Enbridge Pipelines Inc. ("Enbridge") Line 9B Reversal and Line 9 Capacity Expansion Project ("Project")

Application under section 58 and Part IV ("Application") of the *National Energy Board Act*
OH-002-2013
File OF-Fac-Oil-E101-2012-10 02

Response to John Quarterly Information Request No. 1

PROLOGUE:
The preambles to and/or premises of several of the information requests include assertions that may not be factually correct. Unless expressly stated otherwise, does not concede the accuracy of any preamble or part thereof. Similarly, Enbridge does not concede the relevance of any request to which it has provided a response.

A. Existing Pipeline

Preamble: Reliability Engineering information requested shall apply to the complete pipeline network and system including but not limited to:

information requested shall apply to the complete pipeline network and system including but not limited to:-

All control centers,
All instrumentation and monitoring equipment.
All pumping stations, equipment and control systems
All electrical systems and supplies.
All systems and sub systems used in the running and administration of the pipeline
All water supplies used
All communication systems.

This applies to any unit or sub unit, any system or sup system for the continuous running, or and the partial running of the pipeline or the monitoring of the same, or, and, the process and procedures for startup, periodic inspection, routine maintenance or, and, the shutdown of any or all of the system. This shall also apply to any ancillary system or sup systems.

This shall also apply to any of the above hat is not owned or controlled by Enbridge and, or is used at any point in the operation of the network or system.

Those shall also apply to any and all contractor or sub contractors and or their equipment and or their personal

1. **Request:** (1) (a) What were the results of the original reliability analysis on the pipeline?

(b) To see the results of reliability studies and analysis on the original design, feasibility studies and construction stages of the original pipeline.

(2) What was the PPM for the pipeline since construction?

(3) What were the MTBF figures?

(4) What were the MTTF figures?

(5) What was the Reliability criteria for the original pipeline through the design, feasibility studies and construction stages of the original pipeline?

(6) What were the original contractual agreements with respect to all the Reliability engineering standards and analysis?

(7) Were any of the reliability engineering criteria or standards or MTTF or MTBF changed?

(8) From the reliability engineering information what was the Planned Preventative Maintenance (PPM) For the pipe line over the past years of operation

Response: 1.1 a - b) Enbridge objects to the request as the information sought is not relevant to the issues in this proceeding. The request also engages in a "fishing expedition".

1.2 Enbridge has complied with regulatory requirements and its internal standards for the maintenance of Line 9, including an expansive ILI program as detailed in Table 3-3 of the Pipeline Engineering Assessment (Exhibit B1-15) ("Pipeline EA"). The results of these inspections determine what proactive remediation actions, including excavation, direct assessment and repair, are warranted to prevent pipeline incidents.

1.3 Enbridge objects to the request as the information sought is not relevant to the issues in this proceeding.

1.4 Enbridge objects to the request as the information sought is not relevant to the issues in this proceeding.

1.5 Enbridge objects to the request as the information sought is not relevant to the issues in this proceeding.

1.6 Enbridge objects to the request as the information sought is not relevant to the issues in this proceeding.

1.7 Enbridge objects to the request as the information sought is not relevant to the issues in this proceeding.

1.8 Please refer to response to John Quarterly IR 1.2.

B. Existing Pipeline

2. **Request:** (1) (a) What are the results of the reliability analysis on this proposal for the pipeline 2013?

(b) To see the results of reliability studies and analysis on this proposal new design features, feasibility studies and construction stages of the this pipeline.

(2) What is the new PPM for this proposal?

(3) What is the new MTBF figures calculated 2013

(4) What are the new MTTF figures calculated 2013

(5) What is the current Reliability criteria for this application through the design, feasibility studies and any construction or modification to the systems for this proposal.

(6) Are there any special contractual agreements with respect to all the Reliability engineering standards for this application?

(7) Have there been any reliability engineering criteria or standards or MTTF or MTBF changed on this application.

Response: 2.1 (a) The Pipeline EA is the method to assess the fitness for service of the pipeline. Requirements and guidelines to complete the assessment are found in CSA Z662-11.

