



File OF-Surv-Gen-T217 01
24 October 2016

Mr. John Ferris
President and CEO
Trans-Northern Pipelines Inc.
45 Vogell Road, Suite 310
Richmond Hill, ON L4B 3P6
Facsimile 905-770-8675

Dear Mr. Ferris:

**Trans-Northern Pipelines Inc. (TNPI)
Amending Safety Order AO-001-SO-T217-03-2010 and TNPI letter dated
21 September 2016**

On 20 September 2016, the National Energy Board (Board) issued Amending Safety Order AO-001-SO-T217-03-2010 to TNPI allowing operation of its pipeline system subject to certain conditions.

On 21 September 2016, TNPI submitted a letter to the Board acknowledging receipt of the Amending Safety Order and requesting corrections to Schedule B of the Amending Safety Order AO-001-SO-T217-03-2010 as follows:

1. Corrections to the maximum operating pressures (MOP) of four pipeline sections;
2. Correction to the service status of two pipeline sections; and
3. Replacing one pipeline section from Schedule B to Schedule A.

TNPI also requested a meeting with the Board to clarify a number of questions in respect of Amending Safety Order AO-001-SO-T217-03-2010. NEB staff met with TNPI representatives on 3 October 2016 and discussed aspects of the Amending Safety Order AO-001-SO-T217-03-2010. Staff also discussed procedural options with respect to TNPI's 12 September 2016 filing with the Board.

The Board, having considered the above-mentioned letter of 21 September 2016 and the outcomes from the meeting of 3 October 2016, has issued the attached Amending Safety Order AO-002-SO-T217-03-2010 including a revised Schedule B.

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TNPI's 21 September 2016 letter also requested that the Montreal Feeder Line be moved from Schedule B to Schedule A of the Amending Safety Order on the grounds that the Montreal Feeder Line was referenced in TNPI's Montreal to Farran's Point Application to return to Full Pressure. The Board is of the view that the NPS10 Montreal Feeder Line should not be included in Schedule A. The Montreal Feeder Line was not assessed as part of the fitness-for-service assessment conducted by DNV for the Montreal to Farran's Point pipeline section. Additionally, TNPI's 30 November 2012 letter - that requested that the Board lift the pressure restriction on the portion of the TNPI pipeline system located between the Montreal Pump Station and Farran's Point Pump Station - did not include a request for the Board to consider the Montreal Feeder Line. Lastly, the Board's letter and Order SO-T217-006-2013 dated 29 August 2013 did not address the Montreal Feeder Line. Therefore, the Board is of the view that the NPS10 Montreal Feeder line is appropriately placed in Schedule B of the attached Amending Safety Order AO-002-SO-T217-03-2010.

Accordingly, the Board has issued Amending Safety Order AO-002-SO-T217-03-2010 which reflects the revised authorized and related reduced MOPs.

If you have questions concerning Amending Safety Order AO-002-SO-T217-03-2010, please call the Board toll free at 1-800-899-1265.

Yours truly,

Original signed by

Sheri Young
Secretary of the Board



ORDER AO-002-SO-T217-03-2010

IN THE MATTER OF the *National Energy Board Act* (NEB Act) and the regulations made thereunder,

IN THE MATTER OF pipeline incidents and non-compliances which have occurred on the Trans-Northern Pipelines Inc. (TNPI) pipeline system; and

IN THE MATTER OF National Energy Board (Board) file OF-Surv-Gen-T217 01.

BEFORE the Board on 24 October 2016.

