1/2021	9/28/2021	FR				
30020	L0014		70210	4/1/2021	9/28/2021	FR				
30021	L0014		72140	4/1/2021	9/28/2021	FR				
30022	L0014		100590	4/1/2021	9/28/2021	FR				
30023	L0014		111300	4/1/2021	9/28/2021	FR				
30024	L0014		112170	4/1/2021	9/28/2021	FR				
30025	L0014		112840	4/1/2021	9/28/2021	FR				
30026	L0014		118740	4/1/2021	9/28/2021	FR				
30027	L0014		120350	4/1/2021	9/28/2021	FR				
30028	L0014		121170	4/1/2021	9/28/2021	FR				
30029	L0014		121180	4/1/2021	9/28/2021	FR				
30030	L0014		131750	4/1/2021	9/28/2021	FR				
30031	L0014		132340	4/1/2021	9/28/2021	FR				
30032	L0014		148230	4/1/2021	4/1/2022	FR				
30033	L0014		150780	4/1/2021	9/28/2021	FR				
30034	L0014		168380	4/1/2021	9/28/2021	FR				
30035	L0014		172430	4/1/2021	9/28/2021	FR				
30077	L0065		2220	4/21/2021	10/18/2021	FR				

Table D-24: P. 47 Crack Features Requiring Excavation										
Dig ID	Line	Segment	Girth Weld	Date Features Added to Dig List	Repair / Mitigation Deadline	Date of Repair / Mitigation ¹				
30078	L0065		6410	4/21/2021	10/18/2021	FR				
30079	L0065		7430	4/21/2021	10/18/2021	FR				
30080	L0065		11540	4/21/2021	10/18/2021	FR				
30081	L0065		14640	4/21/2021	10/18/2021	FR				
30082	L0065		26780	4/21/2021	10/18/2021	FR				
30083	L0065		27830	4/21/2021	10/18/2021	FR				
30084	L0065		32750	4/21/2021	10/18/2021	FR				
30085	L0065		37210	4/21/2021	5/20/2021	4/22/2021				
30086	L0065		60930	4/21/2021	10/18/2021	FR				
30087	L0065		87320	4/21/2021	10/18/2021	FR				
30088	L0065		100270	4/21/2021	10/18/2021	FR				
30089	L0065		100330	4/21/2021	10/18/2021	FR				

TABLE NOTE:

¹ "FR" indicates that this information is outside the reporting period of this SAR and will be included in a future SAR

The following 2 pages are Table D-25: P. 47 Crack Feature Pressure Restrictions.

	Table D-25: P. 47 Crack Feature Pressure Restrictions										
PR ID	Line	Segment	Girth Weld	Date of Discovery	Repair / Mitigation Deadline (specified in Tables 1 to 5 of the Consent Decree)	PPR Set (psi)	PPR Imposition Date	Repair / Mitigation Date ²	PPR Removal Date ^{1, 2}		
31460	L0002		60210	5/5/2020	11/2/2020	789	5/7/2020	7/24/2020	11/26/2020		
30479	L0003		171730	12/12/2019	12/11/2020	444	12/13/2019	10/9/2020	2/25/2021		
30683	L0006A		64280	1/24/2020	1/25/2021	603	1/27/2020	1/15/2021	4/27/2021		
30684	L0006A		65420	1/24/2020	1/25/2021	617	1/27/2020	1/14/2021	4/27/2021		
34072	L0014		22220	4/1/2021	9/28/2021	1367	4/5/2021	FR	FR		
34073	L0014		22320	4/1/2021	9/28/2021	1377	4/5/2021	FR	FR		
34074	L0014		42750	4/1/2021	9/28/2021	1279	4/5/2021	FR	FR		
34075	L0014		57160	4/1/2021	9/28/2021	1340	4/5/2021	FR	FR		
34076	L0014		61350	4/1/2021	9/28/2021	1311	4/5/2021	FR	FR		
34077	L0014		70210	4/1/2021	9/28/2021	1285	4/5/2021	FR	FR		
34078	L0014		72140	4/1/2021	9/28/2021	1315	4/5/2021	FR	FR		
34079	L0014		100590	4/1/2021	9/28/2021	1373	4/5/2021	FR	FR		
34080	L0014		111300	4/1/2021	9/28/2021	1359	4/5/2021	FR	FR		
34081	L0014		112170	4/1/2021	9/28/2021	1374	4/5/2021	FR	FR		
34082	L0014		112840	4/1/2021	9/28/2021	1328	4/5/2021	FR	FR		
34083	L0014		118740	4/1/2021	9/28/2021	1177	4/5/2021	FR	FR		
34084	L0014		120350	4/1/2021	9/28/2021	1369	4/5/2021	FR	FR		
34085	L0014		121170	4/1/2021	9/28/2021	1374	4/5/2021	FR	FR		
34086	L0014		121180	4/1/2021	9/28/2021	1372	4/5/2021	FR	FR		
34087	L0014		131750	4/1/2021	9/28/2021	1304	4/5/2021	FR	FR		
34088	L0014		132340	4/1/2021	9/28/2021	1335	4/5/2021	FR	FR		
34089	L0014		150780	4/1/2021	9/28/2021	1305	4/5/2021	FR	FR		
34090	L0014		168380	4/1/2021	9/28/2021	1326	4/5/2021	FR	FR		
34091	L0014		172430	4/1/2021	9/28/2021	1338	4/5/2021	FR	FR		
34203	L0065		2220	4/21/2021	10/18/2021	1175	4/23/2021	FR	FR		
34204	L0065		6410	4/21/2021	10/18/2021	1174	4/23/2021	FR	FR		
34205	L0065		7430	4/21/2021	10/18/2021	1125	4/23/2021	FR	FR		
34206	L0065		11540	4/21/2021	10/18/2021	1078	4/23/2021	FR	FR		

	Table D-25: P. 47 Crack Feature Pressure Restrictions											
PR ID	Line	Segment	Girth Weld	Date of Discovery	Repair / Mitigation Deadline (specified in Tables 1 to 5 of the Consent Decree)	PPR Set (psi)	PPR Imposition Date	Repair / Mitigation Date ²	PPR Removal Date ^{1, 2}			
34207	L0065		14640	4/21/2021	10/18/2021	1143	4/23/2021	FR	FR			
34208	L0065		26780	4/21/2021	10/18/2021	1204	4/23/2021	FR	FR			
34209	L0065		27830	4/21/2021	10/18/2021	1227	4/23/2021	FR	FR			
34210	L0065		32750	4/21/2021	10/18/2021	1205	4/23/2021	FR	FR			
34211	L0065		37210	4/21/2021	5/20/2021	765	4/23/2021	4/22/2021	4/27/2021			
34212	L0065		60930	4/21/2021	10/18/2021	1216	4/23/2021	FR	FR			
34213	L0065		87320	4/21/2021	10/18/2021	921	4/23/2021	FR	FR			
34214	L0065		100270	4/21/2021	10/18/2021	1219	4/23/2021	FR	FR			
34215	L0065		100330	4/21/2021	10/18/2021	992	4/23/2021	FR	FR			

TABLE NOTES:

¹PPR is removed after the Feature Requiring Pressure Restriction is repaired or mitigated. This PPR Removal Date can be before the Repair / Mitigation Date which is the repair and mitigation date of the entire dig package that may include other features not requiring pressure restriction

² "FR" indicates that this information is outside the reporting period of this SAR and will be included in a future SAR

The following 2 pages are the D-26: P. 50 Corrosion Features Requiring Excavation.

Table D-26: P. 50 Corrosion Features Requiring Excavation									
Dig ID	Line	Segment	Girth Weld	Date Features Added to Dig List	Repair / Mitigation Deadline	Date of Repair / Mitigation ¹			
24805 ²	L0003		58670	12/10/2018	4/17/2032 ²	FR			
28194	L0003		153620	7/16/2020	1/12/2021	1/8/2021			
28338 ³	L0003		58690	9/3/2020	12/2/2026 ³	FR			
28340	L0003		59780	9/3/2020	3/2/2021	2/8/2021			
28341	L0003		59790	9/3/2020	3/2/2021	2/16/2021			
28342	L0003		59810	9/3/2020	3/2/2021	2/20/2021			
28343	L0003		59830	9/3/2020	3/2/2021	2/26/2021			
28346	L0003		136280	9/3/2020	3/2/2021	1/13/2021			
30153	L0004		27260	5/18/2021	11/15/2021	FR			
30120	L0004		45560	5/5/2021	5/5/2022	FR			
30129	L0004		38460	5/6/2021	5/4/2022	FR			
30130	L0004		39000	5/6/2021	5/4/2022	FR			
30131	L0004		45220	5/6/2021	5/4/2022	FR			
27910	L0004		29830	5/22/2020	5/18/2021	1/22/2021			
27913	L0004		34440	5/22/2020	5/18/2021	1/23/2021			
27914	L0004		37340	5/22/2020	5/18/2021	2/19/2021			
27915	L0004		42920	5/22/2020	5/18/2021	2/17/2021			
27916	L0004		46160	5/22/2020	5/18/2021	2/25/2021			
28039	L0004		18910	6/4/2020	6/4/2021	3/5/2021			
30154	L0004		34710	5/18/2021	5/18/2022	FR			
30155	L0004		35090	5/18/2021	5/18/2022	FR			
30156	L0004		35100	5/18/2021	5/18/2022	FR			
30157	L0004		35670	5/18/2021	5/18/2022	FR			
30158	L0004		35690	5/18/2021	5/18/2022	FR			
30159	L0004		35830	5/18/2021	5/18/2022	FR			
30160	L0004		35850	5/18/2021	5/18/2022	FR			
30161	L0004		35970	5/18/2021	5/18/2022	FR			
30162	L0004		36550	5/18/2021	11/15/2021	FR			
30163	L0004		37560	5/18/2021	11/15/2021	FR			
30164	L0004		37710	5/18/2021	11/15/2021	FR			
30165	L0004		37750	5/18/2021	11/15/2021	FR			
30166	L0004		38770	5/18/2021	11/15/2021	FR			

	Та	able D-26: P	. 50 Corrosio	on Features Requirin	g Excavation	
Dig ID	Line	Segment	Girth Weld	Date Features Added to Dig List	Repair / Mitigation Deadline	Date of Repair / Mitigation ¹
30167	L0004		38780	5/18/2021	11/15/2021	FR
30168	L0004		38790	5/18/2021	11/15/2021	FR
30169	L0004		38800	5/18/2021	11/15/2021	FR
30170	L0004		38920	5/18/2021	11/15/2021	FR
30171	L0004		39000	5/18/2021	11/15/2021	FR
30172	L0004		39010	5/18/2021	11/15/2021	FR
30173	L0004		39170	5/18/2021	11/15/2021	FR
30174	L0004		39210	5/18/2021	11/15/2021	FR
30175	L0004		39600	5/18/2021	11/15/2021	FR
30176	L0004		39720	5/18/2021	11/15/2021	FR
30152	L0005		260790	5/17/2021	5/17/2022	FR
28360	L0067		53660	9/8/2020	3/8/2021	2/27/2021
28361	L0067		53700	9/8/2020	3/8/2021	3/3/2021

TABLE NOTES:

¹"FR" indicates that this information is outside the reporting period of this SAR and will be included in a future SAR ² Dig Repair/Mitigation Deadline was requested to be extended, which was reported in SAR5 ³ AP6

The following 4 pages are Table D-27: P. 52 Corrosion Feature Pressure Restrictions.

			Table [0-27: P. 52 Corro	sion Feature Pre	ssure Re	strictions		
PR ID	Line	Segment	Girth	Date of	Repair /	PPR	PPR	Repair /	PPR Removal
			vveid	Discovery	Mitigation Deadline ¹	Set	Imposition Date	Date	Date
					Doudinio	(psi)	Duto	2410	
34225	L0004		45560	5/5/2021	5/5/2022	594	5/7/2021	FR	FR
34222	L0004	-	38460	5/6/2021	5/4/2022	619	5/7/2021	FR	FR
34223	L0004	-	39000	5/6/2021	5/4/2022	614	5/7/2021	FR	FR
34224	L0004	-	45220	5/6/2021	5/4/2022	606	5/7/2021	FR	FR
31461	L0004	-	29830	5/22/2020	5/18/2021	607	5/22/2020	1/22/2021	4/26/2021
31462	L0004	-	30950	5/22/2020	5/18/2021	614	5/22/2020	8/20/2020	3/11/2021
31463	L0004	-	33090	5/22/2020	5/18/2021	617	5/22/2020	8/1/2020	3/11/2021
31464	L0004	-	34440	5/22/2020	5/18/2021	622	5/22/2020	1/23/2021	4/26/2021
31465	L0004	-	37340	5/22/2020	5/18/2021	609	5/22/2020	2/19/2021	4/26/2021
31466	L0004	-	42920	5/22/2020	5/18/2021	619	5/22/2020	2/17/2021	4/26/2021
31467	L0004	-	46160	5/22/2020	5/18/2021	604	5/22/2020	2/25/2021	4/26/2021
31486	L0004	-	18910	6/4/2020	6/4/2021	622	6/5/2020	3/5/2021	4/26/2021
31487	L0004	-	46130	6/22/2020	6/21/2021	604	6/24/2020	9/19/2020	12/4/2020
31488	L0004	-	48450	6/22/2020	6/21/2021	623	6/24/2020	9/30/2020	12/4/2020
31489	L0004	-	48510	6/22/2020	6/21/2021	601	6/24/2020	10/1/2020	12/4/2020
31490	L0004	-	49560	6/22/2020	6/21/2021	619	6/24/2020	10/16/2020	12/4/2020
31491	L0004	-	49600	6/22/2020	6/21/2021	622	6/24/2020	10/7/2020	12/4/2020
31492	L0004	-	49640	6/22/2020	6/21/2021	629	6/24/2020	10/10/2020	12/4/2020
31493	L0004		50230	6/22/2020	6/21/2021	620	6/24/2020	9/10/2020	12/4/2020
31494	L0004		50260	6/22/2020	6/21/2021	602	6/24/2020	9/10/2020	12/4/2020
31495	L0004		51010	6/22/2020	6/21/2021	599	6/24/2020	9/12/2020	12/4/2020
31496	L0004		51120	6/22/2020	6/21/2021	607	6/24/2020	9/19/2020	12/4/2020

			Table D	0-27: P. 52 Corro	sion Feature Pre	ssure Re	strictions		
PR ID	Line	Segment	Girth	Date of	Repair /	PPR	PPR	Repair /	PPR Removal
			Weld	Discovery	Mitigation	Set	Imposition	Mitigation	Date ²
					Deaume	(psi)	Date	Date	
31497	L0004		51450	6/22/2020	6/21/2021	617	6/24/2020	9/2/2020	12/4/2020
31498	L0004		51530	6/22/2020	6/21/2021	628	6/24/2020	9/29/2020	12/4/2020
31499	L0004		52450	6/22/2020	6/21/2021	613	6/24/2020	10/5/2020	12/4/2020
31500	L0004		53250	6/22/2020	6/21/2021	629	6/24/2020	9/16/2020	12/4/2020
31501	L0004		53300	6/22/2020	6/21/2021	606	6/24/2020	8/18/2020	12/4/2020
31502	L0004		53820	6/22/2020	6/21/2021	613	6/24/2020	9/17/2020	12/4/2020
31503	L0004		54110	6/22/2020	6/21/2021	622	6/24/2020	10/15/2020	12/4/2020
31504	L0004		54640	6/22/2020	6/21/2021	625	6/24/2020	10/6/2020	12/4/2020
31505	L0004		55270	6/22/2020	6/21/2021	627	6/24/2020	9/29/2020	12/4/2020
31506	L0004		56370	6/22/2020	6/21/2021	619	6/24/2020	10/29/2020	12/4/2020
34260	L0004		34710	5/18/2021	5/18/2022	620	5/20/2021	FR	FR
34261	L0004		35090	5/18/2021	5/18/2022	592	5/20/2021	FR	FR
34262	L0004		35100	5/18/2021	5/18/2022	609	5/20/2021	FR	FR
34263	L0004		35670	5/18/2021	5/18/2022	616	5/20/2021	FR	FR
34264	L0004		35690	5/18/2021	5/18/2022	602	5/20/2021	FR	FR
34265	L0004		35830	5/18/2021	5/18/2022	585	5/20/2021	FR	FR
34266	L0004		35850	5/18/2021	5/18/2022	614	5/20/2021	FR	FR
34267	L0004		35970	5/18/2021	5/18/2022	617	5/20/2021	FR	FR
34268	L0004		36550	5/18/2021	11/15/2021	596	5/20/2021	FR	FR
34269	L0004		37560	5/18/2021	11/15/2021	606	5/20/2021	FR	FR
34270	L0004		37750	5/18/2021	11/15/2021	612	5/20/2021	FR	FR
34271	L0004		38770	5/18/2021	11/15/2021	604	5/20/2021	FR	FR

	Table D-27: P. 52 Corrosion Feature Pressure Restrictions								
PR ID	Line	Segment	Girth Weld	Date of Discovery	Repair / Mitigation Deadline ¹	PPR Set (psi)	PPR Imposition Date	Repair / Mitigation Date	PPR Removal Date ²
34272	L0004		38780	5/18/2021	11/15/2021	596	5/20/2021	FR	FR
34273	L0004		38800	5/18/2021	11/15/2021	606	5/20/2021	FR	FR
34274	L0004		38920	5/18/2021	11/15/2021	601	5/20/2021	FR	FR
34275	L0004		39000	5/18/2021	11/15/2021	609	5/20/2021	FR	FR
34276	L0004		39010	5/18/2021	11/15/2021	584	5/20/2021	FR	FR
34277	L0004		39170	5/18/2021	11/15/2021	598	5/20/2021	FR	FR
34278	L0004		39210	5/18/2021	11/15/2021	602	5/20/2021	FR	FR
34279	L0004		39600	5/18/2021	11/15/2021	604	5/20/2021	FR	FR
34280	L0004		39720	5/18/2021	11/15/2021	599	5/20/2021	FR	FR
30696	L0006A		108890	1/28/2020	7/27/2020	617	1/29/2020	7/8/2020	11/25/2020
30697	L0006A		113560	1/28/2020	7/27/2020	613	1/29/2020	6/24/2020	11/25/2020
30700	L0006A		255180	1/28/2020	7/27/2020	584	1/29/2020	7/24/2020	11/25/2020
30704	L0006A		291890	1/28/2020	7/27/2020	614	1/29/2020	5/22/2020	11/25/2020
30705	L0006A		297890	1/28/2020	7/27/2020	609	1/29/2020	6/11/2020	11/25/2020
309474	L0006A		256490	5/11/2018	5/20/2024	618	3/23/2020	8/26/20204	12/17/2020
30398 ³	L0061		73610	10/7/2019	11/2/2020	1153	10/9/2019	N/A ³	12/1/2020
30399 ³	L0061		90360	10/7/2019	11/2/2020	1137	10/9/2019	N/A ³	12/1/2020
30400 ³	L0061		250590	10/7/2019	11/2/2020	1156	10/9/2019	N/A ³	12/1/2020
33833	L0067		53660	9/8/2020	3/8/2021	1257	9/9/2020	2/27/2021	FR
33834	L0067		53700	9/8/2020	3/8/2021	1255	9/9/2020	3/3/2021	FR

TABLE NOTES:

¹Repair/ Mitigation Deadline was specified in Tables 1 to 5 of the Consent Decree

² PPR is removed after the Feature Requiring Pressure Restriction is repaired or mitigated. This PPR Removal Date can be before the Repair / Mitigation Date which is the repair and mitigation date of the entire dig package that may include other features not requiring pressure restriction. "FR" indicates that this information is outside the reporting period of this SAR and will be included in a future SAR

³ Digs were cancelled on 09/29/2020. The PPR's associated with these digs are in the process of being removed ⁴ The target feature was mitigated in the HDD project of Alternate Plan 3. The Tie-in Date was 08/26/2020

The following 1 page is Table D-28: P. 53 Digs for Axial Slotting, Axial Grooving, Selective Seam Corrosion and Seam Weld anomaly A/B Features Table.

Table D	Table D-28: P. 53 Digs for Axial Slotting, Axial Grooving, Selective Seam Corrosion and Seam Weld Anomaly A/B Features								
Dig ID	Line	Segment	Girth Weld	Date of Discovery / Feature Added to Dig List	Repair / Mitigation Deadline	Date of Repair / Mitigation			
N/A ¹									

TABLE NOTES:

¹ This table is blank for this SAR period

The following 1 page is Table D-29: P. 54 Axial Slotting, Axial Grooving, and Selective Seam Corrosion, and Weld Anomaly A/B Feature Pressure Restrictions.

Tab	Table D-29: P. 54 Axial Slotting, Axial Grooving, Selective Seam Corrosion, and Weld Anomaly A/B Feature Pressure Restrictions										
PR ID	Line	Segment	Girth Weld	Date of Discovery	Repair / Mitigation Deadline	PPR Set (psi)	PPR Imposition Date	Repair / Mitigation Date	PPR Removal Date		
N/A ¹											

TABLE NOTES:

¹ There are no features of this type to report in this SAR period

The following 1 page is Table D-30: P. 56 Geometry features Mitigation Timelines Table.