The Pipeline EA is a deterministic approach to assessing the fitness for service incorporating reliability assessment methods in certain elements of the assessment. The re-inspection interval process incorporates aspects of reliability to determine the appropriate time to re-inspect the pipeline for degradation. The re-inspection interval is found in Section 4.28 of the Pipeline EA.

(b) Please see the response to John Quarterly IR 2.1.a.

2.2 Sections 4.2, 4.3, and 4.4 of the Pipeline EA describe future monitoring and maintenance plans as part of the Integrity Management Program.

2.3 Please see response to John Quarterly IR 2.1.a.

2.4 Please see response to John Quarterly IR 2.1.a.

2.5 New and additional equipment for the Project will be designed, procured and installed in accordance with CSA Z662-11.

Please see response to John Quarterly IR 2.1.a.

2.6 Enbridge objects to the request as the information sought is not relevant to the issues in this proceeding.

2.7 As noted in the Pipeline EA, the re-inspection interval is periodically adjusted to manage the integrity of the line. Examples of aspects that may influence adjustments include minor operational changes to the pipeline, In-Line Inspection tool technology advancements, Integrity Management Program updates, and incorporating lessons learned from any incidents that may occur.

Leak detection

3. **Request:**

(1) What is the procedure if a leak is detected any point in the system?

(2) Will pipe and the system be subdivided into sections so that sections can be isolated?

(3) What will be the minimum amount in liters of leak that can be detected at any point in the overall system that controls the flow of the contents in this proposal for Line 9 application?

(4) What is the distance between points in the system where the flow of the DilBit or the contents of the pipe can be isolated to stop the flow of the contents of the pipeline so as to limit any discharge from the pipe.

(5) What is the response time of the system to shut the system down when a leak is detected?

(6) What Quality Assurance that is applied to the overall system?

(7) What is an acceptable level of wastage in the industry on a pipeline of this length?

(8) What is the training given to the people monitoring the system and also running the system?

(9) What is the length of time that the Dilbit will stop leaking out of the pipeline when a leak is detected?

(10) Given the composition of the content of the pipe how will turbulent flow problems be resolved?

(11) How will problems caused by velocity gradients across the pipeline be resolved?

(12) Have velocity gradients been taken into account in the reliability studies.

Response:

3.1 Please refer to response to TRCA IR 1.g.

3.2 Please refer to Attachment 1 to NEB IR 2.7 (revised) for the locations of sectionalizing valves. Sectionalizing valves block pipeline flow in both directions and effectively isolate sections

of pipe.

3.3 Please refer to response to NEB IR 3.10.c for the sensitivity of the Computational Pipeline Monitoring ("CPM") system.

3.4 Please refer to response to John Quarterly IR 3.2.

3.5 Initiation of pipeline system shutdown is immediate upon a confirmed or suspected leak. If a leak alarm is generated in the absence of additional leak triggers, an analysis period of up to 10 minutes is used to determine the source of the alarm. If the source cannot be determined, the pipeline is shut down.

3.6 Please refer to response to OPLA IR 1.78.h uses a number of defined procedures to ensure the quality, and validate the performance, of its system. Examples of these procedures include: formal leak detection analyst procedures; point to point verification; leak detection equipment maintenance management; and formal Management of Change to ensure the integrity of the leak detection system.

In addition, system effectiveness is measured against performance based metrics. There are several techniques used to determine the effectiveness of the CPM system. performs ongoing testing on all of its CPM systems to understand performance and opportunities for improvement. These methods include:

- Parameter manipulation test: performs annual leak testing of all of the CPM systems using an API 1130 recognized "flow meter parameter manipulation technique".

- Simulated leak tests: Simulated leak test data sets are generated and entered into the CPM system to measure performance.

- Fluid withdrawal tests: Performed annually on selected lines to evaluate CPM performance and to test response procedures. The withdrawal volume required to generate an alarm and the elapsed time to detect are used to determine the effectiveness of the CPM system.

