

**ONTARIO INFORMATION REQUEST NO. 1
ENBRIDGE PIPELINES INC.
LINE 9B REVERSAL AND LINE 9 CAPACITY EXPANSION HEARING
NEB HEARING ORDER OH-002-2013**

ENGINEERING DESIGN AND INTEGRITY OF THE PIPELINE

1.1 Pipeline Risk

Reference: Filing A3D7J4: B1-15 - Attachment 7 – Pipeline Integrity Engineering Assessment, (Adobe page 21, lines 20-21).

Preamble: In the reference, Enbridge states that the increase in Line 9 capacity “results in a minor increase in assessed risk for 0.9% of the pipeline”.

Request: With respect to pipeline risk and integrity:

- a) Please clarify what is meant by a minor increase in assessed risk and identify the type of risk contemplated.
- b) Identify the specific location (or locations) of the pipeline that would be subject to increased risk along Line 9 in a Geographic Information System (GIS) enabled shape files in ARC ESRI format, which delineates Line 9, showing the location (or locations) in Ontario.
- c) Identify the specific steps that Enbridge can take so that the increase in Line 9 capacity will not result in any increase in assessed risk for the pipeline.

1.2 Back-up Power Supply

Reference: Filing A3G4R8: B8-2, Response to NEB Information Request No. 1, (Adobe page 44, Question 1.26 a).

Preamble: NEB question 1.26a) asks Enbridge to confirm whether or not every station involved in the project has an emergency shut-down system, including back-up power supply, which comply with the requirements of OPR-99 section 12 and CSA Z662-11 section 14.4.3.3.

The Enbridge response to NEB Question 1.26a) states: "However, the motor and the electrical starter for the isolation valve configuration at the stations and inlet valves at the terminals are not backed up by an auxiliary supply. This does not meet the requirement of OPR-99 section 12."

Request: Please provide:

- a) The date at which Enbridge became aware that its terminals and stations involved in the Project were not in compliance with OPR-99 section 12, as it relates to auxiliary supply.
- b) The length of time the terminals and stations involved in the Project were operated outside of compliance with OPR-99 section 12, as it relates to auxiliary power supply.
- c) NEB Order SO-E101-001-2013 and the associated NEB letter to Enbridge dated 15 March 2013 regarding non-compliance with CSA Z662-11 relating to Emergency Shut Down push-buttons and OPR-99 section 12 requirements pursuant to auxiliary power supply at Enbridge facilities.
- d) Enbridge's response to NEB Order SO-E101-001-2013.
- e) The specific dates in which Enbridge plans to have the following facilities compliant with OPR-99, section 12: Sarnia Terminal, North Westover Station, Westover Terminal, Hilton Station, Cardinal Station, Terrebonne Station, and Montreal Terminal.
- f) Please identify any and all other Enbridge facilities located in Ontario – not identified in part e) - that are not in compliance with OPR-99 section 12 or CSA Z662-11 and provide specific dates by which Enbridge plans to make these facilities compliant.

1.3 Engineering Assessment and Third Party Review

Reference: Filing A3D7J4: B1-15 - Attachment 7 – Pipeline Integrity Engineering Assessment, (Adobe pages 12 -13).

Preamble: In the above reference, Enbridge indicates that the Engineering Assessment has been prepared by members of the Pipeline Integrity Department at Enbridge. Enbridge lists the team members (9) in table 2-1.

Request: With respect to engineering assessments:

- a) Please advise whether any individuals, other than Enbridge staff, participated in the preparation of the Engineering Assessment.
- b) Please advise whether Enbridge retained an independent third party to conduct a peer review of the Engineering Assessment. If so, please indicate who conducted the review and file a copy of the peer review in this proceeding.
- c) If the answer to b) is no, does Enbridge agree to retain a qualified, independent third party to conduct a peer review of the Engineering Assessment and to file the results of the peer review in this proceeding at least 30 days prior to the commencement of Oral Final Argument?

1.4 *Payment of Clean-Up Costs, Reimbursement of First Responder Costs, and Compensation for Damages for Leaks and Ruptures*

Reference: Enbridge Application for the Line 9B Reversal and the Line 9 Capacity Expansion Project

Preamble: The primary purpose of the proposed project is to transport crude oil produced in western Canadian provinces (and the United States) for use in refineries located in Québec. If the project is approved, the pipeline will carry crude oil through most of southern Ontario, through many communities, and will involve multiple water crossings. Ontario notes that a significant leak or rupture, such as the one that occurred on an Enbridge oil pipeline in Michigan in 2010, could result in clean-up costs that approach, and possibly exceed, \$1 billion.

Ontario would like to ensure that the province and its municipalities, public agencies, businesses and residents will not bear any of the clean-up costs related to a leak or

rupture on the pipeline and that Enbridge will be fully responsible for all such costs.

In addition, in the event of a leak or rupture on the pipeline, it is possible that the province and its municipalities, public agencies and others may incur costs in initially responding to the leak or rupture. Ontario believes that Enbridge should reimburse those costs.

Further, Ontario would like to ensure that the province and its municipalities, public agencies, businesses and residents are fully compensated in the event that they incur damages due to a leak or rupture on the pipeline.

Request: Please respond:

- a) Does Enbridge agree that it is fully responsible for paying all of the clean-up costs related to a leak or rupture on the pipeline?
- b) Does Enbridge agree to reimburse the province and its municipalities, public agencies and other responders for all reasonable costs incurred by them in responding to a leak or rupture on the pipeline?
- c) Does Enbridge agree to compensate the province and its municipalities, public agencies, businesses and residents in the event that they incur damages, including economic loss, due to a leak or rupture on the pipeline?
- d) If the National Energy Board issues an Order approving the project, does Enbridge agree to the inclusion in the Order of a condition requiring Enbridge to be fully responsible for paying all of the clean-up costs related to a leak or rupture on the pipeline?
- e) If the National Energy Board issues an Order approving the project, does Enbridge agree to the inclusion in the Order of a condition requiring Enbridge to reimburse the province, municipalities, public agencies and other responders for all reasonable costs incurred by them in responding to a leak or rupture on the pipeline?
- f) If the National Energy Board issues an Order approving the project, does Enbridge agree to the inclusion in the Order of a condition requiring Enbridge to compensate

the province and its municipalities, public agencies, businesses and residents in the event that they incur damages, including economic loss, due to a leak or rupture on the pipeline?

1.5 Financial Assurance Plan

Reference: Enbridge Application for the Line 9B Reversal and the Line 9 Capacity Expansion Project

Preamble: Ontario would like Enbridge to identify the financial assurance plan that it proposes to provide for the project.

Ontario notes that financial assurance was recently considered by the Joint Review Panel for the Enbridge Northern Gateway Project.

On April 13, 2013, the Joint Review Panel published potential conditions related to the Northern Gateway Project. Condition number 147 would require Northern Gateway to provide a financial assurance plan with total coverage of \$950 million for liabilities that could arise as consequence of the operation of the Northern Gateway Project. The financial assurance plan would consist of at least \$100 million of ready cash, \$600 million of insurance coverage, and \$250 million of financial backstop.

In arriving at the proposed financial assurance, the Joint Review Panel took into account a number of specific factors including "potential spill quantities, spill location (such as high consequence areas) and potential unit costs for liabilities including clean-up, remediation and other damages on a per barrel basis". Condition number 147 may be viewed at: <https://www.neb-one.gc.ca/ll-eng/livelink.exe/fetch/2000/90464/90552/384192/620327/624909/942629/A346-5 - Panel-Commission - Attachment B - Collection of potential conditions - A3G7X1.pdf?nodeid=942306&vernum=0>.

Request: If the National Energy Board issues an Order approving the Line 9 reversal and expansion, please indicate:

- a) The total amount of the financial assurance plan that Enbridge will provide;

- b) The various components of the financial assurance plan, including the related amounts, to be provided;
- c) The assumptions and specific factors used by Enbridge in developing the financial assurance plan; and
- d) If a significant spill occurs where the clean-up costs exceed the amount of the financial assurance, how will Enbridge pay for the additional clean-up costs?

1.6 Operating Volumes

Reference: i) Filing A3D7J7: B1-18 - Attachment 8 – Facilities Integrity Engineering Assessment, (Adobe page 15, lines 14-17).

ii) Filing A3D7I1: B1-2 – Line 9B Reversal and Line 9 Capacity Expansion Project Application, (Adobe page 26, lines 7-9).

Preamble: In the above reference i) it is indicated that the currently approved annual capacity of Line 9B is 240,000 barrels per day (bpd), and Line 9B has been operating at approximately 166,000 bpd. The proposed annual rate in reversed service for both Line 9B and the Lateral is 300,000 bpd, with a maximum rate of 333,333 bpd.