Table D-30: P. 56 Geometry Features Mitigation Timelines									
Dig ID	Line	Segment	Girth Weld	Date of Discovery / Feature Added to Dig List	Repair / Mitigation Deadline	Date of Repair / Mitigation ¹			
N/A ¹									

TABLE NOTE:

¹ There are no features of this type to report in this SAR period

The following 1 page is Table D-31: P. 58 Interacting Features Requiring Excavation.

Table D-31: P. 58 Interacting Features Requiring Excavation										
Dig ID	Line	Segment	Girth Weld	ΤοοΙ	Report Received Date	One-Source Load Date	Date of Discovery / Feature Added to Dig List	Repair / Mitigation Deadline	Type of Inter-acting features (tool)	Date of Repair / Mitigation ¹
30070	L0005		220240	CD+	3/11/2021	3/11/2021	4/9/2021	6/8/2021	Geometry	4/16/2021

TABLE NOTES:

¹ "FR" indicates that this information is outside the reporting period of this SAR and will be included in a future SAR.
The following 1 page is Table D-32: P. 59 Interacting Features Pressure Restrictions.

	Table D-32: P. 59 Interacting Features Pressure Restrictions								
PR ID	Line	Segment	Girth Weld	Date of Discovery	Repair / Mitigation Deadline ¹	PPR Set (psi)	PPR Imposition Date	Repair / Mitigation Date	PPR Removal Date ^{2,3}
34201	L0005		220240	4/9/2021	6/8/2021	490	4/12/2021	4/16/2021	4/20/2021

TABLE NOTES:

¹ Specified in Tables 1 to 5 of the Consent Decree and Exhibit 1 – Fifth Modification of Consent Decree

² PPR is removed after the Feature requiring Pressure Restriction is repaired or mitigated. The PPR Removal Date may be before the Repair / Mitigation Date because that date is the repair and mitigation date of the entire dig package that may include other features not requiring pressure restriction

³ "FR" indicates that this information is outside the reporting period of this SAR and will be included in a future SAR

The following 1 page is Table D-33: P. 60 Remaining Life Calculations.

Table D-33: P. 60 Remaining Life Calculations							
Tool Run ID	Line	Segment	ΤοοΙ	Report Type	Remaining Life Calculation Completion Date		
4507	02		Proton	Crack	12/17/2020		
6729	04		MFL DuDi	Corrosion	5/5/2021		
10991	04		UCM	Corrosion	5/18/2021		
6738	04		MFL DuDi	Corrosion	5/5/2021		
6486	04		DuDi UCM	Corrosion	11/25/2020		
6486	04		DuDi UCM	Crack	12/17/2020		
6737	04		MFL DuDi	Corrosion	5/11/2021		
6740	04		MFL DuDi	Corrosion	5/18/2021		
6593	05		CD+	Crack	4/9/2021		
6743	05		GEMINI	Corrosion	5/17/2021		
6728	10		USWM+	Corrosion	5/3/2021		
6742	14		Eclipse	Crack	5/19/2021		
6498	14		MFL4	Corrosion	2/23/2021		
6553	14		Eclipse	Crack	4/1/2021		
6555	65		CD+	Crack	4/21/2021		
6744	65		GEMINI	Corrosion	5/4/2021		

The following 1 page is Table D-34: P. 63 Crack Feature Remaining Life Calculations.

Table D-34: P. 63 Crack Feature Remaining Life Calculations							
Tool Run ID	Line	Segment	ΤοοΙ	Report Type	Remaining Life Calculation Completion Date		
4507	02		Proton	Crack	12/17/2020		
6486	04		DuDi UCM	Crack	12/17/2020		
6593	05		CD+	Crack	4/9/2021		
6742	14		Eclipse	Crack	5/19/2021		
6553	14		Eclipse	Crack	4/1/2021		
6555	65		CD+	Crack	4/21/2021		

Section E

The following 2 pages are Table E-1: P. 68 Consent Decree Screw Anchor Installation Summary.

Section E

Table	Table E-1: P. 68 Consent Decree Screw Anchor Installation Summary						
Location	Installed	Installation Year	Long.	Lat.			
EP-17-1	Υ	2018					
EP-17-2	Y	2018					
EP-17-3	Y	2018					
EP-17-4	Y	2018					
EP-17-5	Y	2018					
WP-17-1	Y	2018					
WP-17-2	Y	2018					
WP-17-3	Y	2018					
WP-17-4	Y	2018					
WP-17-5	Y	2018					
WP-17-6	Y	2018					
WP-17-7	Y	2018					
WP-17-8	Y	2018					
WP-17-9	Y	2018					
WP-17-10	Y	2018					
WP-17-11	Υ	2018					
WP-17-12	Y	2018					
WP-17-13	Y	2020					
WP-17-14	Y	2020					
WP-17-15	Y	2018					
WP-17-16	Y	2018					
WP-17-17	Y	2019					
EAP-1	Y	2019					
EAP-2	Y	2020					
EAP-3	Y	2020					
EAP-4	Y	2020					
EAP-5	Y	2019					
EAP-6	Y	2020					
EAP-7	Y	2020					
EAP-8	Y	2020					
EAP-9	Y	2020					
EAP-10	Y	2020					
EAP-11	Y	2020					
EAP-12	Y	2020					
EAP-13	Y	2019					
EAP-14	Y	2019					
EAP-15	Υ	2019					
EAP-16	Υ	2019					
EAP-17	Υ	2019					
EAP-18	Υ	2019					
EAP-19	Y	2019					

Table	E-1: P. 68 Consen	t Decree Screw An	chor Installation S	Summary
Location	Installed	Installation Year	Long.	Lat.
EAP-20	Y	2019	r L	
EAP-21	Y	2019		
EAP-22	Y	2019		
EAP-23	Υ	2019		
EAP-24	Y	2019		
EAP-25	Υ	2020		
EAP-26	Υ	2019		
EAP-27	Υ	2019		
EAP-28	Y	2020		
EAP-29	Y	2020		
EAP-30	Y	2019		
WAP-1	Y	2019	-	
WAP-2	Y	2019	-	
WAP-3	Y	2020	-	
WAP-4	Y	2020	-	
WAP-5	Y	2019	-	
WAP-6	Y	2020		
WAP-7	Y	2019		
WAP-8	Y	2019		
WAP-9	Υ	2019		
WAP-10	Υ	2019		
WAP-11	Y	2019		
WAP-12	Υ	2020		
WAP-13	Y	2019		
WAP-14	Υ	2019		
WAP-15	Y	2019		
WAP-16	Y	2019		
WAP-17	Y	2019		
WAP-18	Υ	2019		
WAP-19	Y	2019		
WAP-20	Y	2019		
WAP-21	Y	2020		

The following 1 page is Table E-2: P. 73 Acoustic Leak Detection.

Table E-2: P. 73 Acoustic Leak Detection						
Segment Quarter Leak Detection Tool Run Date						
Dual Pipelines (West and East)	Q4 2020	12/02/2020				
Dual Pipelines (West and East)	Q1 2021	03/08/2021				

Section F

The following 1 page is Table F-1: P. 77 OneSource NDE Updates.

Section F

	Table F-1: P. 77 OneSource NDE Updates								
Tool Run ID	Line	Segment	ΤοοΙ	Report Type	Last NDE Report Approved Date ¹	OneSource Load Date			
4045	L0001		UMP	Corrosion	3/11/2021	3/12/2021			
6581	L0003		UCMPUTCD	Crack	12/15/2020	12/21/2020			
6581	L0003		UCMPUTWM	Corrosion	1/26/2021	2/1/2021			
3830	L0003		AFD	Corrosion	3/22/2021	3/23/2021			
10052	L0003		MFL4MFL	Corrosion	12/2/2020	12/7/2020			
6486	L0004		UCMUTCD	Crack	4/1/2021	4/2/2021			
6487	L0004		MFLDUDI	Corrosion	4/19/2021	4/20/2021			
6488	L0004		MFLDUDI	Corrosion	4/6/2021	4/7/2021			
6607	L0004		MFLDUDI	Corrosion	12/3/2020	12/7/2020			
6607	L0004		MFLDUDI	Corrosion	12/3/2020	12/7/2020			
6609	L0005		GEMINICAL	Geometry	4/23/2021	4/26/2021			
4676	L0006A		DUOCD	Crack	2/5/2021	2/8/2021			
6443	L0014		MFL4CAL	Geometry	4/28/2021	4/29/2021			
6504	L0067		GEMINIMFL	Corrosion	3/22/2021	3/23/2021			
6416	L0078		UC	Crack	3/1/2021	3/10/2021			
6418	L0078		CD+	Crack	12/23/2020	12/31/2020			

TABLE NOTE:

¹ The last NDE report approved date was the date the last CD FRE NDE report for that particular ILI program was approved.

The following 2 pages are Table F-2: P. 78.a OneSource ILI Updates.

		Та	ble F-2: P. 78.a O	neSource ILI Up	odates	
Tool Run ID	Line	Segment	ΤοοΙ	Report Type	Report Received Date	OneSource Load Date
4506	02		Proton	Crack	2/1/2021	2/2/2021
6606	03		MFL4	Corrosion	5/10/2021	5/11/2021
10052	03		MFL4	Corrosion	5/3/2021	5/5/2021
10991	04		UCM	Corrosion	4/27/2021	4/28/2021
6729	04		MFL DuDi	Corrosion	4/19/2021	4/19/2021
6738	04		MFL DuDi	Corrosion	4/9/2021	4/12/2021
6486	04		DuDi UCM	Corrosion	12/3/2020	12/3/2020
6486	04		DuDi UCM	Crack	11/27/2020	11/27/2020
6487	04		MFL DuDi	Corrosion	4/5/2021	4/7/2021
6607	04		MFL DuDi	Corrosion	3/29/2021	4/2/2021
6736	04		Deformation	Geometry	4/14/2021	4/19/2021
6737	04		MFL DuDi	Corrosion	4/22/2021	4/23/2021
6739	04		Deformation	Geometry	4/12/2021	4/14/2021
6740	04		MFL DuDi	Corrosion	4/22/2021	4/23/2021
6693	05		UCc	Crack	5/19/2021	5/20/2021
6593	05		CD+	Crack	3/11/2021	3/11/2021
6743	05		GEMINI	Corrosion	4/22/2021	4/23/2021
6743	05		GEMINI	Geometry	4/22/2021	4/23/2021
6666	05		UCc	Crack	5/20/2021	5/20/2021
6578	06A		GeoPig	Geometry	1/20/2021	1/20/2021
6449	10		Eclipse	Crack	2/17/2021	Table note 1
6095	10		MFL4	Corrosion	4/12/2021	4/20/2021
6491	10		Eclipse	Crack	2/17/2021	Table note 1
6728	10		USWM+	Corrosion	4/9/2021	4/13/2021
6742	14		Eclipse	Crack	4/30/2021	4/30/2021
6498	14		MFL4	Corrosion	1/29/2021	2/1/2021
6498	14		MFL4	Geometry	1/29/2021	2/1/2021
6553	14		Eclipse	Crack	3/5/2021	3/5/2021
6555	65		CD+	Crack	3/19/2021	3/22/2021
6744	65		GEMINI	Corrosion	4/8/2021	4/8/2021
6744	65		GEMINI	Geometry	4/8/2021	4/8/2021
2369	67		MFL4	Corrosion	4/26/2021	4/26/2021

TABLE NOTE:

¹ No changes were made to the Feature Detailed listing and therefore the OneSource data is unaffected and no OneSource load is required for this re-issue.

The following 2 pages are Table F-3: P. 78.b Interacting Feature Reviews.

	Table F-3: P. 78.b Interacting Feature Reviews									
Tool Run ID	Line	Segment	ΤοοΙ	Report Type	Pull Date	Report Received Date	Interacting Feature Review	SQuAD and QuAD Completion Date ¹	Issue #	
4506	02		Proton	Crack	5/7/2020	2/1/2021	2/4/2021	N/A	2	
4507	02		Proton	Crack	7/22/2020	11/19/2020	12/17/2020	N/A	1	
10991	04		UCM	Corrosion	1/27/2021	4/27/2021	5/18/2021	5/18/2021	1	
6729	04		MFL DuDi	Corrosion	1/19/2021	4/19/2021	5/5/2021	5/5/2021	1	
6738	04		MFL DuDi	Corrosion	1/9/2021	4/9/2021	5/5/2021	5/5/2021	1	
6486	04		DuDi UCM	Corrosion	7/30/2020	10/28/2020	11/25/2020	11/25/2020	1	
6486	04		DuDi UCM	Corrosion	7/30/2020	12/3/2020	12/16/2020	12/16/2020	2	
6486	04		DuDi UCM	Crack	7/30/2020	11/27/2020	12/17/2020	N/A	1	
6487 ²	04		MFL DuDi	Corrosion	1/24/2020	4/5/2021	4/20/2021	4/20/2021	2	
6607 ²	04		MFL DuDi	Corrosion	2/26/2020	3/29/2021	4/20/2021	4/20/2021	3	
6736	04		Deformation	Geometry	1/14/2021	4/14/2021	5/10/2021	5/10/2021	1	
6737	04		MFL DuDi	Corrosion	2/2/2021	4/22/2021	5/11/2021	5/11/2021	1	
6739	04		Deformation	Geometry	1/13/2021	4/12/2021	5/7/2021	5/7/2021	1	
6740	04		MFL DuDi	Corrosion	1/26/2021	4/22/2021	5/18/2021	5/18/2021	1	
6593	05		CD+	Crack	11/11/2020	3/11/2021	4/9/2021	N/A	1	
6743	05		GEMINI	Corrosion	1/28/2021	4/22/2021	5/17/2021	5/17/2021	1	
6743	05		GEMINI	Geometry	1/28/2021	4/22/2021	5/18/2021	5/18/2021	1	
6578	06A		GeoPig	Geometry	10/22/2020	1/20/2021	2/16/2021	2/16/2021	1	
6095 ²	10		MFL4	Corrosion	7/11/2018	4/12/2021	5/5/2021	5/5/2021	3	
6728	10		USWM+	Corrosion	3/10/2021	4/9/2021	5/3/2021	5/3/2021	1	

	Table F-3: P. 78.b Interacting Feature Reviews									
Tool Run ID	Line	Segment	ΤοοΙ	Report Type	Pull Date	Report Received Date	Interacting Feature Review	SQuAD and QuAD Completion Date ¹	lssue #	
6742	14	•	Eclipse	Crack	1/11/2021	4/30/2021	5/19/2021	N/A	1	
6498	14		MFL4	Corrosion	11/2/2020	1/29/2021	2/23/2021	2/23/2021	1	
6498	14		MFL4	Geometry	11/2/2020	1/29/2021	2/24/2021	2/24/2021	1	
6553	14		Eclipse	Crack	11/5/2020	3/5/2021	4/1/2021	N/A	1	
6555 ³	65		CD+	Crack	11/20/2020	3/19/2021	4/21/2021	N/A	1	
6744	65		GEMINI	Corrosion	1/8/2021	4/8/2021	5/4/2021	5/4/2021	1	
6744	65		GEMINI	Geometry	1/8/2021	4/8/2021	5/7/2021	5/7/2021	1	
2369 ²	67		MFL4	Corrosion	4/5/2018	4/26/2021	5/20/2021	5/20/2021	3	

TABLE NOTE:

¹ SQuAD/QuAD not applicable to crack program

² Please refer to P34c [ILI Reports With Data Quality Issues in Areas with Significant Changes in Wall Thickness – 34C] for further information

³ Please see the Paragraph 145 [Section D] Untimely Preliminary Quality Review and Interacting Feature Review on L65 GF-CR UTCD – P34a and 58 for further information

Section G

The following 1 page is Table G-1: P. 93-94, 96-97 Temporary MBS Suspension.

Section G

Table G-1: P. 93-94, 96-97 Temporary MBS Suspension						
Reason for Instrumentation Outage	Time Period to Restore MBS Segment to Operation (Requirement)	Number of Occurrences	Number of Occurrences Exceeding Time Period			
Instrumentation failure	10 days	27	0			
Bypass of ILI Tool	4 hours	9	0			
Scheduled maintenance or repairs	4 days	29	0			

The following 1 page is Table G-2: P. 99 Projects.

Table G-2: P. 99 Projects									
Line	Line Milepost Valve Tag No. Installation Date Triggers Paragraph 99?								
N/A ¹	N/A ¹								

TABLE NOTE:

¹ This table is blank for SAR8

The following 7 pages are Table G-3: P. 112 Lakehead System Pipeline Incident Reporting.

Table G-3: P. 112 Lakehead System Pipeline Incident Reporting						
Incident Description	Date and Time Notice Received	Date and Time Investigation Began	Date and time when preliminary Investigation complete	Information Provided with Notice	Conclusion and Findings of the Investigation	Lakehead Lines Affected
	11/23/2020 16:27 MST	11/23/2020 16:33 MST	11/23/2020 16:33 MST			Line 78
	12/13/2020 18:15 MST	12/13/2020 18:25 MST	12/13/2020 18:19 MST			Line 6A

	Table G-3: P. 112 Lakehead System Pipeline Incident Reporting						
Incident Description	Date and Time Notice Received	Date and Time Investigation Began	Date and time when preliminary Investigation complete	Information Provided with Notice	Conclusion and Findings of the Investigation	Lakehead Lines Affected	
	12/16/2020 05:23 MST	12/16/2020 05:29 MST	12/16/2020 05:34 MST			Line 01 Line 2B Line 93 Line 04 Line 05 Line 6A Line 14 Line 61 Line 67	
	02/01/2021 11:31 MST	02/01/2021 11:35 MST	02/01/2021 11:34 MST			Line 3	

	Table G-3: P. 112 Lakehead System Pipeline Incident Reporting					
Incident Description	Date and Time Notice Received	Date and Time Investigation Began	Date and time when preliminary Investigation complete	Information Provided with Notice	Conclusion and Findings of the Investigation	Lakehead Lines Affected
	02/12/2021 12:29 MST	02/12/2021 12:37 MST	02/12/2021 12:40 MST			Line 78
	02/19/2021 12:59 MST	02/19/2021 13:04 MST	02/19/2021 13:03 MST			Line 01 Line 02 Line 03 Line 04 Line 67

Table G-3: P. 112 Lakehead System Pipeline Incident Reporting						
Incident Description	Date and Time Notice Received	Date and Time Investigation Began	Date and time when preliminary Investigation complete	Information Provided with Notice	Conclusion and Findings of the Investigation	Lakehead Lines Affected
	02/22/2021 15:05 MST	02/22/2021 15:08 MST	02/22/2021 15:12 MST			Line 6A Line 14 Line 61
	03/04/2021 09:23 MST	03/04/2021 09:31 MST	03/04/2021 09:44 MST			Line 01 Line 02 Line 03 Line 04 Line 65 Line 67

Table G-3: P. 112 Lakehead System Pipeline Incident Reporting						
Incident Description	Date and Time Notice Received	Date and Time Investigation Began	Date and time when preliminary Investigation complete	Information Provided with Notice	Conclusion and Findings of the Investigation	Lakehead Lines Affected
	03/18/2021 08:30 MST	03/18/2021 08:36 MST	03/18/2021 08:35 MST			Line 61 Line 78
	04/03/2021 08:53 MST	04/03/2021 09:01 MST	04/03/2021 09:02 MST			Line 5
	04/10/2021 03:13 MST	04/10/2021 03:16 MST	04/10/2021 03:29 MST			Line 6A Line 14

Table G-3: P. 112 Lakehead System Pipeline Incident Reporting						
Incident Description	Date and Time Notice Received	Date and Time Investigation Began	Date and time when preliminary Investigation complete	Information Provided with Notice	Conclusion and Findings of the Investigation	Lakehead Lines Affected
	05/04/2021 09:57 MST	05/04/2021 10:08 MST	05/04/2021 10:01 MST			Line 5

Table G-3: P. 112 Lakehead System Pipeline Incident Reporting						
Incident Description	Date and Time Notice Received	Date and Time Investigation Began	Date and time when preliminary Investigation complete	Information Provided with Notice	Conclusion and Findings of the Investigation	Lakehead Lines Affected
	05/21/2021 20:02 MST	05/21/2021 20:11 MST	05/21/2021 20:10 MST			Line 5

Section H

There are no tables associated with Section H.

Section I

There are no tables associated with Section I.

Section J

There are no tables associated with Section J.

Section IX

The following 2 pages are Table IX-1: P. 144 Problems Anticipated, Consent Decree Interpretation Issues in Discussion by the Parties.