3.7 Enbridge objects to this request as the information sought is not relevant to the issues in this proceeding.

3.8 Operator training and qualification programs include, without limitation:

(a) Review of written materials followed by written exams on such topics as pipeline hydraulics, pipeline equipment, SCADA and advanced operating techniques, incident prevention, problem solving and incident analysis;

(b) Structured on-the-job training that provides real-world pipeline-specific learning with proficiency evaluations, supplemented by classroom and simulator sessions with emergency response evaluations; and

(c) Refresher training programs, both in-class and through simulator instruction, that cover such areas as Emergency Response Training (annual, mandatory) Hydraulics (annual, mandatory) Annual Team Training (annual, mandatory) and Human Factors (annual, mandatory).

Leak Detection Analysts ("LD Analysts") receive extensive multiphase, on-the-job training, which is led by a mentor. Skills covered include task and analysis based procedures as well as best practices. The training program typically takes between 3-4 months. Prior to working independently, LD Analysts undergo an assessment by qualified personnel to gauge their qualifications. Operators and LD Analysts also receive ongoing team training (including both Operators and LD Analysts), on an annual basis.

3.9 Please refer to response to John Quarterly IR 3.5.

3.10 The desired flowing regime of the pipeline is turbulent. There are no known problems associated with this condition.

3.11 Fluid velocity is constant across the pipeline.

3.12 Oil velocity has been considered as part of the Pipeline EA.

Temperature of pipeline

4. **Request:** (13) What is the working temperature of the existing pipeline?

(14) What will be the working temperature of the pipeline if it is modified as in the proposal?

Response: 4.13 Please refer to response to Mississauga IR 1.13.a. and to response to OPLA IR 1.27.a.

4.14 Please refer to response to Mississauga IR 1.13.a. and to response to OPLA IR 1.27.a.

Pressure of the pipeline.

5. **Request:** (15) What is the working pressure of the existing pipeline?

(16) What is the proposed working pressure of the pipeline covered in this proposal?

(17) In this proposal what is the maximum instantaneous pressure that the pipeline could stand without the system starting to have a malfunction, and, or a leak occurs.

(18) In this proposal what is the maximum continuous pressure overload that the pipeline could stand without the system starting to have a malfunction, and, or a leak occurs

Response: 5.15 Please refer to Table 3-1 of the Pipeline EA for details of the approved operating pressures.

5.16 Please refer to Table 3-1 of the Pipeline EA for details of the approved operating pressures. The Project will not require an operating pressure over the approved MOP.

5.17 Please see Durham CLEAR IR No. 1.5.n.

Please refer to Section 4.2.3.3 of the Pipeline EA.

5.18 Please refer to Section 4.2.3.3 of the Pipeline EA.

Environmental

6. **Request:** (19) What is the stress that the pipeline can handle as the pipeline is adjacent to an earthquake fault?

(20) What testing has been done on the pipeline to see what the effect of the temperature gradient across the pipe as this is now heated pipe.

(21) What is the temperature coefficient of the pipe?

(22) What effect will the temperature gradient have on

(a) The surface wave in the pipe?

(b) Any standing waves in the pipe?

(c) Any turbulent flow problems?

(24) What is the composition of the dilbit in the pipe?

(25) Given the fact that the material moving though the pipe is not oil and is not crude oil and the fact Bitumen is not oil and that because of this classification Exxon did not have to pay for the cleanup in leak in Mayflower Arkansas.

(26) As dilbit is not actually classified as an oil, who will be liable to pay for any cleanup when a leak occurs?

(27) Will Enbridge be responsible for the cleanup from any leaks or egress of the material in the pipeline and will the pay for all the cost that are associated with any of the product in the pipeline which may cause damage to ether property nature or people?

(28) What is the speed of the material in the pipe?

(29) Given the fact in bitumen is no oil and that Dilbit is a solid that is liquefied with chemicals so that is only a sludge, which is suspended in chemicals. When will Enbridge stop calling it any kind of oil, as this is not true?

(30) It is a known fact in the perto-chemical industry that pipelines end up with microbes living inside the pipe and these microbes eat the pipe inside out. What efforts are being made to have systems in place to minimize any problems from a leak caused

by this problem?