WHEREAS the Board regulates the construction and operation of the TNPI pipeline system;

AND WHEREAS the Board has issued Safety Orders SG-T217-04-2009, SG-T217-01-2010, and SO-T217-03-2010 (Safety Orders) requiring specific safety measures;

AND WHEREAS TNPI has operated the pipeline system beyond design limits and Board-established pressure restriction;

AND WHEREAS TNPI participated in a Technical Meeting with the Board and made undertakings related to facility and pipeline integrity management programs;

AND WHEREAS TNPI has not yet satisfied all of the conditions in the Safety Orders and all of the undertakings agreed to at the TNPI-Board Technical Meeting;

AND WHEREAS TNPI has reported eleven overpressure incidents on its pipeline systems since SO-T217-03-2010 was issued;

AND WHEREAS the Board is of the view that the recurrence of overpressure incidents demonstrates that TNPI has not yet effectively resolved its overpressure hazard and that TNPI will be required to conduct additional work to meet the Board's requirements;

AND WHEREAS, as an interim measure, the Board is of the view that requiring further pressure reductions would increase the safety of the pipeline system;

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AND WHEREAS the Board is not satisfied that TNPI has addressed all possible causal factors related to its overpressure incidents, particularly with respect to management systems and organizational factors;

AND WHEREAS the Board is of the view that TNPI should develop and implement a Water Crossing Management Program for its pipeline system, and that the Board should provide further direction with respect to on-going remediation activities related INC 2010-034 on Bronte Creek near Oakville, Ontario:

AND WHEREAS the majority of the Board decided to issue Amending Safety Order AO-001-SO-T217-03-2010 (this Order) and letter decision dated 20 September 2016;

AND WHEREAS Member Richmond and Member Ballem dissent from the majority decision, and their dissent decision, outlining the reasons, is in Appendix A to the letter decision of the majority of the Board dated 20 September 2016;

NOW THEREFORE, pursuant to paragraph 12(1)(b), subsection 21(1) and subsection 48(1.1) of the NEB Act, the Board rescinds Safety Orders SG-T217-04-2009, SG-T217-01-2010 and SO-T217-03-2010 and their associated conditions, and hereby orders that TNPI may continue to operate its pipelines, subject to the following conditions:

1. For each pipeline section listed in Schedule A
 - a. TNPI shall immediately restrict the operating pressure to the lower of 90% of the authorized MOP (Maximum Operating Pressure) or 10% below the highest pressure reached within the 90 day period prior to the issuance of this Order;
 - b. TNPI shall file with the Board, within 60 days after the date of issuance of this Order, a report which includes the following information:
 - i. the new restricted MOPs for each section, as directed in Condition 1. a.;
 - ii. all applicable overpressure protection system set points; and
 - iii. the overpressure system configuration.
2. For each pipeline section listed in Schedule B
 - a. TNPI shall immediately restrict the operating pressure by 30% of the authorized MOP;
 - b. TNPI shall file with the Board, within 60 days after the date of issuance of this Order, a report which includes the following information:
 - i. the new restricted MOPs for each section as directed in Condition 2. a.;
 - ii. all applicable overpressure protection system set points; and

- iii. the overpressure system configuration.
 - c. TNPI shall file with the Board a yearly Engineering Assessment, on or before 30 September 2017 and 30 September of each year thereafter that demonstrate the fitness for service of the pipeline sections listed in Schedule B at the reduced pressure. The Engineering Assessment must include, but not be limited to:
 - i. revised defect growth rates since 2010; and,
 - ii. time-to-failure calculations, commencing September 2017 and ending when the pressure restriction has been lifted for each section of pipeline listed in Schedule B.
3. For each pipeline section listed in Schedule C
- a. TNPI shall immediately restrict the operating pressure by 30% of the authorized MOP;
 - b. TNPI shall file with the Board, within 60 days after the date of issuance of this Order, a report which includes the following information:
 - i. the new restricted MOPs for each section as directed in Condition 3.a.;
 - ii. all applicable overpressure protection system set points; and
 - iii. the overpressure system configuration.
 - c. TNPI shall file with the Board a yearly Engineering Assessment, on or before 31 December 2016 and 31 December of each year thereafter that demonstrate the fitness for service of the pipeline sections listed in Schedule C at the reduced pressure. The Engineering Assessment must include, but not be limited to:
 - i. revised defect growth rates since 2009; and
 - ii. time-to-failure calculations, commencing December 2016 and ending when the pressure restriction has been lifted for each section of pipeline listed in Schedule C.
4. For each of the pipeline sections listed in Schedules A, B, and C
- a. TNPI shall perform the following actions:
 - i. TNPI shall conduct a hydraulic analysis that includes all possible steady and non-steady state condition scenarios for all TNPI facilities and pipeline segments at 100% MOP and their reduced operating pressures to identify where overpressure events may occur. TNPI shall include in the hydraulic analysis an assessment of the collateral effects to the operation of third party pipelines in the event of an overpressure;