Section IX

Table IX-1: P. 144 Problems Anticipated, Consent Decree Interpretation Issues in Discussion by the Parties								
Section and Title	Relevant Paragraph or Reference	Enbridge Position						
[Section D] Periodic In-Line Inspections, Circumferential Cracking	Paragraph 27, 28: "ILI tools that are most appropriate for accurately detecting, characterizing and sizing all Crack features."	As the parties have discussed at length, Enbridge believes that the Consent Decree was not drafted to address circumferential cracking. Enbridge has identified difficulties encountered, from a technical perspective, of applying the Consent Decree to circumferential Cracking. Enbridge, the EPA, and the ITP continue to discuss ways to resolve this challenge. Enbridge created three Engineering Assessments regarding circumferential cracking reviewed by a Third Party Consultant chosen by the ITP. The Third Party Consultant agreed with Enbridge's conclusions in the Engineering Assessments.						
[Section D] Analysis Process Utilized for "Topside" Dents	Paragraph 36, 40, and 56	In this reporting period, Enbridge continued discussions with the EPA and ITP related to interpretation of CD Table 4 with regard to topside dent interpretation. Throughout the term of the CD and prior, Enbridge has consistently applied the assessment of topside versus bottomside to address regulatory requirements and determine the location of the dent as described in Enbridge's Minimum Reporting Requirements (MRR). Enbridge's interpretation of topside has been clearly documented within Enbridge's MRR and accessible to the ITP for the entirety of the CD. While Enbridge did not (and does not), believe the Line 14, AM-MK, Geometry, 6-19- 2020 – DNT 25 feature to be an FRE under the CD, Enbridge agreed to complete the excavation and repair of this single dent feature, at the request of EPA. Enbridge considers this work to be a non-CD excavation. The Line 14, AM- MK, Geometry, 6-19-2020 – DNT 25 feature was subsequently repaired on 4/8/2021 in advance of the "potential FRE" repair deadline.						
Table IX-1: P. 144 Problems Anticipated, Consent Decree Interpretation Issues in Discussion by the Parties								
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Section and Title	Relevant Paragraph or Reference	Enbridge Position						
[Section D] FRE completed	Paragraph 40, 77.d	FRE Completion is the NDE approval date. This is chosen because the NDE QA/QC process can result in revisions to the NDE data, additional NDE data being provided and ultimately, rarely, re- excavation of the site. It appears likely that the parties will agree on a mutually accepted interpretation going forward and thus resolve this issue.						
[Section E] Coverage of Dual Pipelines in Less Than 65-ft of Water	Paragraph 68.b	As Enbridge has indicated in its responses to the ITP, Enbridge believes that inspection data gathered in 2016, 2018, and 2020 adequately confirms that portions of the Dual Pipelines located in water less than 65-feet in depth remain buried. Nonetheless, to address the ITP's concerns regarding prior SAR reporting, Enbridge is willing to revise its prior statements under Paragraph 68.b concerning continuous coverage of the Dual Pipelines in less than 65-feet of water as follows: "Visual underwater inspections performed in 2016, 2018, and 2020 confirm that the Dual Pipelines are buried at a water depth of approximately 65-feet and they remain continuously covered from that point to a point nearer to the shoreline for which inspection data is available. No exposed segment of the Dual Pipelines has been identified as a result of such inspections."						
[Section F] Update of OneSource Database, "all field investigations"	Paragraph 77.d	Although Enbridge does not believe that Paragraph 77 of the Consent Decree was intended to incorporate digs that are outside of Consent Decree requirements, Enbridge is willing to agree that NDE reports from all integrity dig excavations issued from Consent Decree ILI programs, including Consent Decree FRE, investigative digs and Non- Consent Decree digs, would be uploaded into OneSource within 60 days after completing the last field investigation related to an ILI. It appears likely that the parties will agree on a mutually accepted interpretation going forward and thus resolve this issue.						

The following 1 page is Table IX-2: Lines 2, 14/64 Flow Rates.

Table IX-2: Lines 2, 14/64 Flow Rates		
Lakehead Pipeline	Operating flow rate range during original study (m³/hr)	Minimum flow rate line was operated at in Q3-Q4 2020 (m³/hr)
2	2,400 – 3,000	1,500
14/64	2,000 – 2,500	1,350

The following 1 page is Table IX-3: P. 115 Stockbridge Agreed Exercise Activities.

Table IX-3: Paragraph 115 Stockbridge Agreed Exercise Activities			
Date	Planned Exercise Activity	City	State
06/19/19	Concept and Objectives Meeting	Chicago	Illinois
11/05/19	Initial Planning Meeting	Lansing	Michigan
3/2/20	Midterm Planning Meeting	Lansing	Michigan
05/13/20	Stockbridge Master Scenario Events List (MSEL) Meeting (Virtual)	-	-
05/05/2021	Stockbridge Final Planning Meeting (Virtual)	-	-
07/14/21 – 07/15/21	Stockbridge Exercise (Hybrid – virtual and face to face)	Lansing	Michigan
07/16/21	Stockbridge After Action Meeting (Hybrid – virtual and face to face)	Lansing	Michigan

The following 1 page is Table IX-4: TTX and FDE in SAR8 Reporting Period.

Table IX-4: TTX and FDE in SAR8 Reporting Period			
Date	Exercise Type	City	State
February 9th	ТТХ	Cass Lake	Minnesota
March 25th	ТТХ	Darien	Wisconsin
April 6th	ТТХ	Grayling	Michigan
April 20th	ТТХ	Carlton	Minnesota
April 20th	ТТХ	Mio	Michigan
May 11th	FDE	Mio	Michigan
May 18th	FDE	Oklee	Minnesota

The following 1 page is Table IX-5: Section H P. 174 Force Majeure Notifications.

Table IX-5: Section H P. 174 Force Majeure Notifications		
Step	Summary of Section H Action	
Step 1 Verbal Immediate	As soon as Enbridge is aware of an issue that will result in not meeting Consent Decree requirements then they must notify the EPA immediately.	
Step 2 Written notification within 5 Days of Knowing ¹	A written notification is made to the EPA. There were no written notifications during this reporting period.	
Step 3 Written Follow up within 10 Days of the initial Written Notification	 A follow up written notification is made to the EPA by legal following the initial written notification. <u>Tenth Written Notification</u>: A written notification was submitted on December 21, 2020 regarding conducting TTX in February and March 2021 virtually. The EPA approved these TTX to be held virtually via email submitted to Enbridge on January 21, 2021. <u>Eleventh Written Notification</u>: a written notification was submitted on January 4, 2021 regarding conducting Community Engagement (in March and April 2021 virtually). The EPA approved these Community Engagement to be held virtually via email submitted to Enbridge on January 21, 2021. <u>Twelve Written Notification</u>: A written notification was sent on February 25, 2021 requesting virtual TTX for April 6 and April 20th TTX and requesting virtual community engagement in May 2021 and notifying the EPA of the amended dates for the March, Ashland and Hurley events. The EPA approved holding these virtually in a March 8, 2021 correspondence with Enbridge. 	
Step 4 Enbridge Continues to Monitor the Situation	Enbridge staff have regular meetings to discuss and monitor the situation.	
Step 5 Enbridge Identifies a Work Around, if Possible, and Notifies EPA	For Section H, the events impacted by the COVID-19 Force Majeures include TTXs, Community Outreach Sessions and FSE planning meetings for Stockbridge.	
Step 6 EPA Policy Termination	This step is initiated by the EPA, Enbridge will have 7 days to come up with an updated plan to meet our Consent Decree obligations. Enbridge will meet those obligations as per the submitted plan.	

TABLE NOTE:

¹As of April 30, 2020 – This step is no longer required and is replaced by the 10-day written follow up (Step 3).

The following 1 page is Table IX-6: P. 145 List of Potential Non-Compliances.

Table IX-6: P. 145 List of Potential Non-Compliances			
Potential Non-Compliance	Summary Location		
[Section D] Untimely Preliminary Quality Review and Interacting Feature Review on L65 GF-CR UTCD – P34a and 58	Section IX – Paragraph 145		

The following 1 page is Table IX-7: P. 146 Discharges from a Lakehead System Pipeline.

Table IX-7: P. 146 Discharges from a Lakehead System Pipeline		
Spill Date (MM/DD/YYYY)	3/2/2021	
National Response Center #	Not Required	
Spill Location	Viking, Marshall County, MN	
MP#/Facility Name	Viking Station	
Equipment or Line Number	Line 4 Pressure Transmitter Flex Hose	
Cause of spill	Equipment Failure	
Spill Material	Crude Oil	
Quantity of Spill	4 Barrels	
Distance Spill Travelled	20 feet	
Sheen, Sludge or Emulsion Observed	None	
Name of Water that Spill Entered (if applicable)	Not Applicable	
Water Quality Standard Exceeded/Violated	Not Applicable	
Actions Taken or Planned to Address Spill	The failed flex hose was replaced, and all contaminated soil was removed from the release site.	
Actions Taken or Planned to Prevent Future Spills and Schedule for Future Actions	A Quality Bulletin will be issued company wide as it relates to the configuration of the flex hose and the role it played in the failure. For existing flex hoses, the Quality Bulletin will provide direction regarding the inspection of the hoses to confirm whether they adhere to the applicable installation guide as recommended by the manufacturer.	
Environmental Impacts from Spill	Soil (Solely on Enbridge Property)	
Root Cause	Other Equipment Failure	

The following 1 page is Table IX-8: P. 147 Update on Discharges from a Lakehead System Pipeline.

Table IX-8	P. 147 Update on Discharges from a Lakehead System Pipeline
Spill Date (MM/DD/YYYY)	N/A ¹
National Response Center #	
Spill Location	
MP#/Facility Name	
Equipment or Line Number	
Cause of spill	
Spill Material	
Quantity of Spill	
Distance Spill Travelled	
Sheen, Sludge or Emulsion Observed	
Name of Water that Spill Entered (if applicable)	
Water Quality Standard Exceeded/Violated	
Actions Taken or Planned to Address Spill	
Actions Taken or Planned to Prevent Future Spills and Schedule for Future Actions	
Final Actions Taken or Planned to Prevent Future Spills and Schedule for Future Actions	
Environmental Impacts from Spill	
Preliminary Root Cause	
Final Root Cause	

TABLE NOTE:

¹There were no discharges of one or more barrels of oil or any that reached a waterbody that occurred during the SAR7 reporting period or from reporting periods prior to SAR7.

Appendix 2 – Lakehead Leak Alarm Report [108,110,111]

Reporting Period: November 23, 2020 to May 22, 2021



Lakehead Leak Alarm Reports

- Summary of Alarms (SOA)
- Record of Alarms (ROA)
- Weekly List of Alarms (WLOA)
- Instrumentation Outage Report

Prepared by Pipeline Control

On June 3, 2021

For reporting period November 23, 2020 to May 22, 2021

Company Confidential

Purpose of the Document

The following sections present four (4) reports from section **VII.G. LEAK DETECTION AND CONTROL ROOM OPERATIONS** of the Consent Decree.

The first three reports are for subsection **VII.G.V. Leak Detection Requirements for Control Room** of the decree. They list production MBS Leak Detection System (MBS) and Rupture Detection System (RDS) alarms in the Lakehead System:

- 1. The summary of alarms ("SOA") lists the total number of Alarms per pipeline and states whether or not Enbridge complied with the 10-Minute Rule in responding to Alarms. With respect to each non-compliance, it provides a reference to the post incident report which states the reason for the non-compliance and identifies the corrective action, if any, taken to prevent a recurrence of the non-compliance.
- 2. The record of alarms ("ROA") documents Unscheduled Shutdowns due to Alarms. Each record indicates an instance when the pipeline was shutdown with critical facts relating to the Alarm.
- 3. The weekly list of alarms ("WLOA") include Alarms broken down by pipeline, the type of Alarm, the total number of Alarms for the reporting period, the date of the Alarm, the time at which it began, and the time when the Alarm was cleared.

The fourth report is for subsection **VII.G.IV. Leak Detection Requirements for Pipelines** within the Lakehead System of the decree. The report lists instances when the outage exceeded time periods set forth in paragraph VII.G.IV.97 of the decree.

- 4. The instrumentation outage report documents two of the three "Reason for Instrumentation Outage" listed in paragraph VII.G.IV.97 of the decree:
 - Instrumentation Failure
 - Scheduled Maintenance or repairs
 - Bypass ILI Tool is documented separately.

Timestamps in the reports are in 24-hour Mountain Standard Time format.

For specific detailed requirements of the reports, please to refer to the Consent Decree.

Terms of Reference

Terms of Reference Table: Special Terms and Reference from the Consent Decree

The following section define terms copied from the Consent Decree for convenience. Please refer to the Consent Decree in case of any discrepancies.

Consent Decree Reference	Term	Definition
IV.10.dd	Lakehead System	The portion of the Mainline System within the United States that is comprised of fourteen pipelines – Lines 1, 2B, 3, 4, 5, 6A, 6B, 10, 14, 61, 62, 64, 65, and 67 – and all New Lakehead Pipelines.
		Note: Line 6B has been renamed to Line 78. 6B and 78 are equivalent and the same pipeline.
IV.10.ii	Material Balance System or MBS Leak Detection System	The computational pipeline monitoring system used by Enbridge to detect leaks or ruptures in the Lakehead System.
IV.10.ggg	Shutdown	The operational period between (1) the initial cessation of pumping operations in a pipeline, or section of pipeline, through which oil has been actively flowing and (2) the point where the flow rate within the pipeline, or section of pipeline, is zero.
IV.10.iii	Startup	The operational period between (1) the commencement of pumping operations in a pipeline that had been previously shut down and (2) the point where oil in the pipeline achieves a Steady State.
VII.G.V.105	Alarm Response Team:	All Alarms shall be addressed by an Alarm Response Team, which shall be composed of the following individuals in the Control Room at the time that the Alarm occurs:
	CRO, LDA, STA	 the Control Room operator ("CRO") who is responsible for the pipeline that generates the alarm, the leak detection analyst ("LD Analyst"), and the senior technical advisor for that pipeline.

REDACTED SUBMITTAL -- PUBLIC COPY Terms of Reference Table: Special Terms referenced in these reports.

The following section define terms used by Enbridge for the purpose of these reports.

Consent Decree Reference	Term	Definition
VII.G.V.104	Alarm or Alarms	Alarm and Alarming Event are equivalent in these reports. An Alarming Event is an event with a single root cause but can generate one or more alarms. Enbridge documents alarms as events. In order to align with the information requested by the Consent Decree (such as root cause), Alarming Events are reported.
VII.G.V.108	Alarm Clearance	Alarm Clearance is the act of investigating whether an Alarm is truly a potential leak or a false alarm. The alarm clearance is a procedural act and not to be confused with the alarm status which is the binary state of in alarm state (ALM, often "1") or returned to normal (RTN, often "0").

I certify that for this reporting period, the information contained in the SOA, WLOA, and ROAs, is true and accurate, and

Enbridge has complied with the 10-Minute <u>Rule and other requirements of Subsection VII.G.(V)</u>.

 Vice President, Pipeline Control

 Image: Signature

Date

1. Summary of Alarms ("SOA")

The records in this report each contain data that are referenced by the Consent Decree. The terms are explained in the following table.

Data	Description
Pipeline	Name (number) of the pipeline
Total Alarms	Total number of alarming events for reporting period
Total Non-Compliance	 (Alarming) Number of times Enbridge did not comply with the 10-Minute Rule in responding to Alarms (Non-Alarming) Number of times Enbridge did not comply with the 10-Minute Rule in responding to potential leak or rupture from a source other than an Alarm
Reasons and Corrective Actions for each Non-Compliance	Reference to the Post Incident Report describing reason for the non-compliance and the corrective action, if any, taken to prevent a reoccurrence of the non- compliance. An empty reference indicates either zero non-compliance to the 10-minute rule or the Post Incident Report is not yet generated.

Table 1b: Summary of Alarms (Reporting Period: November 23, 2020 to May 22, 2021)

Pipeline	Total Alarms	Total Non-Compliance (Alarming)	Total Non-Compliance (Non-Alarming)	Reasons and Corrective Actions for each Non-Compliance
00	0	0	0	
01	7	0	0	
02	9	0	0	
03	8	0	0	
04	3	0	0	
05	5	0	0	
06A	8	0	0	
10	3	0	0	
14	11	0	0	
61	4	0	0	
62	0	0	0	

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Pipeline	Total Alarms	Total Non-Compliance (Alarming)	Total Non-Compliance (Non-Alarming)	Reasons and Corrective Actions for each Non-Compliance
64	0	0	0	
65	0	0	0	
67	2	0	0	
78	6	0	0	

2. Record of Alarm ("ROA")

The records in this report each contain data that are referenced by the Consent Decree. The terms are explained in the following table.

Table 2a:	Description	of fields in	this Report
-----------	-------------	--------------	-------------

Data	Description
Pipeline	Name (number) of the pipeline.
Alarming Event Start Time	Start of the Alarming Event that caused the alarm(s) to trigger. It is always the receipt time of the earliest alarm in an Alarming Event.
Alarm Received Time	Time that the alarm was received for each individual alarm within the Alarming Event. Each alarm is simultaneously received by all members of the alarm response team.
Alarm Assessed Time	Time that the alarm was assessed for each individual alarm within the Alarming Event. Each alarm is assessed by each independent member of the alarm response team; an alarm is considered assessed when all members of the alarm response team has assessed.
Root Cause	Cause and classification of the Alarm. An empty field indicates the root cause has not yet been documented.
CRO and STA Actions	Procedures executed by the control room operator (OP) and the senior technical advisor (STA) which define the positions (i.e. role) of the Alarm Recipients, the actions (or inactions) of the Alarm Response Team, and each fact considered in determining the cause of the Alarm. An empty field indicates the actions or procedures have not yet been documented.

LDA Actions	Procedures executed by the leak detection analyst (LDA) which define the positions (i.e. role) of the Alarm Recipients, the actions (or inactions) of the Alarm Response Team, and each fact considered in determining the cause of the Alarm. An empty field indicates the actions or procedures have not yet been documented.
Shutdown Commenced	Time the Unscheduled Shutdown commenced. An empty time indicates the Shutdown Commenced has not yet been documented.
Shutdown Completed	Time the Unscheduled Shutdown completed. An empty time indicates the Shutdown Completed has not yet been documented.
Justification for Resumption	Justification for resumption of pumping operations. An empty field indicates the Justification for Resumption has not yet been documented.
Startup Commenced	Time that pumping operations resumed. An empty time indicates the Startup Commenced has not yet been documented.
Were Procedures Followed	Certification of compliance with 10-Minute Rule. An empty field indicates the certification of compliance has not yet been documented.
Post Incident Report	Reference of Post-Incident Report if not in compliance with the 10-Minute Rule. An empty reference indicates the Post Incident Report is not needed or has not yet been documented.

Table 2b: Record of Alarm

Pipeline	01
Alarming Event Start Time	2021-02-06 07:58:12
MBS Alarm Received Time MBS Alarm Assessed Time	2021-02-06 07:58:13 2021-02-06 08:07:30
MBS Alarm Received Time	2021-02-06 07:58:13
MBS Alarm Assessed Time	2021-02-06 08:07:26
Root Cause	Instrument Error
CRO and STA Actions	LDAM - Leak Detection System (LDS) Alarm - Non-Flowing Pipeline
LDA Actions	LD - MBS - Leak Alarm
Shutdown Commenced	Not Applicable - pipeline was already Shutdown and Sectionalized
Shutdown Completed	Not Applicable - pipeline was already Shutdown and Sectionalized
Justification for Resumption	CCO investigation identified no leak triggers - Regional and CCO admin approvals granted
Startup Commenced	2021-02-06 11:02:00
Were Procedures Followed	Yes
Post Incident Report	

REDACTED SUBMITTAL PUBLIC COPY		
Pipeline		
Alarming Event Start Time	2021-03-09 02:32:16	
MBS Alarm Received Time	2021-03-09 02:32:17	
MBS Alarm Assessed Time	2021-03-09 02:39:38	
MBS Alarm Received Time	2021-03-09 02:36:17	
MBS Alarm Assessed Time	2021-03-09 02:39:40	
MBS Alarm Received Time	2021-03-09 02:37:47	
MBS Alarm Assessed Time	2021-03-09 02:39:43	
Root Cause	Column Separation	
CRO and STA Actions	LDAM - Leak Detection System (LDS) Alarm - Flowing Pipeline	
LDA Actions	LD - MBS - Leak Alarm	
Shutdown Commenced	*Each alarm was assessed individually to rule out the possibility of a leak within 10 minutes of the alarm in the event. Shutdown was commenced immediately, not to exceed 60 seconds upon completion of the 10-minute timer. This is in accordance with the Ten-Minute Rule as explained to the ITP on Sept 2017 and Jan 2018.	
Shutdown Completed	2021-03-09 02:53:16	
Justification for Resumption	Static Pressure Monitoring of System over 60 minutes and CCO investigation	
	identified no additional leak triggers. Regional and CCO Admin approvals granted	
	Visual inspection performed by field staff - Regional and CCO Admin approvals granted	
Startup Commenced	2021-03-09 09:32:00	
Were Procedures Followed	Yes	
Post Incident Report		

Pipeline	02	
Alarming Event Start Time	2021-01-12 09:03:15	
MBS Alarm Received Time MBS Alarm Assessed Time	2021-01-12 09:03:17 2021-01-12 09:08:13	
Root Cause	Transient Condition	
CRO and STA Actions	LDAM - Leak Detection Sys	tem (LDS) Alarm - Flowing Pipeline
LDA Actions	LD - MBS - Leak Alarm	
Shutdown Commenced	2021-01-12 08:51:11**	**The line was in the process of shutting down when the alarm was generated. The 'Shutdown Commenced' is the time when the shutdown was initiated.
Shutdown Completed	2021-01-12 09:25:06	
Justification for Resumption	Aerial Patrol Performed - Re	egional and CCO admin approvals granted
Startup Commenced	2021-01-12 13:00:00	
Were Procedures Followed	Yes	
Post Incident Report		