In reference ii) it is stated that "Throughput on Line 9 over the last three years (2009-11) has averaged only 10,175 m³ per day (64,000 bpd) ..."

Ontario would like details on how the safety of a higher throughput of 333,333 bpd was determined and why the figure of 300,000 bpd is cited throughout the application, not 333,333 bpd cited in the reference above. Also, Ontario would like to confirm when Line 9B was operating at 166,000 bpd.

Request: Please explain the following:

- a) Please explain how a flow of 333,333 bpd was determined to be safe for the pipeline despite its current approved annual capacity of 240,000 bpd.

- b) Please explain the discrepancy between the 300,000 bpd outlined in the project application and the maximum rate of 333,333 bpd cited above.
- c) In table form please identify the actual average throughput volume for each section of Line 9 for each of the last five years, beginning with the year 2008.
- d) Please explain the discrepancy between the two references, 166,000 bpd and 64,000 bpd, in terms of historical Line 9B operating rates.

1.7 Drag Reducing Agent

Reference: Filling A3D7J7: B1-18 - Attachment 8 – Facilities Integrity Engineering Assessment, (Adobe page15, lines 17-19).

Preamble: In the above reference it is indicated “rates are increased with the effect of a drag reducing agent, which is being injected at SA [Sarnia] and each of the subsequent pump stations”.

Ontario would like details on the composition of the Drag Reducing Agent, a list of the Enbridge pipelines on which it is or has been used, and details of spills and leaks on these lines pre and post the introduction of the Agent. Also, we request studies assessing the safety of the Drag Reducing Agent and identifying any special clean-up requirements.

Request: Please provide the following information:

- a) Please provide the chemical composition, human and environmental toxicity results, and WHIMS info of the Drag Reducing Agent (DRA) and the collective properties of the DRA mixed with crude oil (for all grades proposed in the Line 9B pipeline reversal).
- b) Please identify the Enbridge pipelines that use or have used a DRA and provide details on any spills or leaks on these pipelines prior to and post DRA being utilized. Do you intend to use the same DRA that has been used on any of these lines on Line 9?

- c) Please provide studies regarding DRA and the human health and environmental impact, and any safety and clean-up requirements.
- d) Please provide the concentration in which DRA will be mixed with crude oil for Enbridge Line 9B.
- e) Where does Enbridge intend to source the DRA, where will it be stored and how will it be transported to the point of injection at Enbridge facilities located at Sarnia Terminal, North Westover Station, Cardinal Station, and Hilton Station?
- f) Please indicate if the addition of the DRA will result in chemical properties that would negatively impact the use of or alter the best spill response techniques. For example, does it change the solubility of the oil, the effectiveness of booms, the effectiveness of chemical dispersants, the need for air monitoring precautions, the best spill techniques used for land or water spills?
- g) Please outline how/if response techniques for a spill of DRA enhanced crude oil (for all applicable crude oil grades) would need to be altered to ensure that the best spill response techniques are implemented.
- h) Please identify whether the DRA increases corrosion of pipeline materials/components. If so, please identify by how much and explain how this is taken into account in assessing environmental and safety risks.
- i) Please outline if Line 9 has varying cross-sections and, if so, explain the effect of an increase in volume and increased flow rate (due to drag reducing agent) on the pipe walls when crude oil is going through divergent sections of the pipeline. Please identify whether there is additional stress on the pipeline walls and components.
- j) Please identify the training Enbridge staff, sub-contractors and agents who may respond to spill incidents, have received on any changes in properties or spill response techniques needed to address a spill of the crude and DRA mixture originating from the proposed Line 9B pipeline reversal. Please provide a copy of the training materials and identify which firms/persons in

Ontario have been trained using these documents in the past five years (beginning with the year 2008).

1.8 Leaks and Ruptures

Reference: Filing A3D7J4: B1-15- Attachment 7 – Pipeline Integrity Engineering Assessment, (Adobe pages 16-17, Table 3-2).

Preamble: In the above reference, Enbridge indicates that a total of 12 mainline leaks and one mainline rupture have occurred on the line since its initial construction.

Request: For each of the leaks and the rupture, please provide the following information:

- a) The quantity of oil that was released from the line.
- b) The environmental consequences of the release, including any contamination to water.
- c) The agencies notified and the manner of notification.
- d) The total clean-up costs.
- e) The location of each leak and rupture point and include this information in the shape file requested in Ontario Information Request 1.1b.
- f) The cause of each leak or rupture and the remedial action that was taken.

1.9 Initial Volume Out-Rupture

Reference: Filing A3D7J6: B1-17, Appendix B to Pipeline Engineering Assessment, (Adobe page 7, Table 1).

Preamble: For the Line 9 capacity expansion the increase in risk associated with a rupture is described as follows: "The initial volume out is the amount of product released at design flow rate before remote controlled valves are closed and the pipeline isolated. The increase in initial volume out with the Project is approximately 47 m³."

Request: Please provide the following information:

- a) Please provide the initial volume of product released in the event of a rupture under Line 9's current configuration. Please explain how this figure is calculated.
- b) The increase associated with the initial volume out of a ruptured line is shown as 47 m³ under the Enbridge's proposed Line 9B reversal. Please calculate the percentage increase compared with the current "initial volume out". Is the percentage increase in "initial volume out" the same as the percentage increase in the pipeline's capacity? If not, please explain.

1.10 U.S. Spill Reporting Standards

Reference: i) Filing A3D7J1: B1-12 – Attachment 4f – Letter to Ontario and Quebec Municipalities, (Adobe page 10, ERCB Letter dated February 16, 2011).

ii) Filing A3D7J1: B1-12 – Attachment 4f – Letter to Ontario and Quebec Municipalities, (Adobe page 35, Alberta Innovates Report, Section 7.0).

Preamble: The two references assert different criteria are used in compiling U.S. data of spills (5 gallons vs. 5 barrels).

Reference i), states: "Additionally, the NRDC did not recognize that the ERCB requires all incidents to be reported, regardless of whether or not any product is spilled, and also regardless of spill volume, whereas in the U.S. only spills of five barrels of liquids or more are required to be reported".

Reference ii) states: "Furthermore, the ERCB requires operators to report any pipeline incident that results in a loss of pipeline product, whereas the US data is based on incidents with a release of 5 gallons or more".

Request: Please confirm:

- a) Which reference (barrels or gallons) is accurate?

1.11 Mechanical Damage

Reference: i) Filing A3D7J4: B1-15 - Attachment 7 – Pipeline Integrity Engineering Assessment, (Adobe page 90, lines 6-7).

ii) Filing A3D7J4: B1-15- Attachment 7 – Pipeline Integrity Engineering Assessment, (Adobe pages 16-17, Table 3-2).

Preamble: At reference i), Enbridge states that "... nine documented leaks involving mechanical damage on the pipeline..." occurred between 1978 and 1999. At reference ii), Table 3-2 identifies leaks and ruptures from 1978 to 2005 and lists only two instances of leaks and ruptures caused by mechanical damage.

Request: Please respond:

a) Please explain the apparent inconsistency between references i) and ii).

1.12 Pipeline Depth of Cover Survey

Reference: Filing A3D7J1: B1-12, Attachment 4f – Letter to Ontario and Quebec Municipalities, (Adobe page 15).

Preamble: The reference notes that Enbridge pipelines are generally placed 0.6 - 0.9 metres below ground surface, protecting the pipe from normal ground level activity.

Request: Please provide the following:

a) Identify the standard (CSA, Enbridge, Industry, etc.) that results in the depth of cover practice noted in the reference.

b) Provide a depth of cover survey along the pipeline route to identify pipeline locations that are not at the prescribed depth level.

c) Identify planned remediation activity for locations that do not have sufficient depth of cover. If remediation is not planned at these locations, please explain why not.

1.13 In-Line Inspection ("ILI") Program

Reference: Filing A3D7J4: B1-15- Attachment 7 – Pipeline Integrity Engineering Assessment, (Adobe page10-11, line 39, lines 1-4).

Preamble: "Enbridge plans to complete the following integrity work prior to the flow reversal of Line 9B in 2014: Conduct a comprehensive in-line inspection ("ILI") program; evaluate the ILI data to determine what, if any, line rehabilitation activities are required to maintain the integrity of the pipeline; and execute required excavations and line rehabilitation to maintain line integrity at required operation parameters".

Ontario would like additional information on Enbridge's upcoming ILI program and evaluation.