- ii. TNPI shall conduct and validate the hydraulic analysis results by correctly predicting all of the reported overpressure incidents;
 - iii. TNPI shall develop and implement corrective and preventive measures in response to the results of the hydraulic analysis that are in compliance with CSA Z662-15 Clause 4.18. The recommended measures shall include the installation of pressure-relieving systems to ensure that overpressure will not occur at any point in the TNPI system;
 - iv. TNPI shall integrate and optimize pressure-limiting systems; pressure-relieving systems; and Supervisory Control and Data Acquisition (SCADA), programmable logic controllers (PLC) and programming;
 - v. TNPI shall file with the Board a report that describes the security measures with respect to its SCADA and PLCs operating systems;
 - vi. TNPI shall notify the Board within 2 days after derating a pipeline section, if TNPI derates the operating pressure of any section set out in Conditions 1 a., 2 a., and 3 a. due to an identified transient analysis related issue. The notice shall include the rationale for reducing the pipeline's pressure;
 - vii. TNPI shall file with the Board for approval by 30 September 2017, a report that describes all specific evaluated scenarios, hydraulic analysis results, the recommended corrective and preventive measures, and the locations where overpressure protection system are proposed to be installed;
 - viii. TNPI shall implement the recommended corrective and preventive measures within 24 months after receiving Board approval under 4.a.vii. TNPI shall file with the Board a report confirming that it completed the measures.
- b. TNPI shall review and revise its operational and emergency response procedures and manuals, for its pipeline system, that are related to pressure control and overpressure protection systems. TNPI shall file with the Board by 30 June 2017 a report confirming that the procedures and manuals have been revised and implemented.
- c. TNPI shall implement all outstanding proposed preventive and mitigation measures outlined in the 17 July 2015 "Comprehensive Review of Overpressure Incidents and Systemic Plan for Corrective Action" report. TNPI shall file with the Board by 31 December 2016 confirmation that TNPI has implemented the measures.
- d. TNPI shall evaluate its pipeline risk and reliability at all water crossings, and develop and implement a water crossing management program on the TNPI pipeline system within 24 months after the date of issuance of this Order. TNPI shall file with the Board for approval by 31 December 2018, a report which includes TNPI's pipeline water crossing management

program, and pipeline risk and reliability assessment. The Water Crossing Management Program must include, but is not limited to:

- i. A Depth of Cover survey;
 - ii. An Engineering Assessment for pipeline underwater crossings;
 - iii. A Scouring assessment based on 50-year and 100-year storm event conditions, as well as bank erosion and channel migration analysis;
 - iv. Mitigation, prevention and monitoring programs as per section 39 and 40 of the *National Energy Board Onshore Pipeline Regulations* (OPR);
 - v. A schedule for implementation of all mitigation, prevention and monitoring programs identified in Condition 4.d. iv.
- e. TNPI shall take the following actions with respect to undertakings agreed to at the TNPI-Board technical meeting:
- i. TNPI shall revise and implement the TNPI Integrity Management Programs (IMPs) for its pipeline system (Facility and Pipeline) as required in sections 6.1 to 6.5 and section 40 of the OPR.
 - ii. TNPI shall file the revised IMPs with the Board by 30 September 2017;
 - iii. TNPI shall, as part of its IMPs for facility and pipeline, establish and implement a Risk Management process. The process with a management system framework shall contain the steps for evaluating and managing the pipeline risks associated with identified pipeline and facility integrity hazards, including risk reduction measures related to normal and abnormal operating conditions. TNPI shall file the management risk process with the Board by 30 September 2017;
 - iv. TNPI's Accountable Officer shall file with the Board, by 31 December 2016, a report demonstrating that TNPI has met the requirements of the OPR sections 6.5(1) (v), (w) and (x) and make available for the Board's review TNPI's required management system process and records.
- f. TNPI shall, at least 45 days prior to any request to raise the restricted MOP of any pipeline or section of pipeline, file a request with the Board for approval with information that includes, but is not limited to:
- i. Information demonstrating that TNPI has implemented Conditions 4. a. to 4.e. of this Order;
 - ii. Evidence that, as a result of lifting the pressure restriction, the integrity condition on the pipeline or section of pipeline will not be negatively affected within 36 months after the date of the return to service application;