REDACTED SUBMITTAL PUBLIC COPY		
Pipeline		
Alarming Event Start Time	2021-04-15 10:34:44	
MBS Alarm Received Time	2021-04-15 10:34:45	
MBS Alarm Assessed Time	2021-04-15 10:44:35	
MBS Alarm Received Time	2021-04-15 10:36:16	
MBS Alarm Assessed Time	2021-04-15 10:53:50	
MBS Alarm Received Time	2021-04-15 10:40:45	
MBS Alarm Assessed Time	2021-04-15 10:53:47	
Root Cause	Transient Condition	
CRO and STA Actions	LDAM - Leak Detection System (LDS) Alarm - Flowing Pipeline	
LDA Actions	LD - MBS - Leak Alarm	
Shutdown Commenced	2021-04-15 10:39:15	
Shutdown Completed	2021-04-15 11:10:29	
Justification for Resumption	CCO investigation identified no leak triggers - Regional and CCO admin approvals granted	
Startup Commenced	2021-04-15 15:33:37	
Were Procedures Followed	Yes	
Post Incident Report		

Pipeline	05
Alarming Event Start Time	2021-02-03 10:02:28
MBS Alarm Received Time MBS Alarm Assessed Time	2021-02-03 10:02:29 2021-02-03 10:32:04
MBS Alarm Received Time	2021-02-03 10:03:59
MBS Alarm Assessed Time	2021-02-03 10:32:06
Root Cause	Instrument Error
CRO and STA Actions	LDAM - Leak Detection System (LDS) Alarm - Flowing Pipeline
LDA Actions	LD - MBS - Leak Alarm
Shutdown Commenced	2021-02-03 10:12:36* *Each alarm was assessed individually to rule out the possibility of a leak within 10 minutes of the alarm in the event. Shutdown was commenced immediately, not to exceed 60 seconds upon completion of the 10-minute timer. This is in accordance with the Ten-Minute Rule as explained to the ITP on Sept 2017 and Jan 2018.
Shutdown Completed	2021-02-03 10:26:52
Justification for Resumption	After shutdown, alarm deemed invalid following LDA investigation and CCO investigation identified no leak triggers
Startup Commenced	2021-02-03 18:36:54
Were Procedures Followed	Yes
Post Incident Report	

REDACTED SUBMITTAL PUBLIC COPY		
Pipeline		
Alarming Event Start Time	2021-03-02 13:48:55	
RDS Alarm Received Time RDS Alarm Assessed Time	2021-03-02 13:48:56 2021-03-02 16:33:48	
Root Cause	SCADA Data Failure	
CRO and STA Actions	Rupture Detection Alarm - Pipeline	
LDA Actions		
Shutdown Commenced	2021-03-02 13:55:13	
Shutdown Completed	2021-03-02 14:09:28	
Justification for Resumption	Visual inspection performed by field staff - Regional and CCO Admin approvals granted	
Startup Commenced	2021-03-02 19:45:49	
Were Procedures Followed	Yes	
Post Incident Report		

Pipeline	05
Alarming Event Start Time	2021-05-11 09:47:48
MBS Alarm Received Time	2021-05-11 09:47:49
MBS Alarm Assessed Time	2021-05-11 10:28:09
MBS Alarm Received Time	2021-05-11 09:47:49
MBS Alarm Assessed Time	2021-05-11 10:28:07
MBS Alarm Received Time	2021-05-11 09:47:49
MBS Alarm Assessed Time	2021-05-11 10:28:06
Root Cause	LDS Error
CRO and STA Actions	LDAM - Leak Detection System (LDS) Alarm - Flowing Pipeline
LDA Actions	LD - MBS - Leak Alarm
Shutdown Commenced	2021-05-11 09:47:50
Shutdown Completed	2021-05-11 10:06:52
Justification for Resumption	CCO investigation identified no leak triggers - Regional and CCO admin approvals granted
Startup Commenced	2021-05-11 12:00:00
Were Procedures Followed	Yes
Post Incident Report	

REDACTED SUBMITTAL PUBLIC COPY				
Pipeline	06A			
Alarming Event Start Time	2021-03-02 13:51:45			
RDS Alarm Received Time RDS Alarm Assessed Time	2021-03-02 13:51:46 2021-03-02 16:33:56			
Root Cause	SCADA Data Failure			
CRO and STA Actions	Rupture Detection Alarm - Pipeline			
LDA Actions				
Shutdown Commenced	2021-03-02 13:55:18			
Shutdown Completed	2021-03-02 14:10:42			
Justification for Resumption	Visual inspection performed by field staff - Regional and CCO Admin approvals granted			
Startup Commenced	2021-03-02 20:24:31			
Were Procedures Followed	Yes			
Post Incident Report				

Pipeline	06A			
Alarming Event Start Time	2021-05-17 05:36:08			
MBS Alarm Received Time MBS Alarm Assessed Time	2021-05-17 05:36:08 2021-05-17 05:39:00			
Root Cause	Transient Condition			
CRO and STA Actions	LDAM - Leak Detection System (LDS) Alarm - Flowing Pipeline			
LDA Actions	LD - MBS - Leak Alarm			
Shutdown Commenced	2021-05-17 05:38:41 [^] ^Assessed as flow-based rupture event			
Shutdown Completed	2021-05-17 05:45:00			
Justification for Resumption	CCO investigation identified no leak triggers - Regional and CCO admin approvals granted			
Startup Commenced	2021-05-17 08:26:00			
Were Procedures Followed	Yes			
Post Incident Report				

REDACTED SUBMITTAL PUBLIC COPY				
Pipeline				
Alarming Event Start Time	2020-12-10 22:02:59			
MBS Alarm Received Time MBS Alarm Assessed Time	2020-12-10 22:03:00 2020-12-10 22:22:47			
Root Cause	LDS Error			
CRO and STA Actions	LDAM - Leak Detection System (LDS) Alarm - Non-Flowing Pipeline			
LDA Actions	LD - MBS - Leak Alarm			
Shutdown Commenced	Not Applicable - pipeline was already Shutdown and Sectionalized			
Shutdown Completed	Not Applicable - pipeline was already Shutdown and Sectionalized			
Justification for Resumption	After shutdown, alarm deemed invalid following LDA investigation and CCO investigation identified no leak triggers			
Startup Commenced	2020-12-10 22:42:42			
Were Procedures Followed	Yes			
Post Incident Report				

Pipeline	14
Alarming Event Start Time	2021-03-02 13:51:28
RDS Alarm Received Time RDS Alarm Assessed Time	2021-03-02 13:51:29 2021-03-02 16:33:54
Root Cause	SCADA Data Failure
CRO and STA Actions	Rupture Detection Alarm - Pipeline
LDA Actions	
Shutdown Commenced	2021-03-02 13:49:45
Shutdown Completed	2021-03-02 14:02:00
Justification for Resumption	CCO investigation identified no leak triggers - Regional and CCO admin approvals granted
Startup Commenced	2021-03-02 21:00:25
Were Procedures Followed	Yes
Post Incident Report	

REDACTED SUBMITTAL PUBLIC COPY				
Pipeline				
Alarming Event Start Time	2021-03-02 20:18:52			
MBS Alarm Received Time MBS Alarm Assessed Time	2021-03-02 20:18:52 2021-03-02 20:23:05			
Root Cause	Column Separation			
CRO and STA Actions	LDAM - Leak Detection System (LDS) Alarm - Non-Flowing Pipeline			
LDA Actions	LD - MBS - Leak Alarm			
Shutdown Commenced	Not Applicable - pipeline was already Shutdown and Sectionalized			
Shutdown Completed	Not Applicable - pipeline was already Shutdown and Sectionalized			
Justification for Resumption	After shutdown, alarm deemed valid following LDA investigation. Column separation investigated by CCO with no unexplained leak triggers			
Startup Commenced	2021-03-02 21:10:11			
Were Procedures Followed	Yes			
Post Incident Report				

REDACTED SUBMITTAL PUBLIC COPY					
Pipeline	61				
Alarming Event Start Time	2021-02-23 06:00:27				
MBS Alarm Received Time	2021-02-23 06:00:27				
MBS Alarm Assessed Time	2021-02-23 06:04:19				
MBS Alarm Received Time	2021-02-23 06:00:27				
MBS Alarm Assessed Time	2021-02-23 06:04:17				
MBS Alarm Received Time	2021-02-23 06:06:28				
MBS Alarm Assessed Time	2021-02-23 06:09:04				
MBS Alarm Received Time	2021-02-23 08:04:34				
MBS Alarm Assessed Time	2021-02-23 08:07:27				
MBS Alarm Received Time	2021-02-23 08:13:04				
MBS Alarm Assessed Time	2021-02-23 08:15:39				
Root Cause	Column Separation				
CRO and STA Actions	LDAM - Leak Detection System (LDS) Alarm - Non-Flowing Pipeline				
LDA Actions	LD - MBS - Leak Alarm				
Shutdown Commenced	Not Applicable - pipeline was already Shutdown and Sectionalized				
Shutdown Completed	Not Applicable - pipeline was already Shutdown and Sectionalized				
Justification for Resumption	After shutdown, alarm deemed valid following LDA investigation. Column separation investigated by CCO with no unexplained leak triggers				
Startup Commenced	2021-02-23 11:00:00				
Were Procedures Followed	Yes				
Post Incident Report					

REDACTED SUBMITTAL PUBLIC COPY				
Pipeline	61			
Alarming Event Start Time	2021-03-02 13:50:43			
RDS Alarm Received Time RDS Alarm Assessed Time	2021-03-02 13:50:43 2021-03-02 16:33:52			
Root Cause	SCADA Data Failure			
CRO and STA Actions	Rupture Detection Alarm - Pipeline			
LDA Actions				
Shutdown Commenced	2021-03-02 13:55:11			
Shutdown Completed	2021-03-02 14:09:32			
Justification for Resumption	CCO investigation identified no leak triggers - Regional and CCO admin approvals granted			
Startup Commenced	2021-03-02 19:07:29			
Were Procedures Followed	Yes			
Post Incident Report				

Pipeline	67
Alarming Event Start Time	2020-12-05 17:03:46
MBS Alarm Received Time MBS Alarm Assessed Time	2020-12-05 17:03:47 2020-12-05 17:07:34
Root Cause	Instrument Error
CRO and STA Actions	LDAM - Leak Detection System (LDS) Alarm - Non-Flowing Pipeline
LDA Actions	LD - MBS - Leak Alarm
Shutdown Commenced	Not Applicable - pipeline was already Shutdown and Sectionalized
Shutdown Completed	Not Applicable - pipeline was already Shutdown and Sectionalized
Justification for Resumption	After shutdown, alarm deemed valid following LDA investigation. Column separation investigated by CCO with no unexplained leak triggers
Startup Commenced	2020-12-05 18:01:00
Were Procedures Followed	Yes
Post Incident Report	

3. Weekly List of Alarms ("WLOA")

The records in this report each contain data that are referenced by the Consent Decree. The terms are explained in the following table.

Data	Description			
Week	ISO 8601 week date label to identify the week in the "weekly" list of alarms.			
Pipeline	Name (number) of the pipeline.			
Туре	 Type of alarm (AVB, MBS or RDS): AVB are 24-hour MBS alarms MBS are 5-minute, 20-minute, or 2-hour MBS alarms RDS are Rupture Detection System alarms 			
Alarming Event Start Time	Start of the Alarming Event that caused the alarm(s) to trigger. It is always the receipt time of the earliest alarm in an Alarming Event.			
Alarm Received Time	Time that the alarm was received for each individual alarm within the Alarming Event. Each alarm is simultaneously received by all members of the alarm response team.			
Alarm Assessed Time	Time that the alarm was assessed for each individual alarm within the Alarming Event. Each alarm is assessed by each independent member of the alarm response team; an alarm is considered assessed when all members of the alarm response team has assessed.			
Alarm Cleared Time	The date and time when the Alarm was cleared. An empty time indicates the Alarm has not yet been cleared as of the printing of this report.			
Shutdown Required	Indication of whether this Alarm resulted in a shutdown.			

2020 Week 48: 1 Alarming Event in total

Pipeline	Alarming Event Start Time	Туре	Alarm Received Time	Alarm Assessed Time	Alarm Cleared Time	Shutdown Required
78	2020-11-24 21:37:46	MBS	2020-11-24 21:37:46	2020-11-24 21:42:23	2020-11-24 21:42:23	No
		MBS	2020-11-24 21:37:46	2020-11-24 21:42:25	2020-11-24 21:42:25	

2020 Week 49: 2 Alarming Events in total

Pipeline	Alarming Event Start Time	Туре	Alarm Received Time	Alarm Assessed Time	Alarm Cleared Time	Shutdown Required
67	2020-12-05 17:03:46	MBS	2020-12-05 17:03:47	2020-12-05 17:07:34	2020-12-05 17:32:28	Yes
67	2020-12-05 18:35:46	MBS	2020-12-05 18:35:46	2020-12-05 18:38:45	2020-12-05 18:38:45	No

2020 Week 50: 3 Alarming Events in total

Pipeline	Alarming Event Start Time	Туре	Alarm Received Time	Alarm Assessed Time	Alarm Cleared Time	Shutdown Required
14	2020-12-10 22:02:59	MBS	2020-12-10 22:03:00	2020-12-10 22:22:47	2020-12-10 22:42:09	Yes
14	2020-12-10 22:48:01	MBS	2020-12-10 22:48:01	2020-12-10 22:53:32	2020-12-10 22:53:32	No
61	2020-12-12 00:21:19	MBS	2020-12-12 00:21:20	2020-12-12 00:24:32	2020-12-12 00:24:32	No

2020 Week 51: 2 Alarming Events in total

Pipeline	Alarming Event Start Time	Туре	Alarm Received Time	Alarm Assessed Time	Alarm Cleared Time	Shutdown Required
04	2020-12-15 11:05:54	MBS	2020-12-15 11:05:55	2020-12-15 11:11:45	2020-12-15 11:11:45	No
		IVIDO	2020-12-15 11.00.55	2020-12-15 11.11.46	2020-12-15 11.11.46	
14	2020-12-14 08:58:27	MBS	2020-12-14 08:58:27	2020-12-14 09:02:24	2020-12-14 09:02:24	No

2020 Week 53: 1 Alarming Event in total

Pipeline	Alarming Event Start Time	Туре	Alarm Received Time	Alarm Assessed Time	Alarm Cleared Time	Shutdown Required
14	2020-12-31 22:26:28	MBS	2020-12-31 22:26:28	2020-12-31 22:31:21	2020-12-31 22:31:21	No
2021 Week 01: 2 Alarming Events in total

Pipeline	Alarming Event Start Time	Туре	Alarm Received Time	Alarm Assessed Time	Alarm Cleared Time	Shutdown Required
05	2021-01-08 09:09:29	MBS	2021-01-08 09:09:29	2021-01-08 09:14:12	2021-01-08 09:14:12	No
10	2021-01-05 22:50:33	MBS	2021-01-05 22:50:33	2021-01-05 22:51:41	2021-01-05 22:51:41	No

2021 Week 02: 4 Alarming Events in total

Pipeline	Alarming Event Start Time	Туре	Alarm Received Time	Alarm Assessed Time	Alarm Cleared Time	Shutdown Required
01	2021-01-16 19:50:40	MBS	2021-01-16 19:50:41	2021-01-16 19:55:50	2021-01-16 19:55:50	No
		MBS	2021-01-16 19:52:41	2021-01-16 19:55:52	2021-01-16 19:55:52	
		MBS	2021-01-16 19:53:11	2021-01-16 19:55:55	2021-01-16 19:55:55	
01	2021-01-16 20:52:13	MBS	2021-01-16 20:52:13	2021-01-16 20:57:19	2021-01-16 20:57:19	No
02	2021-01-12 09:03:15	MBS	2021-01-12 09:03:17	2021-01-12 09:08:13	2021-01-12 12:14:00	Yes
14	2021-01-16 02:00:43	MBS	2021-01-16 02:00:43	2021-01-16 02:06:12	2021-01-16 02:06:12	No
		MBS	2021-01-16 02:01:43	2021-01-16 02:06:07	2021-01-16 02:06:07	

2021 Week 03: 3 Alarming Events in total

Pipeline	Alarming Event Start Time	Туре	Alarm Received Time	Alarm Assessed Time	Alarm Cleared Time	Shutdown Required
03	2021-01-23 04:03:30	MBS	2021-01-23 04:03:31	2021-01-23 04:07:51	2021-01-23 04:07:51	No
14	2021-01-23 04:06:20	MBS	2021-01-23 04:06:21	2021-01-23 04:12:01	2021-01-23 04:12:01	No
78	2021-01-24 19:54:13	MBS	2021-01-24 19:54:13	2021-01-24 19:59:56	2021-01-24 19:59:56	No

2021 Week 04: 3 Alarming Events in total

Pipeline	Alarming Event Start Time	Туре	Alarm Received Time	Alarm Assessed Time	Alarm Cleared Time	Shutdown Required
06A	2021-01-28 07:54:42	MBS	2021-01-28 07:54:43	2021-01-28 07:58:46	2021-01-28 07:58:46	No
		MBS	2021-01-28 07:55:12	2021-01-28 07:58:43	2021-01-28 07:58:43	
		MBS	2021-01-28 07:59:13	2021-01-28 08:00:09	2021-01-28 08:00:09	
		MBS	2021-01-28 08:02:13	2021-01-28 08:08:20	2021-01-28 08:08:20	
		MBS	2021-01-28 08:04:13	2021-01-28 08:08:22	2021-01-28 08:08:22	
		MBS	2021-01-28 08:06:43	2021-01-28 08:08:24	2021-01-28 08:08:24	
06A	2021-01-28 13:46:52	MBS	2021-01-28 13:46:53	2021-01-28 13:55:07	2021-01-28 13:55:07	No
		MBS	2021-01-28 13:46:53	2021-01-28 13:55:05	2021-01-28 13:55:05	
78	2021-01-26 17:05:03	MBS	2021-01-26 17:05:03	2021-01-26 17:12:08	2021-01-26 17:12:08	No
		MBS	2021-01-26 17:07:35	2021-01-26 17:12:10	2021-01-26 17:12:10	

2021 Week 05: 7 Alarming Events in total

Pipeline	Alarming Event Start Time	Туре	Alarm Received Time	Alarm Assessed Time	Alarm Cleared Time	Shutdown Required
01	2021-02-06 06:58:13	MBS	2021-02-06 06:58:13	2021-02-06 07:06:08	2021-02-06 07:06:08	No
		MBS	2021-02-06 06:58:13	2021-02-06 07:06:13	2021-02-06 07:06:13	
01	2021-02-06 07:58:12	MBS	2021-02-06 07:58:13	2021-02-06 08:07:30	2021-02-06 10:00:00	Yes
		MBS	2021-02-06 07:58:13	2021-02-06 08:07:26	2021-02-06 10:00:00	
01	2021-02-06 12:38:24	MBS	2021-02-06 12:38:24	2021-02-06 12:45:19	2021-02-06 12:45:19	No
04	2021-02-04 09:01:22	MBS	2021-02-04 09:01:23	2021-02-04 09:07:05	2021-02-04 09:07:05	No
		MBS	2021-02-04 09:01:54	2021-02-04 09:07:00	2021-02-04 09:07:00	
05	2021-02-03 10:02:28	MBS	2021-02-03 10:02:29	2021-02-03 10:32:04	2021-02-03 10:44:20	Yes
		MBS	2021-02-03 10:03:59	2021-02-03 10:32:06	2021-02-03 10:44:20	
06A	2021-02-04 10:48:46	MBS	2021-02-04 10:48:47	2021-02-04 10:57:03	2021-02-04 10:57:03	No
		MBS	2021-02-04 10:49:47	2021-02-04 10:57:05	2021-02-04 10:57:05	
78	2021-02-06 19:33:03	MBS	2021-02-06 19:33:04	2021-02-06 19:37:11	2021-02-06 19:37:11	No

2021 Week 06: 1 Alarming Event in total

Pipeline	Alarming Event Start Time	Туре	Alarm Received Time	Alarm Assessed Time	Alarm Cleared Time	Shutdown Required
02	2021-02-08 09:06:43	MBS	2021-02-08 09:06:45	2021-02-08 09:10:07	2021-02-08 09:10:07	No

2021 Week 08: 5 Alarming Events in total

Pipeline	Alarming Event Start Time	Туре	Alarm Received Time	Alarm Assessed Time	Alarm Cleared Time	Shutdown Required
02	2021-02-25 10:30:26	MBS	2021-02-25 10:30:27	2021-02-25 10:40:00	2021-02-25 10:40:00	No
02	2021-02-25 23:23:03	MBS	2021-02-25 23:23:04	2021-02-25 23:31:08	2021-02-25 23:31:08	No
04	2021-02-25 08:41:36	MBS	2021-02-25 08:41:37	2021-02-25 08:46:33	2021-02-25 08:46:33	No
61	2021-02-23 06:00:27	MBS	2021-02-23 06:00:27	2021-02-23 06:04:19	2021-02-23 06:18:52	Yes
		MBS	2021-02-23 06:00:27	2021-02-23 06:04:17	2021-02-23 06:18:52	
		MBS	2021-02-23 06:06:28	2021-02-23 06:09:04	2021-02-23 06:18:52	
		MBS	2021-02-23 08:04:34	2021-02-23 08:07:27	2021-02-23 06:18:52	
		MBS	2021-02-23 08:13:04	2021-02-23 08:15:39	2021-02-23 06:18:52	
78	2021-02-25 12:38:58	MBS	2021-02-25 12:38:59	2021-02-25 12:48:31	2021-02-25 12:48:31	No