Request: Please respond:

- a) Will Enbridge agree to conduct the In-Line Inspection (ILI) and file the results prior to the Final Argument phase of the hearing of this proceeding?

1.14 Hydrostatic Test

Reference: Filing A3D7J4: B1-15 - Attachment 7 – Pipeline Integrity Engineering Assessment, (Adobe page16, line 6).

Preamble: In the above reference, it is indicated "there were no leaks or ruptures on Line 9 during the last hydrostatic test conducted in 1997".

Ontario would like additional information on when Enbridge is planning to conduct the next hydrostatic test of Line 9.

Request: Please respond:

- a) When is Enbridge planning to conduct the next hydrostatic test of Line 9? Will the next hydrostatic test be completed prior to the reversal of the pipeline (if approved) and will Enbridge file the results in this proceeding?

1.15 2012-13 In-line Inspections

Reference: i) Filing A3D7J1: B1-12, Attachment 4f – Letter to Ontario and Quebec Municipalities, (Adobe page 2).

ii) Filing A3G4S8: B8-12, Attachment 1 to NEB IR 1.22 – Revised Tables 3-3 and 4-1, (Adobe page 3).

Preamble: Reference i) states: “On Line 9 in particular, we ran state-of-the-art in-line inspection tools through the pipeline over the past few months to gather thorough and current data on the condition of the pipeline. We are analyzing that data now, and should our analysis show that further inspection is required, we would carry that out through physical excavations and examinations.”

Reference ii), the revised Table 3-3, outlines several in-line inspections executed or planned, but not yet fully assessed by in-line inspection vendors.

Ontario is interested in the updated results from the recent in-line inspections.

- Request:**
- a) Provide an update of the status for each of the in-line inspections executed or planned identified in the revised Table 3-3 in reference ii). For each in-line inspection, include the date (or planned date) of the tool run. For completed tool runs, identify whether or not the assessment by in-line inspection vendors has been completed.
 - b) For in-line inspections for which the assessment by in-line inspection vendors has been completed, provide the type and number of exceptions noted and the corresponding number of physical excavations and examinations proposed and undertaken.
 - c) For physical excavations and examinations undertaken, please identify and describe the rehabilitation and timing for work proposed and undertaken.
 - d) In table form, for each of the in-line inspection tools identified in part b) please provide a future looking schedule showing the anticipated frequency of inspections over the next 20 years. Please indicate what events would increase or decrease the frequency of

these in-line inspections for each of the various in-line inspection tools identified.

1.16 Excavation and Repair Criteria

- Reference:**
- i) Filing A3D7J4: B1-15- Attachment 7 – Pipeline Integrity Engineering Assessment, (Adobe page 26, lines 9-12).
 - ii) Filing A2V3K6: NEB Letter Decision Line 9 Phase 1 Reversal, Appendix II, Order XO-E1010-010-2012, (Adobe page 4, Condition 9).
 - iii) Filing A3D7J4: B1-15, Attachment 7 – Pipeline Integrity Engineering Assessment, (Adobe page 27, Table 4-2).

Preamble: In reference i), Enbridge appears to have applied a repair standard that is implemented only when the pipe's wall thickness has diminished by at least 50% of the original pipe specification.

However, in reference ii), which is part of the Letter Decision for the Line 9 Phase 1 Reversal Project, the National Energy Board required in Condition 9 a) that Enbridge repair pipe when the loss of pipe wall thickness was 40% or more.

In reference iii), Table 4-2 outlines that features meeting the repair standard are either repaired with full encirclement sleeves or recoated.

Request: Please respond to the following:

- a) Please explain why Enbridge has used a 50% repair standard in the Engineering Assessment filed in this proceeding rather than the 40% standard specified by the NEB for the Line 9 Phase 1 Reversal Project.
- b) Please provide the associated timelines for any repairs that meet the Enbridge repair criteria.
- c) Please describe the procedures Enbridge uses to recoat sections of the pipeline. In your response, please identify what standards apply for the recoat and identify the material Enbridge uses for the recoat.

- d) Describe the encirclement sleeve process. In your response, please identify what standards apply for encirclement sleeves and what material Enbridge uses for the encirclement sleeves.
- e) For internal metal loss, is it standard practice to utilize the encirclement sleeve repair or is the repair achieved through replacement of that section of pipe?
- f) Please explain why the metal loss depth criteria are different for internal and external corrosion.
- g) Table 4-2 has a heading "RPR [Rupture Pressure Ratio] and %WT [Wall Thickness] depth". Please clarify if the remedial action is taken if both factors are present, or only one of the factors is present.

1.17 Threshold Level & Repair Criteria

Reference: Filing A3D7J4: B1-15, Attachment 7 – Pipeline Integrity Engineering Assessment, (Adobe pages 34-38, Figures 4-8 to 4-13)

Preamble: In figures 4.8 to 4.13 Enbridge indicates "Enbridge Repair Criteria" and "Enbridge Threshold Level". Ontario would like to better understand these terms.

- Request:**
- a) Please explain and define what is meant by "Enbridge Repair Criteria" and "Enbridge Threshold Level".
 - b) Please describe the actions Enbridge takes if an identified feature reaches the "Enbridge Repair Criteria" and compare these actions to what action Enbridge would take if a feature reaches the "Enbridge Threshold Level".

1.18 Location of Identified Features

Reference: i) Filing A3D7J4: B1-15 - Attachment 7 – Pipeline Integrity Engineering Assessment, (Adobe page 33, line 7).

ii) Filing A3D7J4: B1-15 - Attachment 7 – Pipeline Integrity Engineering Assessment, (Adobe page 33, line 5).

iii) Filling A3D7J4: B1-15 - Attachment 7 – Pipeline Integrity Engineering Assessment, (Adobe page 53, lines 6-8, and Adobe page 54, Table 4-9).

iv) Filling A3D7J4: B1-15 - Attachment 7 – Pipeline Integrity Engineering Assessment, (Adobe page 80, line 17).

Preamble: In the above reference i), it is indicated “Features below the 50% excavation criterion will be monitored on an ongoing basis” Ontario would like additional information on where these features are located along Line 9.

In the above reference ii), it is indicated “35 joints were identified with features meeting Enbridge excavation criterion for depth of 50%, all of which have been excavated and repaired”. Ontario would like additional information on where these 35 joints are located along Line 9.

In reference iii), Table 4-9 shows that there were a total of 4,738 crack related features reported by the three tool runs within their corresponding final reports. In addition to these crack related features, there were also a total of 8,223 metal loss features (approx. 63% of the total feature count) reported by the three tool runs. Ontario would like additional information on where these features are located, if they were remediated and if so when.

In the above reference iv), it is indicated “there are presently 25 reported features that are predicted to reach critical dimensions prior to the proposed flow reversal October 2013”. Ontario would like additional information on where these are located.

Request: Please provide the following information:

- a) Please identify where the features in reference i) are located and include this information in the shape file requested in Ontario Information Request 1.1b. Also, please identify why these faults have developed and how similar future faults are being prevented.
- b) Please identify where the 35 joints identified in reference ii) were located and include this information in the shape file requested in Ontario Information Request 1.1b. Please identify why these faults have developed and how similar future faults are being prevented.

- c) Please identify where the features in reference iii) are located and the nature of the repairs which were undertaken. Also, please identify why these faults have developed and if they are expected to increase over time.
- d) Please indicate where on Line 9 the 25 features from reference iv) are located and when they will be remediated. If any of these features have been remediated, please identify those separately and indicate when they were repaired and by what means. Please include this information in the shape file requested in Ontario Information Request 1.1b.

1.19 Crack Excavation Program

Reference: i) Filing A3D7J4: B1-15, Attachment 7 – Pipeline Integrity Engineering Assessment, (Adobe page 60, lines 5-12).

ii) Filing A3D7J4: B1-15, Attachment 7 – Pipeline Integrity Engineering Assessment, (Adobe page 59, lines 3-4).

Preamble: Reference i) states: “Based upon the above input assumptions, there were a total of 184 features on 149 joints that had a predicted failure pressure less than 125% of the MOP [Maximum Operation Pressure], shown in Figure 4.34. 172 of these 184 features have been subsequently excavated. The lowest predicted failure pressure of these reported features is 663 psi which equates to 86.3% of the NEB-approved MOP or 212% of the current reduced operating pressure. The vast majority of the features (82%) remaining in the pipeline have predicted failure pressures higher than 140% of the NEB-approved MOP [Maximum Operating Pressure]. Enbridge is presently inspecting Line 9B between NW [North Westover] and ML [Montreal], and these features will be re-evaluated based upon the new inspection data.”