- iii. An Engineering Assessment prepared in accordance with CSA Z662-15 Clause 10.1 that demonstrates that the pipeline or section of pipeline is safe to operate at its maximum operating pressure. The Engineering Assessment must include, but not be limited to, the following items:
 1. A Risk Assessment guided by CSA Z662 Annex B including guidelines for documented reporting by CSA Z662 Annex B Clause B.6;
 2. An imperfection assessment including, but not be limited to, pressure cycling, tool validation (Probability of Detection, Probability of Identification, and Sizing Accuracy), representative material properties, defect interaction, time-to-failure calculations, Safety Factor targets, revised defect growth rates and Probability of Exceedance; and
 3. Required mitigative, preventive and monitoring measures;
 4. A schedule for implementation of all mitigation, prevention and monitoring programs identified in Condition 4.f.iii.3.
5. TNPI shall perform the following actions:
- a. A historical review of past overpressures to identify causal and contributing factors specific to management systems and organizational factors, as well as recommended corrective and preventive measures.
 - b. Implementation of the associated corrective and preventive measures resulting from the historical review.
 - c. TNPI shall file with the Board for approval by 31 December 2016, a report which describes the process of incident investigation and analysis including the incidents assessed, the analytic results, and the implemented and required preventive and mitigative measures. The report shall include a timeline to implement the preventative and mitigative measures that are not implemented when the report is filed (outstanding measures).
 - d. TNPI shall file with the Board, within 30 days after the conclusion of the timeline to implement the outstanding measures, confirmation that the outstanding measures referred to in Condition 5(c) have been implemented.
6. TNPI shall perform the following actions with respect to the on-going remediation activities related to the 16 March 2010 incident (INC 2010-034) on the portion of the TNPI NPS 10 Cummer Junction to Oakville pipeline (Schedule B) that crosses Bronte Creek near Oakville, Ontario:

- a. TNPI shall file with the Board for approval by 31 March 2017 a Remedial Action Plan (RAP) consistent with the guidance provided in the Board's Remediation Process Guide, which includes but is not limited to:
 - i. confirmation that TNPI will send the RAP and the following notation to all previously identified stakeholders (as per the original stakeholder agreement).
 - ii. a detailed description of how the RAP is supported by the Community Based Risk Assessment (CBRA), including a letter from the Ontario Ministry of the Environment and Climate Change which notes its acceptance of the CBRA.
 - iii. confirmation that TNPI has sent the RAP and the following notation to all previously identified stakeholders (as per the original stakeholder agreement):

“This Remedial Action Plan (RAP) is concurrently being filed with the National Energy Board for approval. Please file any comments in respect of this RAP for the Board's consideration within 21 days after receipt of this correspondence”.