2021 Week 09: 8 Alarming Events in total

Pipeline	Alarming Event Start Time	Туре	Alarm Received Time	Alarm Assessed Time	Alarm Cleared Time	Shutdown Required
03	2021-03-01 04:44:29	MBS	2021-03-01 04:44:29	2021-03-01 04:49:37	2021-03-01 04:49:37	No
05	2021-03-02 13:48:55	RDS	2021-03-02 13:48:56	2021-03-02 16:33:48	2021-03-02 18:07:45	Yes
06A	2021-03-02 13:51:45	RDS	2021-03-02 13:51:46	2021-03-02 16:33:56	2021-03-02 18:07:26	Yes
06A	2021-03-02 20:34:33	MBS	2021-03-02 20:34:34	2021-03-02 20:41:33	2021-03-02 20:41:33	No
		MBS	2021-03-02 20:35:03	2021-03-02 20:41:35	2021-03-02 20:41:35	
		MBS	2021-03-02 20:35:03	2021-03-02 20:41:36	2021-03-02 20:41:36	
		MBS	2021-03-02 20:37:03	2021-03-02 20:41:37	2021-03-02 20:41:37	
		MBS	2021-03-02 20:42:33	2021-03-02 20:47:36	2021-03-02 20:47:36	
14	2021-03-02 13:51:28	RDS	2021-03-02 13:51:29	2021-03-02 16:33:54	2021-03-02 20:50:08	Yes
14	2021-03-02 20:18:52	MBS	2021-03-02 20:18:52	2021-03-02 20:23:05	2021-03-02 20:53:49	Yes
14	2021-03-02 22:11:57	MBS	2021-03-02 22:11:58	2021-03-02 22:17:09	2021-03-02 22:17:09	No
		MBS	2021-03-02 22:11:58	2021-03-02 22:17:06	2021-03-02 22:17:06	
61	2021-03-02 13:50:43	RDS	2021-03-02 13:50:43	2021-03-02 16:33:52	2021-03-02 18:07:44	Yes

2021 Week 10: 2 Alarming Events in total

Pipeline	Alarming Event Start Time	Туре	Alarm Received Time	Alarm Assessed Time	Alarm Cleared Time	Shutdown Required
01	2021-03-09 02:32:16	MBS	2021-03-09 02:32:17	2021-03-09 02:39:38	2021-03-09 07:35:33	Yes
		MBS	2021-03-09 02:36:17	2021-03-09 02:39:40	2021-03-09 07:35:33	
		MBS	2021-03-09 02:37:47	2021-03-09 02:39:43	2021-03-09 07:35:33	
06A	2021-03-11 14:44:13	MBS	2021-03-11 14:44:14	2021-03-11 14:53:45	2021-03-11 14:53:45	No
		MBS	2021-03-11 14:44:44	2021-03-11 14:53:57	2021-03-11 14:53:57	
		MBS	2021-03-11 14:48:14	2021-03-11 14:55:38	2021-03-11 14:55:38	

2021 Week 11: 1 Alarming Event in total

Pipeline	Alarming Event Start Time	Туре	Alarm Received Time	Alarm Assessed Time	Alarm Cleared Time	Shutdown Required
14	2021-03-19 07:11:20	MBS	2021-03-19 07:11:21	2021-03-19 07:16:38	2021-03-19 07:16:38	No

2021 Week 12: 5 Alarming Events in total

Pipeline	Alarming Event Start Time	Туре	Alarm Received Time	Alarm Assessed Time	Alarm Cleared Time	Shutdown Required
02	2021-03-28 22:51:39	MBS	2021-03-28 22:51:39	2021-03-28 22:59:12	2021-03-28 22:59:12	No
03	2021-03-23 14:55:55	MBS	2021-03-23 14:55:56	2021-03-23 15:01:42	2021-03-23 15:01:42	No
		MBS	2021-03-23 14:57:56	2021-03-23 15:01:39	2021-03-23 15:01:39	
03	2021-03-25 07:28:41	MBS	2021-03-25 07:28:42	2021-03-25 07:32:39	2021-03-25 07:32:39	No
		MBS	2021-03-25 07:28:42	2021-03-25 07:32:36	2021-03-25 07:32:36	
03	2021-03-27 22:16:01	MBS	2021-03-27 22:16:02	2021-03-27 22:18:25	2021-03-27 22:18:25	No
03	2021-03-28 14:32:00	MBS	2021-03-28 14:32:01	2021-03-28 14:38:57	2021-03-28 14:38:57	No

2021 Week 13: 2 Alarming Events in total

Pipeline	Alarming Event Start Time	Туре	Alarm Received Time	Alarm Assessed Time	Alarm Cleared Time	Shutdown Required
02	2021-03-31 11:57:53	MBS	2021-03-31 11:57:53	2021-03-31 12:03:21	2021-03-31 12:03:21	No
05	2021-03-31 07:01:32	AVB AVB	2021-03-31 07:01:33 2021-03-31 07:01:33	2021-03-31 07:05:09 2021-03-31 07:05:14	2021-03-31 07:05:09 2021-03-31 07:05:14	No

2021 Week 15: 6 Alarming Events in total

Pipeline	Alarming Event Start Time	Туре	Alarm Received Time	Alarm Assessed Time	Alarm Cleared Time	Shutdown Required
01	2021-04-14 09:05:04	MBS	2021-04-14 09:05:04	2021-04-14 09:11:38	2021-04-14 09:11:38	No
		MBS	2021-04-14 09:09:04	2021-04-14 09:12:29	2021-04-14 09:12:29	
		MBS	2021-04-14 09:11:35	2021-04-14 09:13:44	2021-04-14 09:13:44	
02	2021-04-15 10:34:44	MBS	2021-04-15 10:34:45	2021-04-15 10:44:35	2021-04-15 13:40:00	Yes
		MBS	2021-04-15 10:36:16	2021-04-15 10:53:50	2021-04-15 13:40:00	
		MBS	2021-04-15 10:40:45	2021-04-15 10:53:47	2021-04-15 13:40:00	
02	2021-04-15 15:45:24	MBS	2021-04-15 15:45:25	2021-04-15 15:48:57	2021-04-15 15:48:57	No
		MBS	2021-04-15 15:45:55	2021-04-15 15:48:59	2021-04-15 15:48:59	
03	2021-04-18 06:50:57	MBS	2021-04-18 06:50:57	2021-04-18 06:57:41	2021-04-18 06:57:41	No
		MBS	2021-04-18 06:51:26	2021-04-18 06:57:44	2021-04-18 06:57:44	
		MBS	2021-04-18 06:52:26	2021-04-18 06:57:46	2021-04-18 06:57:46	
14	2021-04-15 14:01:48	AVB	2021-04-15 14:01:49	2021-04-15 14:08:05	2021-04-15 14:08:05	No
61	2021-04-14 12:54:31	MBS	2021-04-14 12:54:32	2021-04-14 12:57:24	2021-04-14 12:57:24	No

2021 Week 16: 2 Alarming Events in total

Pipeline	Alarming Event Start Time	Туре	Alarm Received Time	Alarm Assessed Time	Alarm Cleared Time	Shutdown Required
06A	2021-04-20 14:39:52	MBS	2021-04-20 14:39:53	2021-04-20 14:48:18	2021-04-20 14:48:18	No
78	2021-04-21 10:37:18	MBS	2021-04-21 10:37:18	2021-04-21 10:42:40	2021-04-21 10:42:40	No

2021 Week 17: 2 Alarming Events in total

Pipeline	Alarming Event Start Time	Туре	Alarm Received Time	Alarm Assessed Time	Alarm Cleared Time	Shutdown Required
02	2021-04-28 05:09:02	MBS	2021-04-28 05:09:02	2021-04-28 05:11:53	2021-04-28 05:11:53	No
10	2021-04-28 07:46:30	MBS	2021-04-28 07:46:30	2021-04-28 07:49:58	2021-04-28 07:49:58	No

2021 Week 19: 3 Alarming Events in total

Pipeline	Alarming Event Start Time	Туре	Alarm Received Time	Alarm Assessed Time	Alarm Cleared Time	Shutdown Required
03	2021-05-12 11:43:04	MBS	2021-05-12 11:43:05	2021-05-12 11:48:18	2021-05-12 11:48:18	No
		MBS	2021-05-12 11:43:05	2021-05-12 11:48:16	2021-05-12 11:48:16	
05	2021-05-11 09:47:48	MBS	2021-05-11 09:47:49	2021-05-11 10:28:09	2021-05-11 11:01:12	Yes
		MBS	2021-05-11 09:47:49	2021-05-11 10:28:07	2021-05-11 11:01:12	
		MBS	2021-05-11 09:47:49	2021-05-11 10:28:06	2021-05-11 11:01:12	
10	2021-05-16 02:50:20	MBS	2021-05-16 02:50:21	2021-05-16 02:59:30	2021-05-16 02:59:30	No
		MBS	2021-05-16 02:50:51	2021-05-16 02:59:33	2021-05-16 02:59:33	

2021 Week 20: 1 Alarming Event in total

Pipeline	Alarming Event Start Time	Туре	Alarm Received Time	Alarm Assessed Time	Alarm Cleared Time	Shutdown Required
06A	2021-05-17 05:36:08	MBS	2021-05-17 05:36:08	2021-05-17 05:39:00	2021-05-17 07:57:00	Yes

4. Instrumentation Outage Report

The records in this report each contain data that are referenced by the Consent Decree. The terms are explained in the following table.

Data	Description
Pipeline	Name (number) of the pipeline on which the instrument is located
Station	Location of the instrument
Outage Start	Date and time when the instrumentation outage began
Outage End	Date and time when the instrumentation outage was resolved
Root Cause	Reason for instrumentation outage (root cause analysis performed by the Leak Detection Analyst)

The records report instances when the outage exceeds time periods set forth in section VII.G.IV.97 of the decree.

Note Enbridge uses root cause descriptions to categorize the outage. The root cause has a finer granularity than the "Reason for Instrumentation Outage" listed in section VII.G.IV.97 of the decree, but is equivalent. The following table maps the fixed set of root causes that result in the "Reason for Instrumentation Outage" listed in section VII.G.IV.97 of the decree as well as their corresponding fixed set of actions to resolve each outage type.

Table 4b: Description of reasons for outage and actions taken to resolve it

Reason for Instrumentation Outage	Time Limit to Restore	Root Cause	Actions Taken to Resolve the Outage
Instrumentation Failure	10 days	Instrumentation Error	Fixed the Instrument
Instrumentation Failure	10 days	Communication Interruption	Restored Communications
Instrumentation Failure	10 days	Power Outage	Restored Power
Scheduled Maintenance or Repairs	4 days	Field Maintenance	Finished the Maintenance

Table 4c: Instrumentation Outage Report

Pipeline	Station	Outage Start	Outage End	Root Cause
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Appendix 3 – Spill Response and Preparedness Additional Information [116]

Reporting Period: November 23, 2020 to May 22, 2021

ENBRIDGE PIPELINES IN MICHIGAN: Important Pipeline Safety Information

Proudly operating in the Great Lakes State for 65 years, Michigan is home to more than 100 Enbridge employees. Our pipelines transport the energy resources we rely on every day to fuel our vehicles, heat our homes and feed our families. The safe and reliable operation of our pipeline system is our top priority.

What are the characteristics and hazards of the products being transported by Enbridge?

Crude oil is naturally occurring, unrefined petroleum. Enbridge transports light, medium and heavy crude oil on its liquids pipeline system. The words light, medium and heavy are often used to describe a crude oil's density and resistance to flow (viscosity). Crude oil's color can range from yellow to black and it has an odor similar to gasoline or diesel fuel. If released, crude oil will flow with the land profile. Flow depends on temperature and viscosity; it can be thick and slow-moving or light and able to move quickly. Crude oil can be flammable and explosive if vapors mix with the atmosphere and an ignition source is present. **Natural Gas Liquids (NGLs)** include propane, butane, ethane, and occasionally some other petroleum products like natural gasoline, also known as condensate. NGLs are used by various industries to produce materials such as plastics, refrigerants and tires. NGLs are colorless and will have a steam-like cloud or frost appearance on the ground and have an odor similar to gasoline. NGLs are liquids when inside the pipeline or storage tank but become gaseous if released into the atmosphere. NGLs are heavier than air and stay close to the ground in low-lying areas.

Crude oil and NGLs can be flammable and vapors may ignite when an ignition source is present. Many compounds in crude oil and NGLs can be harmful if they enter the human body through inhalation, ingestion or skin absorption. Exposure to these compounds may cause skin irritation, dizziness, headache or even loss of consciousness. Suffocation may occur if vapors displace the oxygen in an enclosed area.

How do I know where Enbridge pipelines are located?

Pipeline operators, including Enbridge, are required to submit transmission pipeline maps to the National Pipeline Mapping System. You can access these maps at npms.phmsa.dot.gov. Pipeline markers also indicate the approximate location of pipelines and can be found along the pipeline right-of-way and near road and water crossings. All pipeline markers provide the name of the pipeline operator, product being transported and a telephone number for reporting pipeline emergencies.



What should I do if I suspect a pipeline leak?

If you are in immediate danger, damage the pipeline, or observe or suspect a leak – even if you are uncertain of the severity – take the following steps:

- 1. If you can do so safely, turn off any mechanized equipment. Move as far away from the leak as possible in an upwind direction, avoiding contact with escaping liquids and gases.
- 2. Call **911**.
- 3. Call the toll-free, 24-hour Enbridge emergency number for your area: **800-858-5253**.
- 4. Follow instructions provided to you by Enbridge and local emergency responders.

You can also report emergencies and other sudden threats to public health, such as oil and/or chemical spills, to the federal government's centralized reporting center, the National Response Center (NRC) at **800-424-8802**. The NRC is staffed 24 hours a day by personnel who will ask you to provide as much information about the incident as possible.

Please include the following:

- Your name, location, organization, and telephone number.
- Name and address of the party responsible for the incident; or name of the carrier or vessel, the railcar/truck number, or other identifying information.
- Date and time of the incident.
- · Location of the incident.
- · Source and cause of the release or spill.
- Types of material(s) released or spilled.
- · Quantity of materials released or spilled.
- Medium (e.g. land, water) affected by the release or spill.
- Danger or threat posed by the release or spill.
- Number and types of injuries or fatalities (if any).
- · Weather conditions at the incident location.
- · Whether an evacuation has occurred.
- · Other agencies notified or about to be notified.
- Any other information that may help emergency personnel respond to the incident.

If reporting directly to the NRC is not possible, reports also can be made to the EPA Regional office where the incident occurred.

Michigan is located within EPA Region 5:

U.S. EPA - Region 5 77 W. Jackson Boulevard Chicago, IL 60604-3590

312-353-2318 (in Region 5 only)

*epa.gov/emergency-response/what-information-neededwhen-reporting-oil-spill-or-hazardous-substance-release



What not to do in an emergency situation:

- Do not touch any liquid or vapor that may have come from the pipeline.
- Do not drive into the area or start your car.
- Do not light a match.
- Do not turn on or off anything that may create a spark including cell phones, telephones, light switches, vehicle alarms, vehicle keyless entry and flashlights – until you are in a safe location.
- Do not operate pipeline valves.
- Do not remain in a building if the smell is stronger inside than outside.

How can I obtain information from Enbridge?

During an incident, Enbridge representatives will work diligently to keep the public informed through local news media. We will also post information about the spill on our website and social media channels.

- Website: enbridge.com
- Facebook: facebook.com/enbridge
- Twitter: @Enbridge

You can also visit the EPA website and use the "Cleanups in My Community" tool to find the EPA's current and past emergency response activities in your community.

epa.gov/emergency-response/
 emergency-response-my-community

ENBRIDGE PIPELINES IN MINNESOTA: Important pipeline safety information

Proudly operating in Minnesota since 1949, Minnesota is home to hundreds of Enbridge employees. Our pipelines transport the energy resources we rely on every day to fuel our vehicles, heat our homes and feed our families. The safe and reliable operation of our pipeline system is our top priority.

What are the characteristics and hazards of the products being transported by Enbridge?

Crude oil is naturally occurring, unrefined petroleum. Enbridge transports light, medium and heavy crude oil on its liquids pipeline system. The words light, medium and heavy are often used to describe a crude oil's density and resistance to flow (viscosity). Crude oil's color can range from yellow to black and it has an odor similar to gasoline or diesel fuel. If released, crude oil will flow with the land profile. Flow depends on temperature and viscosity; it can be thick and slow-moving or light and able to move quickly. Crude oil can be flammable and explosive if vapors mix with the atmosphere and an ignition source is present.

Natural Gas Liquids (NGLs) is a liquid when transported inside the pipeline but becomes gaseous if released into the atmosphere. NGL is heavier than air and tends to stay close to the ground in low-lying areas. It is extremely flammable and explosive. **Diluent** is a light hydrocarbon that is blended with heavy crude oil to make it thinner and easier to transport by pipeline. Enbridge has a dedicated pipeline to transport diluent that has been recovered from the diluted heavy crude oil. Diluent is very light and fluid. It's liquid when inside the pipeline but quickly evaporates if released into the atmosphere. Like all hydrocarbons transported by Enbridge, diluent is flammable and vapors may ignite if an ignition source is present. The toxicity and potential health effects from exposure to diluent are similar to other petroleum products. During normal operations, the liquid petroleum Enbridge transports is contained with the pipeline system and there are no hazards to those who live and work along the pipelines transporting diluent.

How do I know where Enbridge pipelines are located?

Pipeline operators, including Enbridge, are required to submit transmission pipeline maps to the National Pipeline Mapping System. You can access these maps at **npms.phmsa.dot.gov**.

Pipeline markers also indicate the approximate location of pipelines and can be found along the pipeline right-of-way and near road and water crossings. All pipeline markers provide the name of the pipeline operator, product being transported and a telephone number for reporting pipeline emergencies.



What should I do if I suspect a pipeline leak?

If you are in immediate danger, damage the pipeline, or observe or suspect a leak – even if you are uncertain of the severity – take the following steps:

1. If you can do so safely, turn off any mechanized equipment. Move as far away from the leak as possible in an upwind direction, avoiding contact with escaping liquids and gases.

2. Call 911

- 3. Call the toll-free, 24-hour Enbridge emergency number for your area: **800-858-5253**
- 4. Follow instructions provided to you by Enbridge and local emergency responders

You can also report emergencies and other sudden threats to public health, such as oil and/or chemical spills, to the federal government's centralized reporting center, the National Response Center (NRC) at **800-424-8802**. The NRC is staffed 24 hours a day by personnel who will ask you to provide as much information about the incident as possible.

Please include the following:

- · Your name, location, organization, and telephone number
- Name and address of the party responsible for the incident; or name of the carrier or vessel, the railcar/truck number, or other identifying information
- Date and time of the incident
- · Location of the incident
- · Source and cause of the release or spill
- Types of material(s) released or spilled
- · Quantity of materials released or spilled
- · Medium (e.g. land, water) affected by the release or spill
- Danger or threat posed by the release or spill
- · Number and types of injuries or fatalities (if any)
- · Weather conditions at the incident location
- · Whether an evacuation has occurred
- · Other agencies notified or about to be notified
- Any other information that may help emergency personnel respond to the incident

If reporting directly to the NRC is not possible, reports also can be made to the EPA Regional office where the incident occurred.

Minnesota is located within EPA Region 5:

U.S. EPA - Region 5 77 W. Jackson Boulevard Chicago, IL 60604-3590

312-353-2318 (in Region 5 only)

*epa.gov/emergency-response/what-information-neededwhen-reporting-oil-spill-or-hazardous-substance-release

What not to do in an emergency situation:

- Do not touch any liquid or vapor that may have come from the pipeline
- · Do not drive into the area or start your car
- Do not light a match
- Do not turn on or off anything that may create a spark including cell phones, telephones, light switches, vehicle alarms, vehicle keyless entry and flashlights – until you are in a safe location
- Do not operate pipeline valves
- Do not remain in a building if the smell is stronger inside than outside

How can I obtain information from Enbridge?

During an incident, Enbridge representatives will work diligently to keep the public informed through local news media. We will also post information about the spill on our website and social media channels.

- Website: enbridge.com
- Facebook: facebook.com/enbridge
- Twitter: @Enbridge

You can also visit the EPA website and use the "Cleanups in My Community" tool to find the EPA's current and past emergency response activities in your community.

 epa.gov/emergency-response/ emergency-response-my-community



ENBRIDGE PIPELINES IN NEW YORK: Important Pipeline Safety Information

Enbridge has proudly operated in New York for more than 50 years. Our pipelines transport the energy resources we rely on every day to fuel our vehicles, heat our homes and feed our families. The safe and reliable operation of our pipeline system is our top priority.

What are the characteristics and hazards of the products being transported by Enbridge?

Crude oil is naturally occurring, unrefined petroleum. Enbridge transports light, medium and heavy crude oil on its liquids pipeline system. The words light, medium and heavy are often used to describe a crude oil's density and resistance to flow (viscosity). Crude oil's color can range from yellow to black and it has an odor similar to gasoline or diesel fuel. If released, crude oil will flow with the land profile. Flow depends on temperature and viscosity; it can be thick and slow-moving or light and able to move quickly. Crude oil can be flammable and explosive if vapors mix with the atmosphere and an ignition source is present.