Reference ii) states that “Following the 2004 to 2006 crack detection inspections, Enbridge excavated and repaired all features with estimated failure pressure less than 125% of MOP”.

Requests: Please explain the following:

- a) Please explain why 12 of the identified features with a predicted failure pressure less than 125% of MOP were not excavated, in apparent contradiction of the Enbridge's excavation standard outlined in reference ii).
- b) Please confirm whether or not the reported feature identified in reference i) that had a predicted failure pressure of 86.3% of the NEB-approved Maximum Operating Pressure has been excavated and repaired.

1.20 False Negative Features

- Reference:** i) Filing A3D7J4: B1-15, Attachment 7 – Pipeline Integrity Engineering Assessment, (Adobe page 63, lines 21-25).
- ii) Filing A3D7J4: B1-15, Attachment 7 – Pipeline Integrity Engineering Assessment, (Adobe page 65, Table 4-10).

Preamble: Reference i) states: "... there were a total of 206 unreported features (193 CL [Crack Like] features and 13 SCC [Stress Corrosion Cracking] colonies) that had field measured length and depth dimensions that were larger than the tool reporting threshold and were thus classified as a false negative features (sic). The tool specification says that in order for a feature to be classified as a false negative, the feature must have a depth of 1 mm for the entire length of 60 mm."

Reference ii) is Table 4-10 and is titled "False Negatives – CL [Crack Like] Features with a Calculated Remaining Life < 50 Years".

Ontario is interested in Enbridge's perspective on the number of false negatives identified in the field that were not captured in tool runs.

Requests: Please provide comments on the following:

- a) Based on the statistics and capabilities of the tools Enbridge uses for inline inspections, please comment on the number of false negative features identified in reference i). In Enbridge's opinion, is the number of false negative features an acceptable outcome? Please explain your answer.

- b) In reference ii), a false negative feature with a length of 1,075 mm is identified. This is well over 10 times the 60 mm length required for a feature to be considered a false negative (as outlined in reference i). In Enbridge's opinion, how could such a result be generated? Please discuss all concerns Enbridge has with the adequacy of these test results given the existence of such 'false negative' results as the 1,075 mm feature identified above.

1.21 Probability of Detection

Reference: i) Filing A3D7J4: B1-15, Attachment 7 – Pipeline Integrity Engineering Assessment, (Adobe page 67, lines 22-25).

ii) Filing A3D7J4: B1-15, Attachment 7 – Pipeline Integrity Engineering Assessment, (Adobe page 68, lines 1-2).

Preamble: Reference i) notes that the Probability of Detection (POD) is 52% for Crack-Like and Notch Like features from Cardinal to Hilton and 57% from Hilton to North Westover.

Reference ii) states: "The low POD can be attributed to the observed false negatives in the field. These false negatives, shown in Section 4.3.5.1, do not to (sic) pose immediate threat to the integrity of Line 9B, most especially at the current reduced operating pressure."

Request: With respect to leak detection probabilities:

- a) Please explain the rationale for relying upon the inline inspection tools used by Enbridge in light of the low probability of fault detection and the large number of false negatives identified.
- b) Does Enbridge view a POD of 52% and 57% as acceptable results? Please explain.

1.22 Remaining Life Analysis – Crack Features

Reference: Filing A3D7J4: B1-15, Attachment 7 – Pipeline Integrity Engineering Assessment, (Adobe page 77, lines 4-7).

Preamble: The reference states: "Since the last crack inspection for each segment, pressure data was analyzed to find the most severe quarter of pressure cycling associated with each pump station and used to assess the remaining life of the reported crack related features in Line 9B".

Request: With respect to crack inspections:

- a) Please justify the decision to use historical data in light of the fact that the Project, if approved, will significantly change Line 9B operations as a result of increasing volumes and operating at NEB-approved Maximum Operation Pressure (not the current Enbridge-imposed pressure restrictions).
- b) In Enbridge's opinion, would using "most severe quarter of pressure data" from 2004 to 2010 result in a more conservative remaining life estimate than modelling the projected operations of a reversed Line 9B? Please explain.

1.23 Feature Density

Reference: i) Filing A3D7J4: B1-15, Attachment 7 – Pipeline Integrity Engineering Assessment, (Adobe page 39, Table 4-3).

ii) Filing A3G4S8: B8-12, Attachment 1 to NEB IR 1.22 - Revised Tables 3-3 and 4-1, (Adobe page 4, Table 4-1 (revised)).

Preamble: In reference i), Table 4-3 indicates that the Hilton to North Westover segment of Line 9B, for external corrosion, has a feature density of 6.04 per km for a Metal Loss Rupture Pressure Ratio between 1.1 and 1.2. The comparable feature densities for Montreal to Cardinal and Cardinal to Hilton are 2.09 and 0.65.

In reference ii), the revised Table 4-1 outlines the in-line inspection history on Line 9B for metal loss.

Ontario would like to better understand the underlying reasons behind the differences in feature density between the Line 9B pipeline segments.

Request: With respect to differences in feature density:

- a) Please explain why, in Enbridge's opinion, the Hilton to North Westover segment of Line 9B has significantly higher external feature density than the two other segments for features with rupture pressure ratios between 1.1 and 1.2. In your response, consider factors such as differences in tool runs, data interpretation of tool runs, geotechnical features, pipe construction, operating history and any other factor that Enbridge considers relevant.
- b) Please explain why, in Enbridge's opinion, the Hilton to North Westover segment (external) has a higher feature density for metal loss depth <20% and metal loss depth between 20% and 50% than the Montreal to Cardinal and the Cardinal to Hilton segments.
- c) Please identify which tool runs from reference ii) were used to compile the data in reference i) for each of the segments of Line 9B (i.e. Montreal to Cardinal, Cardinal to Hilton, and Hilton to North Westover). Please identify the year of the tool run and equipment used to undertake the tool run.

1.24 Voluntary Pressure Restriction – Cardinal-to-Montreal

Reference: Filing A3D7J4: B1-15, Attachment 7 – Pipeline Integrity Engineering Assessment, (Adobe page 50, Table 4-7).

Preamble: Table 4-7 is titled "RPR and Depth Re-Assessment Intervals".

For the Montreal to Cardinal segment of Line 9, Table 4-7 outlines that a 5 year-reassessment was required in 2009.

The asterisks (*) in Table 4.7 states that: "In order to ensure the safety of the pipeline past the expected inspections in 2012, operating pressure restrictions below the NEB-approved MOP [Maximum Operating Pressure] have been self-imposed by Enbridge...".

Request: With respect to certain Line 9 inspection practices:

- a) Please explain why an inline inspection tool was not run on the Montreal-Cardinal segment of Line 9B in 2009

when Enbridge's own analysis (as summarized in Table 4-7) indicated that a re-inspection would be required in 2009.

- b) Please identify what standards (CSA, industry, corporate, etc.) and what criteria were used by Enbridge to determine the magnitude of the voluntary pressure restrictions for the Cardinal-Montreal segment of Line 9B.
- c) Please confirm the criteria utilized by Enbridge to determine when to forego previously planned inspections runs, like the 2009 inspection for the Cardinal to Montreal segment of Line 9B outlined in Table 4-7, in favour of a line pressure reduction. Please identify any external standards (CSA, industry, etc.) that apply.

1.25 Heavy Crude

Reference: Filing A3D7J7: B1-18 - Attachment 8 – Facilities Integrity Engineering Assessment, (Adobe page 20, Table 3.15).

Preamble: In the above referenced Table 3.15, "Project Impact to Integrity Threats", the introduction of heavy crudes was identified as a threat to Internal Pipeline Corrosion which can be offset by increased, continuous flow rates.

Ontario would like further information on the threat that heavy crudes pose on the Line.

Request: With respect to the transportation of heavy crude on Line 9:

- a) Please identify the percentage of the threat that heavy crudes pose to facilities and the clean-up procedure for heavy crude in the event of a spill at these facilities.
- b) Please provide any studies undertaken on shipping heavy crude oil at the proposed operating temperature.
- c) Please identify all of the Enbridge pipelines in Canada that currently carry heavy crude and outline their spill/leak history from 2000-2012.

1.26 Sediment & Water Testing

Reference: Filing A3D7J4: B1-15, Attachment 7 – Pipeline Engineering Assessment, (Adobe page 41, lines 10-13).

Preamble: The reference states: “Enbridge regularly conducts evaluations that include periodic testing to ensure that the S&W [sediment & water] content does not exceed tariff quality limits as well as routine analysis of operating conditions to ensure corrosive conditions do not develop.”