- b. TNPI shall file with the Board an annual status report, on or before 31 December 2017 and 31 December of each year thereafter until TNPI files its Remediation Closure Report for the incident site. The annual status report shall summarize remediation activities and progress to date, and include an estimated timeframe for completing remediation activities.
 - c. TNPI shall file with the Board for approval a Remediation Closure Report the content of which is consistent with the guidance provided in the Board's Remediation Process Guide. TNPI shall file the report with the Board after TNPI has completed the remediation objectives noted in the RAP.
7. TNPI shall perform the following actions in order to track and report its progress in completing all condition requirements of this Order:
- a. TNPI shall immediately appoint an independent third party responsible for the following actions:
 - i. Developing a Commitment Plan;
 - ii. Updating the Commitment Plan on a quarterly basis;
 - iii. Tracking the Commitment Plan for all Conditions of this Order;
 - iv. Reporting on the status of all requirements associated with this Order;
 - b. TNPI's Accountable Officer, appointed under subsection 6.2(1) of the OPR, shall sign the Commitment Plan and its Updates.

- c. TNPI shall file the Commitment Plan with the Board for approval within 30 days after the issuance of this Order.
- d. TNPI shall file Updates to the Commitment Plan with the Board on a quarterly basis, commencing 120 days after filing the first Commitment Plan and continuing until otherwise directed by the Board.

NATIONAL ENERGY BOARD

Original signed by

Sheri Young
Secretary of the Board

SCHEDULE A
AO-002-SO-T217-03-2010

Trans-Northern Pipelines Inc.
Amendment to Safety Order AO-001-SO-T217-03-2010

Schedule A - Pressure Reduction to the lower of 90% of Authorized MOP or 10% below the highest pressure reached within 90 days prior to the issuance of this Order.

Line Number	Line Section	Outside Diameter (mm)	Wall Thickness (mm)	Authorized MOP (KPa)	Reduced MOP (KPa)
1	NPS 16 Montreal to Ste Rose Loop	406	7.92	8274	Lower of 90% of MOP or 10% below the highest pressure reached within last 90 days
2	NPS 10 Ste Rose to Farran's Point sections	273.1	7.8	8274	Lower of 90% of MOP or 10% below the highest pressure reached within last 90 days
3	NPS 16 Ste Marthe Transition to Farran's Point Loops	406	7.14	8274	Lower of 90% of MOP or 10% below the highest pressure reached within last 90 days

SCHEDULE B
AO-002-SO-T217-03-2010

Trans-Northern Pipelines Inc.
Amendment to Safety Order AO-001-SO-T217-03-2010

Schedule B - Pressure Reduction of 30% of Authorized MOP (as Specified)

Line Number	Line Section	Outside Diameter (mm)	Wall Thickness (mm)	Authorized MOP (KPa)	Reduced MOP (KPa) (70% MOP)
1	NPS 10 Montreal to Ste Rose	273.1	7.8	8275	5793
2	NPS 10 Dorval Lateral	273.1	6.35	9653	6757
3	NPS 10 Farran's Point to Cummer Junction	273.1	7.8	8275	5793
4	NPS 10 Cummer Junction to Oakville	273.1	7.8	8275	5793
5	NPS 16 Nanticoke to Hamilton	406	6.35, 7.14	8094,9067	5665,6347
6	NPS 10 Hamilton Junction to Oakville	273.1	7.8	9067,8860	6347,6202
7	NPS 10 Clarkson Lateral	273.1	7.8	8275	5793
8	NPS 20 Clarkson Junction to Toronto Airport Loop	508	7.14	8274	5793
9	NPS 16 Oakville to Clarkson Loop	406	7.14	9067	6347
10	NPS 10 Toronto Airport Lateral	273.1	6.35	8894	6226
11	NPS 8 CAFAS Lateral	219.1	6.35	6412	4488
12	NPS 10 Montreal Feeder System	273.1			70% MOP

SCHEDULE C
AO-002-SO-T217-03-2010

Trans-Northern Pipelines Inc.
Amendment to Safety Order AO-001-SO-T217-03-2010

Schedule C - Pressure Reduction of 30% of Authorized MOP (as Specified)

Line Number	Line Section	Outside Diameter (mm)	Wall Thickness (mm)	Authorized MOP (KPa)	Reduced MOP (KPa) (70% MOP)
1	NPS 12 Ottawa Lateral	323.9	4.8, 5.16, 5.94, 6.35	8274	5793