How do I know where Enbridge pipelines are located?

Pipeline operators, including Enbridge, are required to submit pipeline maps to the National Pipeline Mapping System. You can access these maps at **npms.phmsa.dot.gov**. Pipeline markers also indicate the approximate location of pipelines and can be found along the pipeline right-of-way and near road and water crossings. All pipeline markers provide the name of the pipeline operator, product being transported and a telephone number for reporting pipeline emergencies.



For more information, visit enbridge.com

What should I do if I suspect a pipeline leak?

If you are in immediate danger, damage the pipeline, or observe or suspect a leak – even if you are uncertain of the severity – take the following steps:

- If you can do so safely, turn off any mechanized equipment. Move as far away from the leak as possible in an upwind direction, avoiding contact with escaping liquids and gases.
- 2. Call **911**
- 3. Call the toll-free, 24-hour Enbridge emergency number for your area: **800-858-5253**
- 4. Follow instructions provided to you by Enbridge and local emergency responders

You can also report emergencies and other sudden threats to public health, such as oil and/or chemical spills, to the federal government's centralized reporting center, the National Response Center (NRC) at **800-424-8802**. The NRC is staffed 24 hours a day by personnel who will ask you to provide as much information about the incident as possible.

Please include the following:

- Your name, location, organization, and telephone number
- Name and address of the party responsible for the incident; or name of the carrier or vessel, the railcar/truck number, or other identifying information
- · Date and time of the incident
- Location of the incident
- · Source and cause of the release or spill
- Types of material(s) released or spilled
- Quantity of materials released or spilled
- · Medium (e.g. land, water) affected by the release or spill
- Danger or threat posed by the release or spill
- Number and types of injuries or fatalities (if any)
- · Weather conditions at the incident location
- · Whether an evacuation has occurred
- Other agencies notified or about to be notified
- Any other information that may help emergency personnel respond to the incident

If reporting directly to the NRC is not possible, reports also can be made to the EPA Regional office or the U.S. Coast Guard Marine Safety Office in the area where the incident occurred.

New York is located within EPA Region 2:

U.S. EPA – Region 2 290 Broadway New York, NY 10007-1866

Region 2 Citizen Hotline/Help Desk 877-251-4575

epa.gov/emergency-response/what-information-needed-whenreporting-oil-spill-or-hazardous-substance-release

What not to do in an emergency situation:

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ENBRIDGE PIPELINES IN NORTH DAKOTA: Important pipeline safety information

Our pipelines transport the energy resources we rely on every day to fuel our vehicles, heat our homes and feed our families. The safe and reliable operation of our pipeline system is our top priority.

What are the characteristics and hazards of the products being transported by Enbridge?

Crude oil is naturally occurring, unrefined petroleum. Enbridge transports light, medium and heavy crude oil on its liquids pipeline system. The words light, medium and heavy are often used to describe a crude oil's density and resistance to flow (viscosity). Crude oil's color can range from yellow to black and it has an odor similar to gasoline or diesel fuel. If released, crude oil will flow with the land profile. Flow depends on temperature and viscosity; it can be thick and slow-moving or light and able to move quickly. Crude oil can be flammable and explosive if vapors mix with the atmosphere and an ignition source is present.

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2. Call 911

- 3. Call the toll-free, 24-hour Enbridge emergency number for your area: **800-858-5253**
- 4. Follow instructions provided to you by Enbridge and local emergency responders

You can also report emergencies and other sudden threats to public health, such as oil and/or chemical spills, to the federal government's centralized reporting center, the National Response Center (NRC) at **800-424-8802**. The NRC is staffed 24 hours a day by personnel who will ask you to provide as much information about the incident as possible.

Please include the following:

- · Your name, location, organization, and telephone number
- Name and address of the party responsible for the incident; or name of the carrier or vessel, the railcar/truck number, or other identifying information
- Date and time of the incident
- · Location of the incident
- · Source and cause of the release or spill
- Types of material(s) released or spilled
- · Quantity of materials released or spilled
- · Medium (e.g. land, water) affected by the release or spill
- Danger or threat posed by the release or spill
- · Number and types of injuries or fatalities (if any)
- · Weather conditions at the incident location
- · Whether an evacuation has occurred
- · Other agencies notified or about to be notified
- Any other information that may help emergency personnel respond to the incident

If reporting directly to the NRC is not possible, reports also can be made to the EPA Regional office where the incident occurred.

North Dakota is located within EPA Region 8:

U.S. EPA - Region 8 Information Center 1595 Wynkoop St (80RA-PA) Denver, CO 80202

303-312-6312 800-227-8917 (in Region 8 only)

*epa.gov/emergency-response/what-information-neededwhen-reporting-oil-spill-or-hazardous-substance-release



What not to do in an emergency situation:

- Do not touch any liquid or vapor that may have come from the pipeline
- · Do not drive into the area or start your car
- Do not light a match
- Do not turn on or off anything that may create a spark including cell phones, telephones, light switches, vehicle alarms, vehicle keyless entry and flashlights – until you are in a safe location
- Do not operate pipeline valves
- Do not remain in a building if the smell is stronger inside than outside

How can I obtain information from Enbridge?

During an incident, Enbridge representatives will work diligently to keep the public informed through local news media. We will also post information about the spill on our website and social media channels.

- Website: enbridge.com
- Facebook: facebook.com/enbridge
- Twitter: @Enbridge

You can also visit the EPA website and use the "Cleanups in My Community" tool to find the EPA's current and past emergency response activities in your community.

 epa.gov/emergency-response/ emergency-response-my-community

Appendix 4 – PHMSA Reports from Lakehead Discharges [146] and Update on Discharges from Lakehead System Pipelines [147]

Reporting Period: November 23, 2020 to May 22, 2021

NOTICE: This report is required by 49 CFR Part 195. Failure to report can result in a exceed \$100,000 for each violation for each day that such violation persists except th penalty shall not exceed \$1,000,000 as provided in 49 USC 60122.	civil penalty not to nat the maximum civil	OMB NO: 2137-0047 EXPIRATION DATE: 1/31/2	023
A	Original Report Date:	03/31/2021	
U.S. Department of Transportation	No.	20210106 - 35	296
Pipeline and Hazardous Materials Safety Administration)
		(DOT Use Only)
ACCIDENT REPORT - HAZ PIPELINE SYS	ARDOUS LIQUIE TEMS)	
A federal agency may not conduct or sponsor, and a person is not required to respor with a collection of information subject to the requirements of the Paperwork Reducti OMB Control Number. The OMB Control Number for this information collection is 21 Send comments regarding this burden or any other aspect of this collection of inform Collection Clearance Officer, PHMSA, Office of Pipeline Safety (PHP-30) 1200 New	nd to, nor shall a person on Act unless that collec 37-0047. All responses to ation, including suggesti Jersey Avenue, SE, Was	be subject to a penalty for failur tion of information displays a cu o the collection of information ar ons for reducing the burden to: shington, D.C. 20590.	e to comply rrent valid re mandatory. Information
INSTRUCTIONS			
Important: Please read the separate instructions for completing this form before you examples. If you do not have a copy of the instructions, you can obtain one from the <u>dot.gov/pipeline/library/forms</u> .	ı begin. They clarify the iı PHMSA Pipeline Safety	nformation requested and provi Community Web Page at <u>http://</u>	de specific / <u>www.phmsa</u> .
PART A - KEY REPORT INFORMATION			
Report Type: (select all that apply)	Original:	Supplemental: Yes	Final: Yes
Last Revision Date:	05/17/2021		
1. Operator's OPS-issued Operator Identification Number (OPID):	11169		
2. Name of Operator	ENBRIDGE ENERG	GY, LIMITED PARTNERSH	IP
3. Address of Operator:		RCOURT	
3h City	HOUSTON		
3c. State	Texas		
3d. Zip Code	77056		
4. Local time (24-hr clock) and date of the Accident:	03/02/2021 15:13		
5. Location of Accident:			
Latitude / Longitude			
6. National Response Center Report Number (if applicable):	NRC Notification No	ot Required	
7. Local time (24-hr clock) and date of initial telephonic report to the			
National Response Center (if applicable):			
8. Commodity released: (select only one, based on predominant	Crude Oil		
- Specify Commodity Subtype:			
- If "Other" Subtype:			
- If Biofuel/Alternative Fuel and Commodity Subtype is			
Ethanol Blend, then % Ethanol Blend:			
- If Biofuel/Alternative Fuel and Commodity Subtype is			
Biodiesel, then Biodiesel Blend e.g. B2, B20, B100			
Q. Estimated volume of commodity released unintentionally (Parrels):	4.00		
3. Estimated volume of intentional and/or controlled release/blowdown 10. Estimated volume of intentional and/or controlled release/blowdown	4.00		
(Barrels):			
11. Estimated volume of commodity recovered (Barrels):	4.00		
12. Were there fatalities?	No		
- If Yes, specify the number in each category:			
12a. Operator employees			
12b. Contractor employees working for the Operator			
12c. Non-Operator emergency responders			
I ∠a. workers working on the right-of-way, but NUI			
12e. General public			
12f. Total fatalities (sum of above)	1		
13. Were there injuries requiring inpatient hospitalization?	No		
- If Yes, specify the number in each category:	·		
13a. Operator employees			
13b. Contractor employees working for the Operator			
13c. Non-Operator emergency responders			
13d. Workers working on the right-of-way, but NOT			
associated WITI THIS Operator			
13f Total injuries (sum of above)	<u> </u>		
$\frac{1}{1}$	1		

14. Was the pipeline/facility shut down due to the Accident?	No
- If No, Explain:	Pipeline was already shut down for a separate issue and
I f Ves complete Questions 1/a and 1/b; (use local time, 2/ br clock)	Ine Station was isolated
14a Local time and date of shutdown:	
14b. Local time pipeline/facility restarted:	
- Still shut down? (* Supplemental Report Required)	
15. Did the commodity ignite?	No
16. Did the commodity explode?	No
17. Number of general public evacuated:	0
18. Lime sequence (use local time, 24-hour clock):	
18a. Local time Operator identified Accident - effective 7- 2014	03/02/2021 15:13
18b Local time Operator resources arrived on site:	03/02/2021 15:13
PART B - ADDITIONAL LOCATION INFORMATION	0002202110.10
1. Mar the origin of the Assident enclose?	Vec
I. was the origin of the Accident onshore?	Yes tions (2-12)
If No. Complete Questi	ons (13-15)
- If Onshore:	
2. State:	Minnesota
3. Zip Code:	56760
4. City	Viking
5. County or Parish	Marshall
6. Operator-designated location:	Milepost/Valve Station
Specify:	848 Villing Station
7. Pipeline/Facility name:	VIKING Station
0. Seyment hame/iD.	4-F1-01/02
	No
10. Location of Accident:	Totally contained on Operator-controlled property
11. Area of Accident (as found):	Aboveground
Specify:	Typical aboveground facility piping or appurtenance
- If Other, Describe:	
Depth-of-Cover (in):	
12. Did Accident occur in a crossing?	No
- If Yes, specily type below:	
- If Bridge crossing -	
Laseu/ Olicaseu.	
- II Railload crossing –	
If Pood grossing	
- II Rodu clossing – Cased/ Uncased/ Bored/drilled	
- If Water crossing -	
- II Watel clossing - Cased/ Uncased	
- Name of body of water, if commonly known;	
- Approx. water depth (ft) at the point of the Accident:	
- Select:	
- If Offshore:	
13. Approximate water depth (ft) at the point of the Accident:	
14. Origin of Accident:	
- In State waters - Specify:	
- State:	
- Alea. - Block/Tract #:	
- Nearest County/Parish	
- On the Outer Continental Shelf (OCS) - Specify:	
- Area:	
- Block #:	
15. Area of Accident:	
PART C - ADDITIONAL FACILITY INFORMATION	
1. Is the pipeline or facility:	Interstate
2. Part of system involved in Accident:	Onshore Pump/Meter Station Equipment and Piping
- If Onshore Breakout Tank or Storage Vessel, Including Attached	
Appurtenances, specify:	
2 Itom involved in Accident	Other
3. Item involved in Accident:	Other
3. Item involved in Accident: - If Pipe, specify: 3a. Nominal diameter of pipe (in):	Other

3b. Wall thickness (in):	
3c. SMYS (Specified Minimum Yield Strength) of pipe (psi):	
3d. Pipe specification:	
3e. Pipe Seam , specify:	
- If Other, Describe:	
3f. Pipe manufacturer:	
3g. Year of manufacture:	
3h. Pipeline coating type at point of Accident, specify:	
- If Other, Describe:	
- If Weld, including heat-affected zone, specify. If Pipe Girth Weld,	
3a through 3h above are required:	
- If Other, Describe:	
- If Valve, specify:	
- If Mainline, specify:	
- If Other, Describe:	
3i. Manufactured by:	
3j. Year of manufacture:	
- If Tank/Vessel, specify:	
- If Other - Describe:	
- If Other, describe:	Flex Hose
4. Year item involved in Accident was installed:	2012
5. Material involved in Accident:	Material other than Carbon Steel
- If Material other than Carbon Steel, specify:	Stainless Steel Braided Hose
6. Type of Accident Involved:	Leak
 If Mechanical Puncture – Specify Approx. size: 	
in. (axial) by	
in. (circumferential)	
- If Leak - Select Type:	Crack
- If Other, Describe:	
- If Rupture - Select Orientation:	
- If Other, Describe:	
Approx. size: in. (widest opening) by	
In. (length circumterentially or axially)	
- If Other – Describe:	
BART D ADDITIONAL CONSEQUENCE INFORMATION	
PART D - ADDITIONAL CONSEQUENCE INFORMATION	
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact:	No
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact: 1a. If Yes, specify all that apply:	Νο
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact: 1a. If Yes, specify all that apply: - Fish/aquatic	No
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact: 1a. If Yes, specify all that apply: - Fish/aquatic - Birds	No
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact: 1a. If Yes, specify all that apply: - Fish/aquatic - Birds - Terrestrial	No
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact: 1a. If Yes, specify all that apply: - Fish/aquatic - Birds - Terrestrial 2. Soil contamination:	No
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact: 1a. If Yes, specify all that apply: - Fish/aquatic - Birds - Terrestrial 2. Soil contamination: 3. Long term impact assessment performed or planned:	No Yes No
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact: 1a. If Yes, specify all that apply: - Fish/aquatic - Birds - Terrestrial 2. Soil contamination: 3. Long term impact assessment performed or planned: 4 Anticipated remediation:	No Yes No
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact: 1a. If Yes, specify all that apply: - Fish/aquatic - Birds - Terrestrial 2. Soil contamination: 3. Long term impact assessment performed or planned: 4. Anticipated remediation: 4a. If Yes, specify all that apply:	No Yes No No
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact: 1a. If Yes, specify all that apply: - Fish/aquatic - Birds - Terrestrial 2. Soil contamination: 3. Long term impact assessment performed or planned: 4. Anticipated remediation: 4a. If Yes, specify all that apply: - Surface water	No Yes No No
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact: 1a. If Yes, specify all that apply: - Fish/aquatic - Birds - Terrestrial 2. Soil contamination: 3. Long term impact assessment performed or planned: 4. Anticipated remediation: 4a. If Yes, specify all that apply: - Surface water - Groundwater	No Yes No No
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact: 1a. If Yes, specify all that apply: - Fish/aquatic - Birds - Terrestrial 2. Soil contamination: 3. Long term impact assessment performed or planned: 4. Anticipated remediation: 4a. If Yes, specify all that apply: - Surface water - Groundwater - Soil	No Yes No No
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact: 1a. If Yes, specify all that apply: - Fish/aquatic - Birds - Terrestrial 2. Soil contamination: 3. Long term impact assessment performed or planned: 4. Anticipated remediation: 4a. If Yes, specify all that apply: - Surface water - Groundwater - Soil - Vegetation	No Yes No No
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact: 1a. If Yes, specify all that apply: - Fish/aquatic - Birds - Terrestrial 2. Soil contamination: 3. Long term impact assessment performed or planned: 4. Anticipated remediation: 4a. If Yes, specify all that apply: - Surface water - Groundwater - Soil - Vegetation - Wildlife	No Yes No No No
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact: 1a. If Yes, specify all that apply: - Fish/aquatic - Birds - Terrestrial 2. Soil contamination: 3. Long term impact assessment performed or planned: 4. Anticipated remediation: 4a. If Yes, specify all that apply: - Groundwater - Soil - Vegetation - Wildlife	No Yes No No No No No No No
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact: 1a. If Yes, specify all that apply: - Fish/aquatic - Birds - Terrestrial 2. Soil contamination: 3. Long term impact assessment performed or planned: 4. Anticipated remediation: 4a. If Yes, specify all that apply: - Groundwater - Soil - Vegetation - Wildlife 5. Water contamination:	No Yes No No No No No No
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact: 1a. If Yes, specify all that apply: - Fish/aquatic - Birds - Terrestrial 2. Soil contamination: 3. Long term impact assessment performed or planned: 4. Anticipated remediation: 4a. If Yes, specify all that apply: - Surface water - Groundwater - Soil - Vegetation - Wildlife 5. Water contamination: 5a. If Yes, specify all that apply: - Ocean/Seawater	No Yes No No No No
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact: 1a. If Yes, specify all that apply: - Fish/aquatic - Birds - Terrestrial 2. Soil contamination: 3. Long term impact assessment performed or planned: 4. Anticipated remediation: 4a. If Yes, specify all that apply: - Surface water - Soil - Vegetation - Wildlife 5. Water contamination: 5a. If Yes, specify all that apply: - Ocean/Seawater - Surface	No Yes No No No No No
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact: 1a. If Yes, specify all that apply: - Fish/aquatic - Birds - Terrestrial 2. Soil contamination: 3. Long term impact assessment performed or planned: 4. Anticipated remediation: 4a. If Yes, specify all that apply: - Groundwater - Soil - Vegetation - Wildlife 5. Water contamination: 5a. If Yes, specify all that apply: - Ocean/Seawater - Surface - Surface	No Yes No No No No
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact: 1a. If Yes, specify all that apply: - Fish/aquatic - Birds - Terrestrial 2. Soil contamination: 3. Long term impact assessment performed or planned: 4. Anticipated remediation: 4a. If Yes, specify all that apply: - Surface water - Soil - Vegetation - Wildlife 5. Water contamination: 5a. If Yes, specify all that apply: - Ocean/Seawater - Surface - Groundwater - Dirpiking water; (Select one or both)	No Yes No No No No No
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact: 1a. If Yes, specify all that apply: - Fish/aquatic - Birds - Terrestrial 2. Soil contamination: 3. Long term impact assessment performed or planned: 4. Anticipated remediation: 4a. If Yes, specify all that apply: - Surface water - Groundwater - Soil - Vegetation - Wildlife 5. Water contamination: 5a. If Yes, specify all that apply: - Ocean/Seawater - Surface - Groundwater - Drinking water: (Select one or both) - Drinking water: Well	No Yes No No No No
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact: 1a. If Yes, specify all that apply: - Fish/aquatic - Birds - Terrestrial 2. Soil contamination: 3. Long term impact assessment performed or planned: 4. Anticipated remediation: 4a. If Yes, specify all that apply: - Surface water - Groundwater - Soil - Vegetation - Wildlife 5. Water contamination: 5a. If Yes, specify all that apply: - Ocean/Seawater - Surface - Groundwater - Surface - Private Well - Public Water Intake	No Yes No No No No
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact: 1a. If Yes, specify all that apply: - Fish/aquatic - Birds - Terrestrial 2. Soil contamination: 3. Long term impact assessment performed or planned: 4. Anticipated remediation: 4a. If Yes, specify all that apply: - Surface water - Groundwater - Soil - Vegetation - Wildlife 5. Water contamination: 5a. If Yes, specify all that apply: - Ocean/Seawater - Surface - Groundwater - Surface - Private Well - Private Well - Public Water Intake 5b. Estimated amount released in or reaching water (Barrels):	No Yes No No No No
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact: 1a. If Yes, specify all that apply: - Fish/aquatic - Birds - Terrestrial 2. Soil contamination: 3. Long term impact assessment performed or planned: 4. Anticipated remediation: 4a. If Yes, specify all that apply: - Surface water - Groundwater - Soil - Vegetation - Wildlife 5. Water contamination: 5a. If Yes, specify all that apply: - Ocean/Seawater - Surface - Groundwater - Surface - Public Water Intake 5b. Estimated amount released in or reaching water (Barrels): 5c. Name of body of water, if commonly known:	No Yes No No No No
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact: 1a. If Yes, specify all that apply: - Fish/aquatic - Birds - Terrestrial 2. Soil contamination: 3. Long term impact assessment performed or planned: 4. Anticipated remediation: 4a. If Yes, specify all that apply: - Surface water - Groundwater - Soil - Wildlife 5. Water contamination: 5a. If Yes, specify all that apply: - Ocean/Seawater - Surface - Surface - Private Well - Private Well - Public Water Intake 5b. Estimated amount released in or reaching water (Barrels): 5c. Name of body of water, if commonly known: 6. At the location of this Accident, had the pipeline segment or facility	No Yes No No No No No
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact: 1a. If Yes, specify all that apply: - Fish/aquatic - Birds - Terrestrial 2. Soil contamination: 3. Long term impact assessment performed or planned: 4. Anticipated remediation: 4a. If Yes, specify all that apply: - Surface water - Groundwater - Soil - Vegetation - Wildlife 5. Water contamination: 5a. If Yes, specify all that apply: - Ocean/Seawater - Surface - Groundwater - Surface - Private Well - Drinking water: (Select one or both) - Private Well - Private Well - Drinking water: (Select one or both) - Surface - Surface - Surface well - Drinking water: (Select one or both) - Private Well - Sturface well - Surface - Surface - Surface - Surface well - Surface well - Drinking water: (S	No Yes No No No No No No Yes No Yes Yes No Yes Yes
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact: 1a. If Yes, specify all that apply: - Fish/aquatic - Birds - Terrestrial 2. Soil contamination: 3. Long term impact assessment performed or planned: 4. Anticipated remediation: 4a. If Yes, specify all that apply: - Surface water - Groundwater - Soil - Vegetation - Wildlife 5. Water contamination: 5a. If Yes, specify all that apply: - Ocean/Seawater - Surface - Groundwater - Surface - Ocean/Seawater - Surface - Oroundwater - Drinking water: (Select one or both) - Private Well - Private Well - Public Water Intake 5b. Estimated amount released in or reaching water (Barrels): 5c. Name of body of water, if commonly known: 6. At the location of this Accident, had the pipeline segment or facility been identified as one that "could affect" a High Consequence Area (HCA) as determined in the Operator's Integrity Management Program?	No Yes No No No No No No Yes No Yes Yes Yes No Yes
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact: 1a. If Yes, specify all that apply: - Fish/aquatic - Birds - Terrestrial 2. Soil contamination: 3. Long term impact assessment performed or planned: 4. Anticipated remediation: 4a. If Yes, specify all that apply: - Surface water - Groundwater - Soil - Vegetation - Wildlife 5. Water contamination: 5a. If Yes, specify all that apply: - Ocean/Seawater - Surface - Groundwater - Surface - Ocean/Seawater - Surface - Oroundwater - Drinking water: (Select one or both) - Private Well - Public Water Intake 5b. Estimated amount released in or reaching water (Barrels): 5c. Name of body of water, if commonly known: 6. At the location of this Accident, had the pipeline segment or facility been identified as one that "could affect" a High Consequence Area (HCA) as determined in the Operator's Integrity Management Program? 7. Did the released commodity reach or occur in one or more High	No Yes No No No No No No Yes Yes Yes Yes Yes
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact:	No Yes No No No No No No Yes No Yes No Yes No Yes No No No Yes No
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact: 1a. If Yes, specify all that apply: - Fish/aquatic - Birds - Terrestrial 2. Soil contamination: 3. Long term impact assessment performed or planned: 4. Anticipated remediation: 4a. If Yes, specify all that apply: - Surface water - Groundwater - Soil - Vegetation - Wildlife 5. Water contamination: 5a. If Yes, specify all that apply: - Ocean/Seawater - Surface - Groundwater - Surface - Groundwater - Surface - Surface - Surface - Groundwater - Surface - Surface - Groundwater - Drinking water: (Select one or both) - Private Well - Public Water Intake 5b. Estimated amount released in or reaching water (Barrels): 5c. Name of body of water, if commonly known: 6. At the location of this Accident, had the pipeline segment or facility been identified as one that "could affect" a High Consequence Area (HCA) as determined in the Operator's Integrity Management Program? 7. Did the released commodity reach or occur in one or more High Consequence Area (HCA)? 7a. If Yes, specify HCA type(s): (Select all that apply)	No Yes No No No No No No Yes No Yes Yes No Yes No Yes No
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact: 1a. If Yes, specify all that apply: - Fish/aquatic - Birds - Terrestrial 2. Soil contamination: 3. Long term impact assessment performed or planned: 4. Anticipated remediation: 4a. If Yes, specify all that apply: - Surface water - Groundwater - Soil - Vegetation - Wildlife 5. Water contamination: 5a. If Yes, specify all that apply: - Ocean/Seawater - Surface - Groundwater - Drinking water: (Select one or both) - Private Well - Private Well - Public Water Intake 5b. Estimated amount released in or reaching water (Barrels): 5c. Name of body of water, if commonly known: 6. At the location of this Accident, had the pipeline segment or facility been identified as one that "could affect" a High Consequence Area (HCA)? 7. Did the released commodity reach or occur in one or more High Consequence Area (HCA)? 7a. If Yes, specify HCA type(s): (Select all that apply) - Commercially Navigable Waterway:	No Yes No No No No No No Yes No Yes No Yes No Yes No Yes No
PART D - ADDITIONAL CONSEQUENCE INFORMATION 1. Wildlife impact: 1a. If Yes, specify all that apply: - Fish/aquatic - Birds - Terrestrial 2. Soil contamination: 3. Long term impact assessment performed or planned: 4. Anticipated remediation: 4a. If Yes, specify all that apply: - Surface water - Groundwater - Soil - Vegetation - Wildlife 5. Water contamination: 5a. If Yes, specify all that apply: - Ocean/Seawater - Surface - Surface - Surface - Surface - Ocean/Seawater - Surface - Public Water Intake 5b. Estimated amount released in or reaching water (Barrels): 5c. Name of body of water, if commonly known: 6. At the location of this Accident, had the pipeline segment or facility been identified as one that "could affect" a High Consequence Area (HCA) as determined in the Operator's Integrity Management Program? 7. Did the released commodity reach or occur in one or more High Consequence Area (HCA)? 7a. If Yes, specify HCA type(s): (Select all that apply) - Commercially Navigable Wat	No Yes No No No No No No Yes No Yes No No No No No No Yes No