Requests: Please answer the following:

- a) Please provide the criteria Enbridge’s uses to determine the frequency of periodic sediment and water testing.
- b) Please identify the standards which Enbridge relies upon to determine the frequency of sediment and water testing.
- c) How frequent is the periodic testing of sediment and water content?

1.27 Minor Corrosion

Reference: Filing A3D7J7: B1-18 - Attachment 8 – Facilities Integrity Engineering Assessment, (Adobe page 18, lines 6-8).

Preamble: In the above reference it is indicated, that “The Project is removing or replacing several sections of existing piping, which includes each of the areas found with minor corrosion (0% to 30%)”.

Ontario would like information on where on the line and at what percentage the corrosive depth was determined to be 1% or higher.

Request: a) Please identify where and at what percentage the areas of minor corrosive depth was determined to be 1% or higher.

1.28 Low Flow Rates

Reference: Filing A3D7J4: B1-15, Attachment 7 – Pipeline Integrity Engineering Assessment, (Adobe page 41, lines 6-18).

Preamble: The reference notes that: "Under certain operating conditions (such as low flow rates / low turbulence) this can lead to the development of local corrosive conditions if these materials are allowed to accumulate and persist over long periods of time".

The reference also notes that: "For Enbridge pipelines considered to have an elevated susceptibility to internal corrosion, additional monitoring and prevention programs may be implemented. Additional monitoring programs include coupons, Electric Resistance Matrices or Field Signature Method – Inspection Tools. Additional preventative programs include regular cleaning and/or inhibition treatments".

Request: Please answer the following:

- a) Please provide a definition of what constitutes "low flow rates / low turbulence" conditions for Enbridge Line 9.
- b) Please confirm whether or not all or any part of Enbridge Line 9 has been operating under "low flow rates / low turbulence". For each instance where Line 9 has operated under low flow conditions, please identify the specific sections of Line 9, and the start and end date of the low flow rates.
- c) Does Enbridge consider Enbridge Line 9 to have an elevated susceptibility to internal corrosion? Please explain your answer.
- d) For each of the additional monitoring programs and preventative programs outlined in the Preamble (and listed below), please describe what the programs involve, indicate whether or not they have been implemented on Line 9 since 2009, when they were implemented, and what standards govern their implementation.
 - Coupons
 - Electric Resistance Matrices
 - Field Signature Method – Inspection Tools
 - Regular cleaning

Inhibition treatments

- e) For the additional monitoring or inspection tools run on the entire Line 9 since 2009, please provide the results and conclusions Enbridge drew from those results.

1.29 External Corrosion Control - Industry and Enbridge Standards

Reference: Filing A3D7J4: B1-15 - Attachment 7 – Pipeline Integrity Engineering Assessment (Adobe pages 22-23, lines 31-32, line 1).

Preamble: Enbridge states that external corrosion is prevented “though the application of an external single layer of PE [polyethylene] Tape coating during initial construction and a CP [cathodic protection] system operated and maintained to industry and Enbridge standards”.

Request: Please respond:

- a) Please explain the difference between industry standards and Enbridge standards.

1.30 Polyethylene Tape

Reference: i) Filing A3D7J4: B1-15 - Attachment 7 – Pipeline Integrity Engineering Assessment, (Adobe page 14, Table 3.1).

ii) Filing A3D7J7: B1-18 - Attachment 8 – Facilities Integrity Engineering Assessment, (Adobe page 12, line 2).

Preamble: In reference i) Enbridge indicates in Table 3-1 pipe properties include a coating of “Single Layer Polyethylene Tape”.

In reference ii) Enbridge indicates “The Lateral is spirally submerged s arc welded and is externally coated with polyethylene tape on both the pipe body and girth welds”.

Ontario would like further information on the specific steps taken by Enbridge to monitor, manage and maintain the single layer polyethylene tape along Line 9.

Request: Please respond:

- a) Please identify what additional precautionary steps Enbridge is taking to monitor, manage and maintain the single layer polyethylene tape along Line 9 given the age of the pipeline.

1.31 Pipeline Relocation – Don River

Reference: Filing A3D7J4: B1-15- Attachment 7 – Pipeline Integrity Engineering Assessment, (Adobe page 92, lines 24-26).

Preamble: In the above reference, it is indicated "in consideration of the movement rates at the East Don River approach slope, Enbridge is planning to conduct a pipeline relocation from this site in 2013".

Ontario would like additional information on where the line would be relocated to and how this portion of the Line is being monitored.

Request: With respect to the Don River pipeline relocation:

- a) Please provide details and specifics on where the line would be relocated. Please include this information in the shape file requested in Ontario Information Request 1.1b.
- b) Please indicate whether the relocation would place the line within a Vulnerable Area identified in an Assessment Report under the Ontario Clean Water Act.
- c) Please provide details on how this portion of the Line is being monitored.
- d) Please describe the process, including approvals and permits required, for the pipeline relocation.

1.32 Pipeline Remediation – Thames River & Soper Creek

Reference: Filing A3D7J4: B1-15 - Attachment 7 – Pipeline Integrity Engineering Assessment, (Adobe page 93, lines 6-15).

Preamble: In the above reference, it is indicated: "Some examples of remediation options are pipeline armouring, line lowering, river rerouting, or line re-routing".

In the above reference, it is indicated: "Historically, remediation has been conducted near the Line 9 crossing of the Thames River and Soper Creek located at MP's 1805 and 1954, respectively".

In the above reference, it is indicated "Should low cover near a river crossing be identified, the crossing is assessed for remediation requirements".

In the above reference, it is indicated that "these sites are closely monitored using ROW patrols and depth of cover surveys to ensure that the pipe cover remains acceptable".

Ontario would like details on the river re-routing process, the historical remediation near the Thames River and Soper Creek and a description of what acceptable pipe cover is and how this has been determined.

Request: With respect to the Thames River and Soper Creek:

- a) Please identify any instances along Line 9 where a river has been re-routed rather than moving the pipeline.
- b) Please describe the historical remediation that has been conducted near the Line 9 crossing of the Thames River and Soper Creek.
- c) Please describe what acceptable pipe cover is and how this has been determined.

1.33 River Crossing Management – Rouge River Crossing

Reference: Filling A3D7J4: B1-15, Attachment 7 – Pipeline Integrity Engineering Assessment, (Adobe page 93, line 20-24).

Preamble: In the above reference, it is indicated "In consideration of the corresponding ILI review, minor length, soil support, exposure location, and other consideration, it was ascertained that immediate remediation was not required and planning was initiated to develop a long-term remediation solution".

In the above reference, it is indicated "In consideration of the crossing proximity to a planned urban national park, Enbridge has worked closely with consultants and stakeholders to develop and implement an acceptable solution."

Ontario would like more information on the river crossing management program as well as copies of the documents developed with consultants and stakeholders.

Request: With respect to the Rouge River Crossing:

- a) Please identify the "other consideration" that supported Enbridge's decision that "immediate remediation was not required".
- b) Please provide copies of documents supporting the solution developed by consultants and stakeholders.

1.34 Lessons Learned from Recent Failures

Reference: i) Filing A3D7J4: B1-15 - Attachment 7 – Pipeline Integrity Engineering Assessment, (Adobe page 84, lines 37-40).

ii) Filing A3D7J4: B1-15 - Attachment 7 – Pipeline Integrity Engineering Assessment, (Adobe page 90, lines 8-10).

Preamble: Enbridge states in reference i) that it has "... applied lessons learned from recent failures..." and in reference ii) refers to "...failures experienced on other Enbridge pipelines ...".

Request: Based on the lessons learned on other Enbridge pipelines, please provide the following information:

- a) Identify the recent failures.
- b) Identify the spill detection time and response time.
- c) Identify the other Enbridge pipelines and describe the related failures.
- d) Identify the lessons learned.

1.35 Line 9A Engineering Assessment

Reference: Filing A3D7J4: B1-15 - Attachment 7 – Pipeline Integrity Engineering Assessment, (Adobe page 10, lines 2-13).

Preamble: The Pipeline Integrity Engineering Assessment filed in this proceeding assesses pipeline integrity on the 639-kilometre segment of the pipeline from North Westover to Montreal (Line 9B). For the 194-kilometre segment of the pipeline from Sarnia to North Westover (Line 9A), Enbridge appears to be relying on the Engineering Assessment for the Line 9 Reversal Project Phase I filed in the previous proceeding, OH-005-2011. However, the Engineering Assessment filed in the previous proceeding did not appear to take into account the proposed increase in capacity on Line 9, the use of a Drag Reducing Agent, or the transportation of heavy crude.