Response: 6.19 pipelines, including Line 9, are operated to accommodate the stress limits specified in CSA Z662-11. For seismic load evaluation, strain based assessment as described in the appendices to CSA Z662-11 are conducted as required. Pipelines installed away from the precise fault line locations are not expected to experience significant seismic loads.

6.20 No such testing has been done as Line 9 is not (and will not be) a heated pipeline.

6.21 The temperature coefficient of the pipe is not relevant as the pipeline will not be heated and the maximum operating temperature of the pipe will be 38 degrees Celsius. Please refer to response to Mississauga IR 1.13.a. and response to OPLA IR 1.27.a.

6.22 (a) Enbridge has conducted steady state and transient hydraulic studies, which take the expected temperature gradient into account, to ensure that the expected operating pressure of the pipeline does not exceed the pipeline's maximum operating pressure.

(b) Please refer to the response to John Quarterly IR 6.22.a.

(c) Please refer to the response to John Quarterly IR 6.22.a.

6.24 Diluted bitumen is comprised of bitumen, a heavy oil derived from the Canadian oil sands, mixed with diluent. Diluted bitumen is not significantly different from other heavy oils, and their overall compositions are quite similar.

Please refer to response to Durham CLEAR IR 6.c.

6.25 As this information request does not contain a question, no response is provided.

6.26 All substances to be transported by the pipeline will be "oil" as that term is defined for purposes of the *National Energy Board Act* and the regulations thereunder. Please refer to response to TRCA IR 1.j - 1.l.

6.27 Please refer to response to TRCA IR 1.j - 1.l.

6.28 The Project's design allows oil to travel through the pipeline from 0.726 m/s to 1.345 m/s.

6.29 Please refer to response to John Quarterly IR 6.26.

6.30 Enbridge's Integrity Management Program for Line 9 will include a pipeline cleaning program designed to remove any unexpected buildup of material and potential corrodents from inside the pipeline. Please refer to section 4 of the Pipeline EA.

Atmospheric Considerations

Preamble: As everything that we do in this world has an effect on other components with in the worlds balancing system we cannot expect to remove the crust of the world surface the size of Great Britain without affecting the atmospheric conditions around the world.

The area and the volume of the tar sands has enough mass and geographical area to cause macro and micro climate changes and create their own local environmental and weather conditions.
Given the fact that stripping the forest and the top covering of the area know as he tar sand which is the Athabasca area of Canada is having an unbelievable effect on the weather patterns.
Many effects may be occurring on a large scale that we are not observing. Temperature inversions for one and also the effect on high and low pressure cells, which could also lead the instability such that tornadoes would be created.
The Rossby Waves (the waves that are usually known as the jet stream) usually have a meandering pattern as the traverse around the world
It has been observed and measured that the Rossby Waves in the past few years have not been conforming to their normal meandering pattering.
It has been observed and reported by scientists all over the world that the Rossby Wave patterns have now taken on the format of great devotions from the norm. They now have deep troughs (great oscillations in their patterns.)
Given the fact that tiled earth attracts and retains heat until it is saturated and then it release the heat in what is cause a thermal. This is a bubble of hat air that pops of the earth atmosphere. These thermals will be popping of all day while the sun heating them. This will cause great atmospheric instability
Given the very large area of the excavation of the earth's surface, I think this is probable the largest area like this in the world which is manmade.
I think this may be causing the displacement of the Rossby Waves.
If my hypothesis is correct then this will be causing great atmospheric instability.
This needs to be examined by scientists and climatologists without any government or political interference.
If I am correct then the tar sands area is giving rise to great atmospheric instability nothing to do with any affect with temperature instability or global warming

Request: (31) Given the information contained within the Atmospheric Considerations I would like to know what environmental testing and environmental mapping is being done by Enbridge and any

other oil companies to help mitigate climate instability which is being added to by the tar sands actions and excavations?

Response: 6.31 Enbridge objects to the request as the information sought is not relevant to the issues in this proceeding.