Integrity Management Program?	
- High Population Area:	
Was this HCA identified in the "could affect"	
determination for this Accident site in the Operator's	
Integrity Management Program?	
- Other Populated Area	
Was this HCA identified in the "could affect" determination	
for this Accident site in the Operator's Integrity	
Management Program?	
- Unusually Sensitive Area (USA) - Drinking Water	
Was this HCA identified in the "could affect" determination	
for this Assident site in the Operator's Integrity	
Management Program?	
- Onusually Sensitive Area (USA) - Ecological	
for this Assident site in the Operatoria Intermity	
Menoment Dremen?	
8. Estimated cost to Operator – effective 12-2012, changed to "Estimated	Property Damage":
8a. Estimated cost of public and non-Operator private property	
damage paid/reimbursed by the Operator – effective 12-2012,	
"paid/reimbursed by the Operator" removed	
8b. Estimated cost of commodity lost	
8c. Estimated cost of Operator's property damage & repairs	
8d Estimated cost of Operator's emergency response	
8e Estimated cost of Operator's environmental remediation	
81 Estimated other costs	
טו. בסנווומנכע טנווכו טטסנס	
8g. Estimated total costs (sum of above) – effective 12-2012,	
changed to "I otal estimated property damage (sum of above)"	
PART E - ADDITIONAL OPERATING INFORMATION	
	0.45.00
1. Estimated pressure at the point and time of the Accident (psig):	945.00
2. Maximum Operating Pressure (MOP) at the point and time of the	960.00
Accident (psig):	
3. Describe the pressure on the system or facility relating to the	Pressure did not exceed MOP
Accident (psig):	
4. Not including pressure reductions required by PHMSA regulations	
(such as for repairs and pipe movement), was the system or facility	No
relating to the Accident operating under an established pressure	
restriction with pressure limits below those normally allowed by the	
MOP?	
 If Yes, Complete 4.a and 4.b below: 	
4a. Did the pressure exceed this established pressure	
restriction?	
4b. Was this pressure restriction mandated by PHMSA or the	
State?	
5. Was "Onshore Pipeline, Including Valve Sites" OR "Offshore	
Pipeline, Including Riser and Riser Bend" selected in PART C, Question	No
2?	
- If Yes - (Complete 5a 5f below) effective 12-2012, changed to "(C	Complete 5.a – 5.e below)"
5a. Type of upstream valve used to initially isolate release	. ,
source:	
5b. Type of downstream valve used to initially isolate release	
source:	
5c. Length of segment isolated between valves (ft):	
5d. Is the pipeline configured to accommodate internal	
inspection tools?	
- If No, Which physical features limit tool accommodation?	(select all that apply)
- Changes in line pipe diameter	
- Presence of unsuitable mainline valves	
- Tight or mitered pipe bends	
- Other passage restrictions (i.e. unbarred tee's	
projecting instrumentation etc.)	
- Extra thick nine wall (applicable only for magnetic	
flux leakage internal inspection tools)	
- Other -	
- If Other Describe	
5e. For this nineline, are there operational factors which	
significantly complicate the execution of an internal inspection tool	
run?	
run? - If Yes, Which operational factors complicate execution? (select all that all	pply)
 - If Yes, Which operational factors complicate execution? (select all that a) - Excessive debris or scale, wax, or other wall buildup 	р/y)

- Low operating pressure(s)	
- Low flow or absence of flow	
- Incompatible commodity	
- Other -	
- If Other, Describe:	
5f. Function of pipeline system:	> 20% SMYS Regulated Trunkline/Transmission
6. Was a Supervisory Control and Data Acquisition (SCADA)-based	Vec
system in place on the pipeline or facility involved in the Accident?	res
If Yes -	
6a. Was it operating at the time of the Accident?	Yes
6b. Was it fully functional at the time of the Accident?	Yes
6c. Did SCADA-based information (such as alarm(s),	
alert(s), event(s), and/or volume calculations) assist with	No
the detection of the Accident?	
6d. Did SCADA-based information (such as alarm(s),	
alert(s), event(s), and/or volume calculations) assist with	No
the confirmation of the Accident?	
7. Was a CPM leak detection system in place on the pipeline or facility	Yes
- If Yes:	Vec
7 a. was it operating at the time of the Accident?	
7b. Was it fully functional at the time of the Accident?	NO
(c) platt(c) event(c) and/or volume calculations) assist with	Ne
(s), alert(s), event(s), and/or volume calculations) assist with	NO
Td. Did CDM look detection system information (such as alarm	
(s) alert(s) event(s) and/or volume calculations) assist with	No
the confirmation of the Accident?	NO
8 How was the Accident initially identified for the Operator?	Local Operating Personnel including contractors
- If Other Specify	Loodi Operating Personnel, meldaling contractore
8a If "Controller" "Local Operating Personnel" including	
contractors" "Air Patrol" or "Ground Patrol by Operator or its	Operator employee
contractor" is selected in Question 8. specify:	
	No. the Operator did not find that an investigation of the
9. Was an investigation initiated into whether or not the controller(s) or	controller(s) actions or control room issues was necessary
Accident2	due to: (provide an explanation for why the Operator did not
Accident?	investigate)
 If No, the Operator did not find that an investigation of the 	
controller(s) actions or control room issues was necessary due to:	Lack of Control Center involvement
(provide an explanation for why the operator did not investigate)	
- If Yes, specify investigation result(s). (select all that apply)	
- Investigation reviewed work schedule rotations,	
Operator), and other factors appropriated with fatigue	
Investigation did NOT review work schedule retations	
- Investigation did NOT review work schedule rotations,	
Operator) and other factors associated with fatigue	
Provide an explanation for why not:	
Investigation identified no control room issues	
- Investigation identified no controller issues	
- Investigation identified incorrect controller action or	
controller error	
- Investigation identified that fatigue may have affected the	
controller(s) involved or impacted the involved controller(s)	
response	
- Investigation identified incorrect procedures	
- Investigation identified incorrect control room equipment	
operation	
- Investigation identified maintenance activities that affected	
control room operations, procedures, and/or controller	
response	
- investigation identified areas other than those above:	
Describe:	
PART F - DRUG & ALCOHOL TESTING INFORMATION	
1. As a result of this Accident, were any Operator employees tested	
under the post-accident drug and alcohol testing requirements of DOT's	No
Drug & Alcohol Testing regulations?	
- If Yes:	
1a Specify how many were tested:	

1b. Specify how many failed:	
2 As a result of this Assident, were any Operator contractor employees	
tosted under the post accident drug and alcohol tosting requirements of	No
DOT's Drug & Alashal Tosting regulations?	NU
If Voo:	
- II 165.	
za. Specily now many were tested.	
2b. Specify how many failed:	
PART G – APPARENT CAUSE	
Select only one box from PART G in shaded column on left represen	ting the APPARENT Cause of the Accident and answer
the questions on the right. Describe secondary contributing or root	causes of the Accident in the parrative $(PAPT H)$
the questions on the right. Describe secondary, contributing of root	causes of the Accident in the narrative (FART H).
Apparent Cause:	G6 - Equipment Failure
G1 - Corrosion Failure - only one sub-cause can be picked from shad	ded left-hand column
Corrosion Failure – Sub-Cause	
If External Correction	
- IT External Corrosion:	
1. Results of visual examination:	
- If Other, Describe:	
2. Type of corrosion: (select all that apply)	
- Galvanic	
- Atmospheric	
- Stray Current	
- Microbiological	
- Selective Seam	
- Other:	
- If Other, Describe:	
3. The type(s) of corrosion selected in Question 2 is based on the following	g: (select all that apply)
- Field examination	
- Determined by metallurgical analysis	
- Other	
- If Other Describe:	
4 Was the failed item buried under the ground?	
- If Ves :	
- If it co.	
44. Was failed item considered to be under cathodic	
files Veen meteotice started	
If Yes - Year protection started:	
4b. Was shielding, tenting, or disbonding of coating evident at	
the point of the Accident?	
4c. Has one or more Cathodic Protection Survey been	
conducted at the point of the Accident?	
If "Yes, CP Annual Survey" – Most recent year conducted:	
If "Yes, Close Interval Survey" – Most recent year conducted:	
If "Yes, Other CP Survey" – Most recent vear conducted:	
- If No:	
4d. Was the failed item externally coated or painted?	
5 Was there observable damage to the coating or paint in the vicinity of	
the corrosion?	
- If Internal Corrosion:	
6 Results of visual examination:	
- Other:	
7 Type of corresion (select all that apply):	
7. Type of contosion (select all that apply)	
- Corrosive Commodity	
- Water drop-out/Acid	
- Erosion	
- Other:	
- If Other, Describe:	
8. The cause(s) of corrosion selected in Question 7 is based on the follow	ring (select all that apply): -
- Field examination	
- Determined by metallurgical analysis	
- Other:	
- If Other, Describe:	
9. Location of corrosion (select all that apply): -	
- Low point in pipe	
- Elbow	

- If Other, Describe:	
10. Was the commodity treated with corrosion inhibitors or biocides?	
12. Were cleaning/dewatering pigs (or other operations) routinely	
13 Were corrosion coupons routinely utilized?	
Complete the following if any Corrosion Failure sub-cause is selected AND	the "Item Involved in Accident" (from PART C,
Question 3) is Tank/Vessel.	
14a. API Std 653 Out-of-Service Inspection	
- No Out-of-Service Inspection completed	
14b. API Std 653 In-Service Inspection	
- No In-Service Inspection completed	
Complete the following if any Corrosion Failure sub-cause is selected AND Question 3) is Pipe or Weld.	the "Item Involved in Accident" (from PART C,
15. Has one or more internal inspection tool collected data at the point of the Accident?	P. 4
15a. If Yes, for each tool used, select type of internal inspection tool and i	ndicate most recent year run: -
Most recent vear:	
- Ultrasonic	
Most recent year:	
- Geometry	
Most recent year:	
Most recent vear:	
- Crack	
Most recent year:	
- Hard Spot	
Most recent year:	
Most recent vear:	
- Transverse Field/Triaxial	
Most recent year:	
- Other	
Most recent year:	
Describe:	
original construction at the point of the Accident?	
If Yes -	
Most recent year tested:	
Test pressure:	
17. Has one or more Direct Assessment been conducted on this segment?	
Most recent vear conducted:	
- If Yes, but the point of the Accident was not identified as a dig site:	
Most recent year conducted:	
18. Has one or more non-destructive examination been conducted at the	
point of the Accident since January 1, 2002?	a for a second
recent year the examination conducted since January 1, 2002, select type	or non-destructive examination and indicate most
- rcaulography Most recent year conducted:	
- Guided Wave Ultrasonic	
Most recent year conducted:	
- Handheld Ultrasonic Tool	
Most recent year conducted:	
- wei magnetic Particle Test Most recent vear conducted	
- Dry Magnetic Particle Test	
Most recent year conducted:	
- Other	
Most recent year conducted:	
G2 - Natural Force Damage - only one sub-cause can be picked from shaded left-handed column	
Natural Force Damage – Sub-Cause:	
- If Earth Movement, NOT due to Heavy Rains/Floods:	
1. Specify:	

- If Other Describe	
- If Heavy Rains/Floods:	
2. Specify:	
- If Other, Describe:	
- If Lightning:	
3. Specify:	
- If Temperature:	
4. Specify:	
- If Other, Describe:	
- If Other Natural Force Damage:	
Complete the following if any Natural Force Damage sub-cause is sel	ected.
6. Were the natural forces causing the Accident generated in	
conjunction with an extreme weather event?	
- Hurricane	
- Tropical Storm	
- Tornado	
- Other	
- If Other, Describe:	
C2. Everytian Demonstructure with several herida to the	had a la f h han da a hann
G3 - Excavation Damage - only one sub-cause can be picked from s	naded left-nand column
Europetics Description Octo	
Excavation Damage – Sub-Cause:	
- If Previous Damage due to Excavation Activity: Complete Questions	1-5 ONLY IF the "Item Involved in Accident" (from PART
C, Question 3) is Pipe or Weld.	
1. Has one or more internal inspection tool collected data at the point of	
1a If Yes for each tool used select type of internal inspection tool at	ad indicate most recent year run: -
- Magnetic Flux Leakage	
Most recent year conducted:	
- Ultrasonic	
Most recent year conducted:	
- Geometry	
Most recent year conducted:	
- Caliper	
Most recent year conducted:	
Most recent year conducted:	
- Hard Spot	
Most recent year conducted	
- Combination Tool	
Most recent vear conducted:	
- Transverse Field/Triaxial	
Most recent year conducted:	
- Other	
Most recent year conducted:	
Describe:	
2. Do you have reason to believe that the internal inspection was	
completed BEFORE the damage was sustained?	
3. Has one or more hydrotest or other pressure test been conducted since	
- If Yes:	
Most recent year tested:	
Test pressure (psig):	
4. Has one or more Direct Assessment been conducted on the pipeline	
segment?	
- If Yes, and an investigative dig was conducted at the point of the Acc	cident:
Most recent year conducted:	
- ii res, but the point of the Accident was not identified as a dig site:	
NUOSI TECETITI YEAR CONTRUCTED.	
point of the Accident since January 1 2002?	
5a. If Yes, for each examination, conducted since January 1 2002 s	elect type of non-destructive examination and indicate most
recent year the examination was conducted:	
- Radiography	
Most recent year conducted:	
- Guided Wave Ultrasonic	
Most recent year conducted:	