Request: Please respond:

- a) Please provide a revised Engineering Assessment for the 194-kilometre segment of the pipeline from Sarnia to North Westover (Line 9A) that takes into account the proposed increase in capacity on Line 9, the proposed use of a Drag Reducing Agent and the proposed transportation of heavy crude.

1.36 Enbridge Line 9 Phase 1 Reversal Project – NEB Conditions

Reference: i) Filing A2V3K6: NEB Letter Decision – OH-005-2011 - Appendix II Order XO-E101-010-2012, (Adobe page 4, Condition 8).

ii) Filing A2V3K6: NEB Letter Decision – OH-005-2011 - Appendix II Order XO-E101-010-2012, (Adobe page 4, Condition 9).

iii) Filing A2V3K6: NEB Letter Decision – OH-005-2011 - Appendix II Order XO-E101-010-2012, (Adobe page 5, Condition 11).

Preamble: Reference i) is Condition 8 (“Updated Engineering Assessment”) of the NEB’s approval of the Enbridge Line 9 Phase 1 Reversal Project.

Condition 8 states: *"Enbridge must file with the Board, at least 30 days prior to applying for LTO [Leave to Open] the pipeline in the reversed direction, an updated Engineering Assessment, which includes a remaining life analysis for cracks, demonstrating that the pipeline between North Westover Pump Station and Sarnia Terminal is fit-for-service in the reversed flow direction at 5,281 kPa (766 psi). If Enbridge chooses to apply a different operating pressure for this analysis, please provide justification."*

Reference ii) is Condition 9 ("Repair of Known Critical Integrity Features") of the NEB's approval of the Enbridge Line 9 Phase 1 Reversal Project.

Condition 9 states: *"Based on the maximum operating pressure (MOP) and integrity status information used in the updated Engineering Assessment (A2Q7D7), prior to applying for LTO [Leave to Open] the pipeline in the reversed direction, Enbridge must: a) repair all the features that meet CSA Z662-11 repair criteria (depth and safety factor based on the MOP including the criterion for cracking depth equal to or greater than 40% nominal wall thickness) in the pipeline sections between Sarnia Terminal and Westover Terminal as identified by additional assessments and/or re-assessments committed to in the Project application; b) repair the defects which triggered the current pressure restrictions specified in Enbridge's response to NEB Information Request 3.7 b), regardless of the existing operating pressure; and c) file a report that includes, but is not limited to, a list of features repaired, feature sizes, safety factors prior to repair, and repair date"*

Reference iii) is Condition 11 ("Cracking Management (North Westover Pump Station to Westover Terminal)").

Condition 11 states: *"Enbridge must submit to the Board, prior to applying for LTO [Leave to Open] the pipeline in the reversed direction, a plan to manage cracking features in the pipeline section between North Westover Pump Station and Westover Terminal. This plan must include the timeline associated with the assessment methodology, and the rationale for selecting the timeline."*

Request: Regarding Line 9 Phase I conditions numbers 8, 9 and 11:

a) Please file Enbridge's response to Condition 8.

- b) Please file a copy of Enbridge's response to Condition 9 and confirm condition 9 has been implemented.
- c) Please file the plan required under Condition 11.

OTHER ENVIRONMENT MATTERS

1.37 *Unevaluated Wetlands*

Reference: Filling A3D7J8: B1- 19 - Attachment 9 – ESEIA Part 1, (Adobe page 41, lines 2-5).

Preamble: In the above reference, it is stated that there are small pockets of unevaluated wetland near densitometer site KP (kilometre post) 2993.38.

Ontario would like all unevaluated wetlands situated along Line 9 identified on a map of Line 9.

Request: Please respond:

- a) Please identify the unevaluated wetlands and map where they are along Line 9. Please include this information in the shape file requested in Ontario Information Request 1.1 b).

1.38 *Water wells*

Reference: i) Filling A3D7J8: B1-19 - Attachment 9 – ESEIA Part 1, (Adobe page 58, Table 4-3).

ii) Filling A2COV3: B1-5 – ESEIA, Line 9 Reversal Phase 1 Project, (Adobe page 38, Page 4-20, Table 4-3).

Preamble: Table 4-3, from reference i) outlines the number of water wells within 500m of the Local Assessment Area (LAA). In the material filed by Enbridge last year for Line 9A, shown in reference ii), the number of water wells within 1KM of the LAA is identified.

Ontario would like water wells within 1KM of LAA to be identified and mapped along Line 9.

Request: Please respond:

- a) Please outline the number of water wells for Line 9 within 1KM of the LAA and where they are located. Please include this information in the shape file requested in Ontario Information Request 1.1b.

1.39 Proximal Water Courses – Sarnia Terminal

Reference: Filling A3D7J8: B1-19 - Attachment 9 – ESEIA Part 1, (Adobe page 54, lines 8-9).

Preamble: The above reference indicated that “Proximal water courses are small and not currently being monitored for flow or stage”.

Ontario would like outlined site-specific measures to ensure the protection of the proximal water courses near the Sarnia Terminal.

Request: Please respond:

- a) Please identify in a data table all proximal water courses near the Sarnia Terminal and outline the site-specific measures Enbridge will undertake to ensure the protection of these proximal water courses near the Sarnia Terminal.

1.40 Climate Change Impacts

Reference: Filling A3D7J9: B1- 20, Attachment 9 – ESEIA Part 2, (Adobe page 27, lines 30-32).

Preamble: The above reference indicates that “the predicted changes to climate of increased temperatures, precipitation, river level and extreme winds, changes in groundwater and stream flow availability will not impact the operation of the Project”.

Ontario would like more information on the methods used to determine the impacts of climate change on the operation of the Project.

Request: With respect to climate change impacts:

- a) Please describe the methods used to determine the impact of climate change on the operation of the Project and provide copies of the analysis.
- b) Please identify if Enbridge has worked with municipalities/agencies or other third parties on

vulnerability assessments of shared or related infrastructure and provide the results of that work.

- c) For river crossings, please indicate how Enbridge has evaluated changes in river flows and erosion potential that may occur as a result of climate change.

1.41 Environmental Protection Plan

Reference: Filing A3D7J9: B1-20 - Attachment 9 – ESEIA Part 2, (Adobe page 30, lines 26-30).

Preamble: In the above reference, it is indicated that as part of contingency planning an Environmental Protection Plan (EPP) will be developed that describes the environmental protection measures to be used during the construction of the Project.

Ontario would like a copy of the EPP.

Request: Please respond:

- a) Please provide a copy of the EPP and identify if the plan has been reviewed by an independent third party. If so, please provide the name of the third party, the results of the review, any disparities between the EPP and the review, and explain how these disparities were resolved by Enbridge.

1.42 Emergency Response Spending

Reference: Filing A3D7J1: B1-12, Attachment 4f – Letter to Ontario and Quebec Municipalities, Adobe page 3.

Preamble: The reference states: “Enbridge will spend an incremental \$50 million between 2012 and 2013 to improve our equipment, training and overall response capabilities across our system, and we are developing better tools and techniques for worst case waterborne spills”.

Request: Please respond to the following:

- a) How much of the spending identified relates to Line 9B and Line 9?

- b) Please classify the \$50 million of spending between the three categories identified: equipment, training, and “overall response capabilities”.
- c) Identify and describe any equipment from this spending that will be used in the event of an incident on Line 9 and where that equipment will be physically located.
- d) Please define a worst case waterborne spill and describe the “better tools and techniques” Enbridge will deploy.

1.43 Emergency Response Preparedness

Reference: Filing A3D7J1: B1-12, Attachment 4f – Letter to Ontario and Quebec Municipalities, Adobe page 4

Preamble: The reference states: “In 2011, a cross-business unit emergency response team was created for large-scale events. As well, we have significantly increased our dedicated Emergency Response group in order to enhance Enbridge resources, processes, training and capabilities to respond to any incident along our system in a rapid and effective manner.”

Request: Please provide the following information:

- a) The membership and composition of the cross-business unit emergency response team including business titles.
- b) An explanation of what “... significantly increased our dedicated Emergency Response group...” means in terms of personnel allocated to the group and in hours of training.
- c) An explanation of how the processes were enhanced including what standards were adopted to enhance the processes.
- d) An explanation of how the “significantly increased ... dedicated Emergency Response group” will benefit Line 9’s operation and safety.

1.44 Michigan and other Spills

Preamble: Ontario would like additional information on the steps Enbridge is taking to ensure that a spill, similar to the one that occurred in Michigan in 2010, will not occur along Line 9.