- Handheld Ultrasonic Tool	
Most recent year conducted:	
- Wet Magnetic Particle Test	
Most recent year conducted:	
- Dry Magnetic Particle Test	
Most recent year conducted:	
- Other	
Most recent year conducted:	
Describe:	
Complete the following if Excavation Damage by Third Party is select	ed as the sub-cause.
6 Did the operator get prior notification of the excavation activity?	
6a. If Yes. Notification received from: (select all that apply) -	
- One-Call System	
- Excavator	
- Contractor	
- Landowner	
Complete the following mandatory CGA-DIRT Program questions if ar	ly Excavation Damage sub-cause is selected.
7. Do you want PHMSA to upload the following information to CGA-	
DIRT (www.cga-dirt.com)?	
8. Right-of-Way where event occurred: (select all that apply) -	
- Public	
- If "Public", Specify:	
- Private	
- If "Private", Specify:	
- Pipeline Property/Easement	
- Power/ I ransmission Line	
- Rallroad	
- Dedicated Public Otility Easement	
- Federal Land	
- Unknown/Other	
9 Type of excavator:	
10 Type of excavation equipment:	
11 Type of work performed	
12. Was the One-Call Center notified?	
12a. If Yes. specify ticket number:	
12b. If this is a State where more than a single One-Call Center	
exists, list the name of the One-Call Center notified:	
13. Type of Locator:	
14. Were facility locate marks visible in the area of excavation?	
15. Were facilities marked correctly?	
16. Did the damage cause an interruption in service?	
16a. If Yes, specify duration of the interruption (hours)	
17. Description of the CGA-DIRT Root Cause (select only the one predom	inant first level CGA-DIRT Root Cause and then, where
available as a choice, the one predominant second level CGA-DIRT Root	Cause as well):
Root Cause:	
- If One-Call Notification Practices Not Sufficient, specify:	
- If Locating Practices Not Sufficient, specify:	
- If Excavation Practices Not Sufficient, specify:	
- If Other/None of the Above, explain:	
C4. Other Outside Force Demore only one sub-source can be as	leaded from the abaded left band caluman
G4 - Other Outside Force Damage - only one sub-cause can be se	
Other Outside Force Damage – Sub-Cause:	
- If Damage by Car, Truck, or Other Motorized Vehicle/Equipment NO	T Engaged in Excavation:
1. Vehicle/Equipment operated by:	
- If Damage by Boats, Barges, Drilling Rigs, or Other Maritime Equipm	nent or Vessels Set Adrift or Which Have Otherwise Lost
Their Mooring:	
2. Select one or more of the following IF an extreme weather event was a	factor:
- Hurricane	
- I ropical Storm	
- Tomado Heavy Peine/Elead	
- Heavy Kains/Flood	
- Uliei If Other Describe:	
- II Ottlei, Describe:	te Questions 3-7 ONLY IE the "Item Involved in
- IF Frevious Mechanical Danage NOT Related to Excavation: Comple	are questions 3-7 ONLT IF the Item involved in
3 Has one or more internal inspection tool collected data at the point of	

the Accident?	
3a. If Yes, for each tool used, select type of internal inspection tool and ind	dicate most recent year run:
- Magnetic Flux Leakage	
Most recent year conducted:	
- Ultrasonic	
Most recent year conducted:	
- Geometry	
Most recent year conducted:	
- Caliper	
Most recent year conducted:	
- Crack	
Most recent year conducted:	
- Hard Spot	
Most recent year conducted:	
- Combination Tool	
Most recent year conducted	
- Transverse Field/Triavial	
Most recent year conducted:	
Most recent year conducted.	
Most recent year conducted:	
Most recent year conducted.	
A Do you have reason to believe that the internal inspection was	
completed REFORE the demage was sustained?	
5. Has one or more hydrotest or other pressure tost boon conducted	
since original construction at the point of the Accident?	
- If Yes	
Most recent year tested.	
Test pressure (psig):	
6. Has one or more Direct Assessment been conducted on the pineline	
segment?	
- If Yes, and an investigative dig was conducted at the point of the Acciden	<u>†</u> .
Most recent year conducted:	
- If Yes, but the point of the Accident was not identified as a dig site.	
Most recent year conducted:	
7 Has one or more non-destructive examination been conducted at the	
point of the Accident since January 1, 2002?	
7a If Yes for each examination conducted since January 1 2002 se	elect type of non-destructive examination and indicate most
recent year the examination was conducted.	soor gpo of hor accuracity o staning and indicate most
- Radiography	
Most recent vear conducted:	
- Guided Wave Ultrasonic	
Most recent year conducted:	
- Handheld Ultrasonic Tool	
Most recent year conducted:	
- Wet Magnetic Particle Test	
Most recent year conducted:	
- Dry Magnetic Particle Test	
Most recent year conducted:	
- Other	
Most recent year conducted:	
Describe:	
- If Intentional Damage:	
8. Specify:	
- If Other, Describe:	
- If Other Outside Force Damage:	
9. Describe:	
G5 - Material Failure of Pipe or Weld - only one sub-cause can be	selected from the shaded left-hand column
Use this section to report material failures ONLY IF the "Item Involved	d in Accident" (from PART C, Question 3) is "Pipe" or
Material Failure of Pipe or Weld – Sub-Cause:	
1. The sub-cause shown above is based on the following: (select all that a	pply)
- Field Examination	
- Determined by Metallurgical Analysis	
- Other Analysis	
- If "Other Analysis". Describe:	
Sub souss is Tentative or Suspected: Still Linder Investigation	
- Sub-cause is remained of Suspected, Shir Under Investigation	•

- If Construction, Installation, or Fabrication-related:	
2. List contributing factors: (select all that apply)	
- Fatigue or Vibration-related	
Specify:	
- If Other, Describe:	
- Mechanical Stress:	
- Utilei	
- If Environmental Cracking-related:	
3 Specify	
- If Other - Describe:	
Complete the following if any Material Failure of Pipe or Weld sub-ca	ise is selected
4. Additional factors: (select all that apply):	
- Gouge - Pine Bend	
- Arc Burn	
- Crack	
- Lack of Fusion	
- Lamination	
- Buckle	
- Wrinkle	
- Misalignment	
- Burnt Steel	
- Other:	
- If Other, Describe:	
5. Has one or more internal inspection tool collected data at the point of the Accident?	
5a. If Yes, for each tool used, select type of internal inspection tool a	nd indicate most recent year run:
- Magnetic Flux Leakage	
Most recent year run:	
- Ultrasonic	
Most recent year run:	
- Geometry	
Most recent year run:	
- Callper	
- Crack	
Most recent year run:	
- Hard Spot	
Most recent year run:	
- Combination Tool	
Most recent vear run:	
- Transverse Field/Triaxial	
Most recent vear run:	
- Other	
Most recent year run:	
Describe:	
6. Has one or more hydrotest or other pressure test been conducted since	
original construction at the point of the Accident?	
- IT Yes:	
Most recent year tested:	
7 Has one or more Direct Assessment been conducted on the pipeline	
segment?	
- If Yes, and an investigative dig was conducted at the point of the Acc	cident -
Most recent year conducted:	
- If Yes, but the point of the Accident was not identified as a dig site -	
Most recent year conducted:	
8. Has one or more non-destructive examination(s) been conducted at the	
point of the Accident since January 1, 2002?	loct type of non-destructive examination and indicate most
oa. It res, for each examination conducted since January 1, 2002, se	erect type of non-destructive examination and indicate most
- Radiography	
Most recent year conducted:	
- Guided Wave Ultrasonic	
Most recent year conducted:	
- Handheld Ultrasonic Tool	
Most recent year conducted:	

- Wet Magnetic Particle Test	
Most recent vear conducted:	
- Dry Magnetic Particle Test	
Most recent year conducted	
- Other	
Most recent year conducted:	
Describe:	
G6 – Equipment Failure - only one sub-cause can be selected from t	he shaded left-hand column
Equipment Failure – Sub-Cause:	Other Equipment Failure
- If Malfunction of Control/Relief Equipment:	
1. Specify: (select all that apply) -	
- Control Valve	
- Instrumentation	
- SCADA	
- Communications	
- Block Valve	
- Check Valve	
- Relief Valve	
- Power Failure	
- Stopple/Control Fitting	
- ESD System Failure	
- Other	
- If Other – Describe:	
- If Pump or Pump-related Equipment:	
2. Specify:	
- If Other – Describe	
- If Threaded Connection/Coupling Failure:	
3 Specify:	
If Other Describe:	
- II Ottlet - Describe.	
- If Non-threaded Connection Failure:	
4. Specily:	
- If Other – Describe:	
- If Other Equipment Failure:	
- If Other Equipment Failure: 5. Describe:	Flex Hose
If Other Equipment Failure: 5. Describe: Complete the following if any Equipment Failure sub-cause is selected	Flex Hose
If Other Equipment Failure: 5. Describe: Complete the following if any Equipment Failure sub-cause is selected	Flex Hose d.
 If Other Equipment Failure: 5. Describe: Complete the following if any Equipment Failure sub-cause is selected 6. Additional factors that contributed to the equipment failure: (select all the failure) 	Flex Hose d. at apply)
If Other Equipment Failure: S. Describe: Complete the following if any Equipment Failure sub-cause is selecter Additional factors that contributed to the equipment failure: (select all the - Excessive vibration	Flex Hose d. at apply)
If Other Equipment Failure: S. Describe: Complete the following if any Equipment Failure sub-cause is selecter 6. Additional factors that contributed to the equipment failure: (select all the - Excessive vibration - Overpressurization	Flex Hose d. at apply)
If Other Equipment Failure: 5. Describe: Complete the following if any Equipment Failure sub-cause is selecte 6. Additional factors that contributed to the equipment failure: (select all th - Excessive vibration - Overpressurization - No support or loss of support	Flex Hose d. at apply)
If Other Equipment Failure: 5. Describe: Complete the following if any Equipment Failure sub-cause is selecte 6. Additional factors that contributed to the equipment failure: (select all th - Excessive vibration - Overpressurization - No support or loss of support - Manufacturing defect	Flex Hose d. at apply)
If Other Equipment Failure: 5. Describe: Complete the following if any Equipment Failure sub-cause is selecter 6. Additional factors that contributed to the equipment failure: (select all th - Excessive vibration - Overpressurization - No support or loss of support - Manufacturing defect Lean of electricity	Flex Hose d. at apply)
If Other Equipment Failure: 5. Describe: Complete the following if any Equipment Failure sub-cause is selecter 6. Additional factors that contributed to the equipment failure: (select all th - Excessive vibration - Overpressurization - No support or loss of support - Manufacturing defect - Loss of electricity	Flex Hose d. at apply)
If Other Equipment Failure: 5. Describe: Complete the following if any Equipment Failure sub-cause is selecter 6. Additional factors that contributed to the equipment failure: (select all th - Excessive vibration - Overpressurization - No support or loss of support - Manufacturing defect - Loss of electricity - Improper installation	Flex Hose d. at apply) Yes
If Other Equipment Failure: 5. Describe: Complete the following if any Equipment Failure sub-cause is selecter 6. Additional factors that contributed to the equipment failure: (select all th - Excessive vibration - Overpressurization - No support or loss of support - Manufacturing defect - Loss of electricity - Improper installation - Mismatched items (different manufacturer for tubing and tubing	Flex Hose d. at apply)
If Other Equipment Failure: 5. Describe: Complete the following if any Equipment Failure sub-cause is selecter 6. Additional factors that contributed to the equipment failure: (select all th - Excessive vibration - Overpressurization - No support or loss of support - Manufacturing defect - Loss of electricity - Improper installation - Mismatched items (different manufacturer for tubing and tubing fittings)	Flex Hose d. at apply) Yes
If Other Equipment Failure: 5. Describe: Complete the following if any Equipment Failure sub-cause is selecter 6. Additional factors that contributed to the equipment failure: (select all th - Excessive vibration - Overpressurization - No support or loss of support - Manufacturing defect - Loss of electricity - Improper installation - Mismatched items (different manufacturer for tubing and tubing fittings) - Dissimilar metals	Flex Hose d. at apply) Yes
If Other Equipment Failure: 5. Describe: Complete the following if any Equipment Failure sub-cause is selecter 6. Additional factors that contributed to the equipment failure: (select all th - Excessive vibration - Overpressurization - No support or loss of support - Manufacturing defect - Loss of electricity - Improper installation - Mismatched items (different manufacturer for tubing and tubing fittings) - Dissimilar metals - Breakdown of soft goods due to compatibility issues with	Flex Hose d. at apply) Yes
If Other Equipment Failure: 5. Describe: Complete the following if any Equipment Failure sub-cause is selecter 6. Additional factors that contributed to the equipment failure: (select all th - Excessive vibration - Overpressurization - No support or loss of support - Manufacturing defect - Loss of electricity - Improper installation - Mismatched items (different manufacturer for tubing and tubing fittings) - Dissimilar metals - Breakdown of soft goods due to compatibility issues with transported commodity	Flex Hose d. at apply)
If Other Equipment Failure: 5. Describe: Complete the following if any Equipment Failure sub-cause is selecter 6. Additional factors that contributed to the equipment failure: (select all th - Excessive vibration - Overpressurization - No support or loss of support - Manufacturing defect - Loss of electricity - Improper installation - Mismatched items (different manufacturer for tubing and tubing fittings) - Dissimilar metals - Breakdown of soft goods due to compatibility issues with transported commodity	Flex Hose d. at apply)
If Other Equipment Failure: 5. Describe: Complete the following if any Equipment Failure sub-cause is selecter 6. Additional factors that contributed to the equipment failure: (select all th - Excessive vibration - Overpressurization - No support or loss of support - Manufacturing defect - Loss of electricity - Improper installation - Mismatched items (different manufacturer for tubing and tubing fittings) - Dissimilar metals - Breakdown of soft goods due to compatibility issues with transported commodity - Valve vault or valve can contributed to the release	Flex Hose d. at apply) Yes
If Other Equipment Failure: S. Describe: Complete the following if any Equipment Failure sub-cause is selecter Additional factors that contributed to the equipment failure: (select all th - Excessive vibration - Overpressurization - No support or loss of support - Manufacturing defect - Loss of electricity - Improper installation - Mismatched items (different manufacturer for tubing and tubing fittings) - Dissimilar metals - Breakdown of soft goods due to compatibility issues with transported commodity - Valve vault or valve can contributed to the release - Alarm/status failure	Flex Hose d. at apply) Yes
If Other Equipment Failure: 5. Describe: Complete the following if any Equipment Failure sub-cause is selecter 6. Additional factors that contributed to the equipment failure: (select all th - Excessive vibration - Overpressurization - No support or loss of support - Manufacturing defect - Loss of electricity - Improper installation - Mismatched items (different manufacturer for tubing and tubing fittings) - Dissimilar metals - Breakdown of soft goods due to compatibility issues with transported commodity - Valve vault or valve can contributed to the release - Alarm/status failure - Misalignment	Flex Hose d. at apply) Yes
If Other Equipment Failure: S. Describe: Complete the following if any Equipment Failure sub-cause is selecter Additional factors that contributed to the equipment failure: (select all th - Excessive vibration - Overpressurization - No support or loss of support - Manufacturing defect - Loss of electricity - Improper installation - Mismatched items (different manufacturer for tubing and tubing fittings) - Dissimilar metals - Breakdown of soft goods due to compatibility issues with transported commodity - Valve vault or valve can contributed to the release - Alarm/status failure - Misalignment - Thermal stress	Flex Hose d. at apply) Yes
If Other Equipment Failure: S. Describe: Complete the following if any Equipment Failure sub-cause is selecter 6. Additional factors that contributed to the equipment failure: (select all th - Excessive vibration - Overpressurization - No support or loss of support - Manufacturing defect - Loss of electricity - Improper installation - Mismatched items (different manufacturer for tubing and tubing fittings) - Dissimilar metals - Breakdown of soft goods due to compatibility issues with transported commodity - Valve vault or valve can contributed to the release - Alarm/status failure - Misalignment - Thermal stress - Other	Flex Hose d. at apply) Yes
If Other Equipment Failure: 5. Describe: Complete the following if any Equipment Failure sub-cause is selecter 6. Additional factors that contributed to the equipment failure: (select all th - Excessive vibration - Overpressurization - No support or loss of support - Manufacturing defect - Loss of electricity - Improper installation - Mismatched items (different manufacturer for tubing and tubing fittings) - Dissimilar metals - Breakdown of soft goods due to compatibility issues with transported commodity - Valve vault or valve can contributed to the release - Alarm/status failure - Misalignment - Thermal stress - Other - Ilf Other, Describe:	Flex Hose d. at apply) Yes
If Other Equipment Failure: S. Describe: Complete the following if any Equipment Failure sub-cause is selecter 6. Additional factors that contributed to the equipment failure: (select all th - Excessive vibration - Overpressurization - No support or loss of support - Manufacturing defect - Loss of electricity - Improper installation - Mismatched items (different manufacturer for tubing and tubing fittings) - Dissimilar metals - Breakdown of soft goods due to compatibility issues with transported commodity - Valve vault or valve can contributed to the release - Alarm/status failure - Misalignment - Thermal stress - Other - If Other, Describe:	Flex Hose at apply) Yes
If Other Equipment Failure: S. Describe: Complete the following if any Equipment Failure sub-cause is selecter 6. Additional factors that contributed to the equipment failure: (select all th - Excessive vibration - Overpressurization - No support or loss of support - Manufacturing defect - Loss of electricity - Improper installation - Mismatched items (different manufacturer for tubing and tubing fittings) - Dissimilar metals - Breakdown of soft goods due to compatibility issues with transported commodity - Valve vault or valve can contributed to the release - Alarm/status failure - Misalignment - Thermal stress - Other - If Other, Describe:	Flex Hose at apply) Yes Yes Image: state of the shaded left-hand column
If Other Equipment Failure: 5. Describe: Complete the following if any Equipment Failure sub-cause is selecter 6. Additional factors that contributed to the equipment failure: (select all th - Excessive vibration - Overpressurization - No support or loss of support - Manufacturing defect - Loss of electricity - Improper installation - Mismatched items (different manufacturer for tubing and tubing fittings) - Dissimilar metals - Breakdown of soft goods due to compatibility issues with transported commodity - Valve vault or valve can contributed to the release - Alarm/status failure - Misalignment - Thermal stress - Other - If Other, Describe: G7 - Incorrect Operation - only one sub-cause can be selected from Incorrect Operation – Sub-Cause:	Flex Hose at apply) Yes Yes the shaded left-hand column
If Other Equipment Failure: 5. Describe: Complete the following if any Equipment Failure sub-cause is selecter 6. Additional factors that contributed to the equipment failure: (select all th - Excessive vibration - Overpressurization - No support or loss of support - Manufacturing defect - Loss of electricity - Improper installation - Mismatched items (different manufacturer for tubing and tubing fittings) - Dissimilar metals - Breakdown of soft goods due to compatibility issues with transported commodity - Valve vault or valve can contributed to the release - Alarm/status failure - Misalignment - Thermal stress - Other - If Other, Describe: G7 - Incorrect Operation – only one sub-cause can be selected from Incorrect Operation – Sub-Cause: - If Tank, Vessel, or Sump/Separator Allowed or Caused to Overfill or	Flex Hose at apply)
If Other Equipment Failure: 5. Describe: Complete the following if any Equipment Failure sub-cause is selecter 6. Additional factors that contributed to the equipment failure: (select all th - Excessive vibration - Overpressurization - No support or loss of support - Manufacturing defect - Loss of electricity - Improper installation - Mismatched items (different manufacturer for tubing and tubing fittings) - Dissimilar metals - Breakdown of soft goods due to compatibility issues with transported commodity - Valve vault or valve can contributed to the release - Alarm/status failure - Misalignment - Thermal stress - Other - If Other, Describe: G7 - Incorrect Operation - only one sub-cause can be selected from Incorrect Operation - only one sub-cause can be selected from Incorrect Operation - Sub-Cause: - If Tank, Vessel, or Sump/Separator Allowed or Caused to Overfill or	Flex Hose at apply) Yes Yes Image: state state of the shaded left-hand column Overflow
If Other Equipment Failure: 5. Describe: Complete the following if any Equipment Failure sub-cause is selecter 6. Additional factors that contributed to the equipment failure: (select all th - Excessive vibration - Overpressurization - No support or loss of support - Manufacturing defect - Loss of electricity - Improper installation - Mismatched items (different manufacturer for tubing and tubing fittings) - Dissimilar metals - Breakdown of soft goods due to compatibility issues with transported commodity - Valve vault or valve can contributed to the release - Alarm/status failure - Misalignment - Thermal stress - Other - If Other, Describe: G7 - Incorrect Operation - only one sub-cause can be selected from Incorrect Operation - only one sub-cause can be selected from Incorrect Operation - Sub-Cause: - If Tank, Vessel, or Sump/Separator Allowed or Caused to Overfill or	Flex Hose d. at apply) Yes Yes Image: state state of the shaded left-hand column the shaded left-hand column Overflow
If Other Equipment Failure: 5. Describe: Complete the following if any Equipment Failure sub-cause is selected 6. Additional factors that contributed to the equipment failure: (select all th - Excessive vibration - Overpressurization - No support or loss of support - Manufacturing defect - Loss of electricity - Improper installation - Mismatched items (different manufacturer for tubing and tubing fittings) - Dissimilar metals - Breakdown of soft goods due to compatibility issues with transported commodity - Valve vault or valve can contributed to the release - Alarm/status failure - Misalignment - Thermal stress - Other - If Other, Describe: G7 - Incorrect Operation - only one sub-cause can be selected from Incorrect Operation - only one sub-cause can be selected from Incorrect Operation - Sub-Cause: - If Other, Describe: - If Other, Describe:	Flex Hose at apply) Yes Yes Image: state state of the shaded left-hand column Image: state of the shaded left-hand column Image: state of the shaded left-hand column Image: state of the shaded left-hand column

2. Describe:		
Complete the following if any Incorrect Operation sub-cause is select	ed.	
3. Was this Accident related to (select all that apply): -		
- Inadequate procedure		
 No procedure established 		
- Failure to follow procedure		
- Other:		
- If Other, Describe:		
4. What category type was the activity that caused the Accident?		
5. Was the task(s) that led to the Accident identified as a covered task in your Operator Qualification Program?		
5a. If Yes, were the individuals performing the task(s) qualified for the task(s)?		
G8 - Other Accident Cause - only one sub-cause can be selected from the shaded left-hand column		
Other Accident Cause – Sub-Cause:		
- If Miscellaneous:		
1. Describe:		
- If Unknown:		
2. Specify:		

PART H - NARRATIVE DESCRIPTION OF THE ACCIDENT

On March 2, 2021 at approximately 3:13 PM, operations personnel at the Viking Station witnessed oil spraying out of the Line 4 facility piping near the case pressure transmitters, just upstream of the pressure control valve. The Edmonton Control Center was immediately notified of the release and Viking Station was isolated. It is estimated that approximately 4 barrels of crude was released. The source of the product was determined to be the pressure transmitter flex hose. The failed flex hose was replaced and approximately 75 cubic yards of contaminated soil was removed from the release site. The failed flex hose was sent out for a third-party analysis which determined the cause to be due to a circumferential crack that was observed in the stainless steel core of the flex hose, 1.5 inches away from the end connection where the outside braid and inside core were welded together. A deformation was discovered at the end connection nearest to the failure, indicating a large extent of bending likely due to incorrect installation practices.

As a result of the findings from the investigation, particularly as it relates to the configuration of the flex hose and the role it played in the failure, a Quality Bulletin will be issued company wide. For existing flex hoses, the Quality Bulletin will provide direction regarding the inspection of the hoses to confirm whether they adhere to the applicable installation guide as recommended by the manufacturer.

PART I - PREPARER AND AUTHORIZED SIGNATURE

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