Request: With respect to spill prevention please provide the following information:

- a) Please indicate what steps Enbridge is taking to ensure that a spill, similar to the one that occurred on July 26, 2010 in Michigan on Enbridge's Line 6B (which is of a comparable age to Line 9), will not occur in Ontario on Line 9.
- b) Please provide copies of the following documents:
 - i) Enbridge's internal investigation of the 2010 Michigan pipeline rupture, corrective actions required and the status of those corrective actions.
 - ii) Any improvements made to Enbridge's in-line inspection program since the 2010 Michigan pipe rupture.
 - iii) The most current Enbridge's Control Room Management Plan and identify how it differs from previous versions.
 - iv) Revised leak detection procedures.
 - v) Revised Emergency Response procedures.
 - vi) Internal training materials including in particular any materials related to training aimed at the development of a strong safety culture.
- c) Please indicate whether Enbridge reviews pipeline spills of other companies and, if so, explain how lessons learned are incorporated by Enbridge into its own operations.

1.45 Spill Prevention, Response, Management, Monitoring

Preamble: Ontario has taken steps to enhance the protection of the Great Lakes. Ontario released its Great Lakes Strategy in December 2012. (available at http://www.ene.gov.on.ca/environment/en/resources/STDPR_OD_101828.html) and in February 2013, Ontario introduced

the proposed Great Lakes Protection Act, 2013 in the Legislative Assembly.

To ensure Great Lakes protection, Ontario would like more information on the leak detection methods, safety, security, and contingency planning associated with the construction and operation of the proposed Project, including emergency response planning and third-party damage prevention.

Request: Please provide the following information:

- a) Please identify how many "on the ground" responders Enbridge has in Ontario, where they are located and the estimated and average response times for each of these teams.
- b) Please provide copies of Enbridge's Emergency Response plan for Ontario and indicate if this document has been reviewed by a third party. If so, please provide the name of the third party, the results of the review, and any disparities between the two reports and explain how the disparities were resolved by Enbridge.
- c) Please identify if Enbridge has done any spill modelling for Line 9, specifically around the Great Lakes, and if so please provide the modelling.
- d) Please outline the emergency response exercises that have been conducted in Ontario from 2008 to the current time, who participated, where they occurred and provide the results of the exercises.
- e) As part of the conditions for Leave to Open, would Enbridge agree to lead annual practical exercises with regulators (NEB, MOE, TSSA, etc.) and other stakeholders (e.g. ECRC, municipalities) to help improve responses to possible pipeline spill scenarios (for example, spills to land, spills that may impact the Great Lakes)?
- f) As part of the Leave to Open conditions would Enbridge agree to lead annual pipeline-specific stakeholder education and outreach focused meetings to address spill and emergency response issues with appropriate agencies/stakeholders?

- g) Please identify the controls in place to stop the flow of oil in the event of a breakage, and identify how fast the flow can be stopped. Please identify where these controls are located along Line 9 in the shape file requested in Ontario Information Request 1.1b.
- h) Please explain how Enbridge has adjusted its spill contingency plans in light of the potential for larger volume spills to ensure it has adequate pipeline monitoring, enough trained staff, spill response equipment and supplies for the new operating conditions.
- i) Please explain how seasonal changes are expected to impact crude oil and diluent and how they have been accounted for in Enbridge's spill contingency plans including training and spill response.
- j) Please describe and provide copies of your remediation plans for the protection groundwater water bodies and their sources along Line 9.

1.46 Source Protection Areas and Emergency Response Planning

Preamble: The Ontario Clean Water Act has established 38 source protection areas in Ontario, grouped into 19 source protection regions. The transportation of fuel in pipelines has been identified as a local "drinking water threat" in 5 of these regions (through which Line 9 passes):

- Thames Sydenham & Region Source Protection Region
- Lake Erie Source Protection Region
- Halton Hamilton Source Protection Region
- CTC Source Protection Region
- Trent Conservation Coalition (Ganaraska)

The threat is defined in the local assessment reports as the conveyance of oil by way of a pipeline (either underground or crossing an open body of water) that would be designated as transmitting or distributing "liquid hydrocarbons", including "crude oil", "condensate", or "liquid petroleum products", and not including "natural gas liquids" or "liquefied petroleum gas", within the meaning of the Ontario Regulation 210/01 under the Technical Standards and Safety Act, or is subject to the National Energy Board Act.

The source protection committee must develop policies to address all significant threats (and may choose to develop policies for low or moderate threats).

We are aware that the committees in these regions have modelled spills from pipelines other than Enbridge's. In vulnerable areas where a spill from an underground pipeline could contaminate groundwater near a municipal well, or a spill from a pipeline crossing a watercourse could contaminate the water at a surface water intake downstream, the committees have proposed policies in their source protection plans to address the risk. Some of these proposed policies request the owner of the pipeline to take actions such as:

- conduct annual emergency preparedness exercises and invite the local conservation authority to observe them;
- update emergency plans, conduct inspections and integrity testing (every 3 years), and notify the conservation authority of the inspections and integrity testing results; and
- report any pipeline construction conveying oil across open water bodies within two kilometres of the Lake Ontario shore.

Request: Please answer these questions:

- a) If Line 9 crosses the vulnerable areas identified in the assessment reports, please indicate how and when Enbridge would institute measures similar to the ones proposed in the source protection policies to reduce the risk of a pipeline rupture resulting in the contents of the pipeline reaching local drinking water sources.
- b) Please indicate how Enbridge would more broadly apply the policies, which are intended to protect sources of drinking water, to Line 9.
- c) Please indicate if Enbridge has included and mapped source protection vulnerable areas in spill training and response documents.
- d) Please identify where stop valves are installed near major river crossings along Line 9. Please include this information in the shape file requested in in Ontario Information Request 1.1b.

- e) Please identify the additional steps that Enbridge will take to protect river crossings that are near sources of drinking water:

1.47 Atmospheric Environment / Air Quality

Reference: i) Filing A3D7J9: B1-20 - Attachment 9 – ESEIA Part 2 (Adobe page 7, lines 18-20).

ii) Filing A3D7K0: B1-21, Attachment 9 – ESEIA Part 3 (Adobe page 20, Table C-1).

Preamble: Reference i) states “As the Project-related changes in total pump horsepower and associated changes in indirect GHG emissions are expected to be less than 1%, the Project is not expected to contribute substantively to a change in GHG emissions on a provincial or national scale.”

In reference ii), it is noted that potential effects of the Project’s operations include reductions in local air quality and an increase in indirect GHG emissions. In both cases, the impact is described as negligible.

The description of greenhouse gas (“GHG”) emissions during operation indicates that this will result in minimal indirect GHG emissions from electricity consumption.

Request: With respect to GHG emissions and air quality, please provide answers to the following questions:

- a) Please explain the relationship between a pipeline’s throughput and its power consumption.
- b) Please estimate the total annual kilowatt hours of electricity consumption and expected throughput on Line 9, assuming the Project is approved.
- c) Please provide the total indirect GHG electricity emissions and emissions of nitrogen oxides resulting from this electricity consumption estimated in part b) and the indirect electricity emission factor used for calculations.

- d) Please provide the actual kilowatt hours of electricity consumption, on an annual basis, on Line 9 for 2008-12 and the corresponding throughput averages.
- e) Please provide the total indirect GHG electricity emissions and emissions of nitrogen oxides resulting from the electricity consumption data from part d) and provide the indirect electricity emission factor used for calculations.
- f) Please provide emissions data for the years 2008 through 2012, and estimates for the next 5 years (all the contaminants discharged and their maximum emission rates) during normal operations and a demonstration of compliance with Ontario discharge requirements set out in the standards included in Ontario Regulation 419/05 under the Ontario Environmental Protection Act.

1.48 Compliance with Ontario Environmental Requirements

Preamble: Ontario would like additional information on Enbridge's compliance with Ontario's environmental requirements.

Request: With respect to environmental and socio-economic impacts of the proposed project, please answer the following questions:

- a) Please identify the environmental and socio-economic impact of the Project for all of Line 9, not just the seven Project sites. Please include this information in the shape file requested in in Ontario Information Request 1.1b) including:
 - i. List of all major water crossings including tributaries to the Great Lakes.
 - ii. List of where Line 9 crosses vulnerable areas (i.e. wellhead protection areas, and intake protection zones) in an Assessment Report under the Clean Water Act.
 - iii. List of all Environmentally Significant Areas.
 - iv. List of all Provincially Significant Wetlands.
 - v. Outline the proximity of the pipe to the Great Lakes shorelines themselves.
- b) Please describe what measures will be in place to ensure the protection of drinking water where the

pipeline crosses vulnerable areas as identified in the Environmental and Socio - Economic Impact Assessment - Line 9B Reversal and Line 9 Capacity Expansion Project report prepared by Stantec.

- c) Please compare and report on Enbridge's emergency plans with Ontario's *Guideline for Implementing Spill Prevention and Contingency Plans Regulatory Requirements*. The Ontario Guideline provides generic guidance for preparing and implementing spill prevention plans which the Province considers a good practice for industries, even those not subject to the regulatory requirements. A copy of the Ontario Guideline is attached to Ontario Information Request No. 1.
- d) Please indicate if the Enbridge Environmental Management System has been audited by an independent third party and, if so, provide the results of the audit.
- e) Please indicate if tests for petroleum hydrocarbons in the soil surrounding Line 9 from Sarnia to Montreal have been completed and if so, when, where, at what frequency, the results, and if remediation has been undertaken where.
- f) Please detail and provide copies of the geotechnical assessment Enbridge has carried out to determine the impact of additional loading on the underlying geological material and evaluation of the potential for preferential settlement or stability along the pipeline route.
- g) Please detail and provide copies of Enbridge studies on the geology and hydrogeology of the formations along the Line 9.

1.49 Status of Ontario Environmental Approvals and Permits

Preamble: Ontario would like additional information on Enbridge's compliance with Ontario's environmental requirements.

Request: With respect to Ontario environmental approvals and permits:

- a) Please indicate if any of Enbridge's existing approvals or permits from the Ontario Ministry of the Environment will require amendment if the reversal of Line 9 proceeds.
- b) Please indicate if one or more new approvals or permits from the Ontario Ministry of the Environment will be required if the reversal of Line 9 proceeds.

CONSULTATION WITH ABORIGINAL COMMUNITIES

1.50 Consultation with Aboriginal Communities

Preamble: Ontario would like information on the approach Enbridge will use to consult, and where appropriate accommodate, First Nations and Métis communities on the proposed Line 9 Reversal.

Request: With respect to First Nations and Métis community consultations:

- a) Please describe the approach Enbridge used in its consultations with First Nations and Métis communities concerning the Line 9 application, and how it has addressed the communities concerns.
- b) Please indicate whether Enbridge's consultation approach includes a role for a Federal Department, Agency, or Committee to oversee and track its consultation on the Line 9 Reversal including any issues that are raised by First Nations and Métis communities.
- c) Please identify whether Enbridge's consultation approach includes an assessment of the adequacy of its approach by a Federal Department, Agency, or Committee.
- d) Please indicate whether there is a Federal point of contact that First Nations and Métis communities can use if they wish to elevate their project concerns to the Crown.

CONSULTATION WITH COMMUNITIES ALONG LINE 9

1.51 Consultation with Communities along Line 9 in Ontario

Preamble: Ontario would like information on the approach Enbridge has used to consult, and where appropriate accommodate, communities along Line 9 in Ontario on the proposed Line 9 Reversal.

Request: With respect to communities along Line 9:

- a) Please describe the approach Enbridge has used to consult with communities along Line 9 in Ontario, and where appropriate accommodate their concerns, for the proposed Line 9 Reversal.
- b) Please describe what further public consultations Enbridge proposes for Line 9.

PUBLIC REPORTING AND IMPROVEMENT

1.52 Public Reporting and Continuous Improvement

Preamble: Ontario would like information on Enbridge's plan to adopt an approach of continuous improvement on Line 9 and how it will report pipeline operation information to the public.

Request: With respect to additional reporting requirements:

- a) Should the National Energy Board issue an Order approving the project, does Enbridge agree to the Board including in the Order a condition requiring Enbridge to prepare an annual public report on all operations of Line 9 including, but not limited to:
 - i) Environmental impacts of pipeline.
 - ii) Spills data and response (including time to respond).
 - iii) Pipeline integrity information.
 - iv) Repair work.
 - v) Maintenance schedules.
 - vi) Air emissions.

COMMERICAL IMPACTS, PROJECT NEED, AND TOLLING

1.53 *Municipal and Provincial Taxes*

Reference: Filing A3D711: B1-2, Line 9B Reversal and Line 9 Capacity Expansion Project Application, (Adobe page 26, lines 7-9).

Preamble: The Application states that Line 9B, if not reversed, will be idled. Ontario is interested in the impact on municipal and provincial taxes if Line 9B is idled.

Request: Please provide the following information:

- a) Municipal taxes paid by Enbridge for 2010, 2011, and 2012 along the Line 9B route. If 2012 data is not yet available, provide information for 2009, 2010, and 2011. Please aggregate data between Ontario and Quebec municipalities.
- b) If Line 9B is idled, what will be the impact on municipal taxes paid by Enbridge to municipalities along the Line 9B route? Please explain. Consider short-term (1-5 years) and long-term impacts (5 years +).
- c) Please confirm the tax implications of an idled pipeline versus an operating pipeline in terms of municipal and provincial tax payable.

1.54 *Light Crude Oil Supply via U.S. Refinery Conversions*

Reference: Filing A3D711: B1-2, Line 9B Reversal and Line 9 Capacity Expansion Project Application, (Adobe page 50, lines 21-25)

Preamble: The reference states: "The impact of the growth in light crude oil supply will be exacerbated by the completion over the next two years of large refinery conversion projects to accommodate heavier crude slates at the following refineries: BP Whiting; Marathon Detroit; and ConocoPhillips Wood River. These refinery conversions are expected to release a total of more than 430,000 bpd of light crude oil back into the market."

Request: Please respond:

- a) Please provide an update, for each refinery conversion project listed – BP Whiting, Marathon Detroit and ConocoPhillips Wood River, of the expected (or actual) in service date and the volume of light crude oil the conversion project will release (or has released) back into the market.

1.55 Crude Oil Supply – Bakken Production

Reference: Filing A3D7I1: B1-2, Line 9B Reversal and Line 9 Capacity Expansion Project Application, (Adobe page 50, lines 19-21).

Preamble: The Application states that North Dakota Bakken production will be sustained at over 1,000,000 barrels per day for 2015 to 2025.

Request: With respect to Bakken production:

- a) Please provide an estimate of North Dakota Bakken production for 2011, 2012, 2013 and 2014.
- b) Please describe the grade (light, medium, or heavy) and sulphur content of Bakken crude oil and confirm the expectation that it will remain of similar consistency through to 2025.

1.56 Don River Replacement Project – Tolling Impacts

Reference: i) Filing A3D7J4: B1-15, Attachment 7 – Pipeline Engineering Assessment, (Adobe page 92, lines 24-26).

ii) Filing A51664: Enbridge Pipelines Inc. – Line 9 Replacement Project at Don River.

Preamble: In reference i), Enbridge states: “In consideration of the movement rates at the East Don River approach slope, Enbridge is planning to conduct a pipeline relocation at this site in 2013. Planning and preparation for the required permitting process is currently underway.”

Reference ii) is an Enbridge Section 58 Application to the NEB dated April 29, 2013 titled “Line 9 Replacement Project at Don River”. The application outlines a \$15,000,000 project

cost with an August 2013 construction start date and an anticipated final tie-in of November 2013.

Request: With respect to the Don River replacement project:

- a) Please explain how Enbridge proposes to recover the \$15,000,000 project cost for the Line 9 Replacement Project at Don River should the Line 9B reversal application be denied or otherwise does not proceed.
- b) Please indicate how Enbridge intends to recover the \$15,000,000 proposed project cost for the Line 9 Replacement Project at Don River should the Line 9B reversal application be approved.

1.57 Tolls for Enbridge Line 9A

Reference: Filing A3G4R9: B8-3, Attachment 1 to NEB IR 1.1 – Pro Forma TSA, (Adobe page 34, Schedule B).

Preamble: The reference is Schedule B “Committed Tolls as of January 1, 2013”, of the Pro Forma TSA (Transportation Service Agreement) for Line 9B. It provides committed tolls for Line 9, assuming the Line 9B reversal proceeds, for service from Edmonton (and other Canadian origination points) to delivery points at Nanticoke, West Seneca, and Montreal.

Ontario is interested in comparing the tolls to Ontario delivery points after Line 9A is operating in eastwards service to the committed tolls to Ontario delivery points with Line 9B in service.

Request: For illustrative purposes please assume Enbridge’s Line 9B reversal application is denied or otherwise does not proceed.

- a) Given this assumption, please provide, in table form similar to that used in the reference, an estimate of the tolls from Edmonton (and other Canadian origination points outlined in the reference) to Nanticoke for light and medium crude oil once the Line 9A reversal project (enabling crude oil to be delivered eastwards from Sarnia to Westover terminal) is in service.