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31 May 2019

Mr. Ian Anderson  
President and CEO  
Trans Mountain Pipeline ULC  
Suite 2700, 300 - 5 Avenue SW  
Calgary, AB T2P 5J2  
Email: [REDACTED]

Dear Mr. Anderson:

**Trans Mountain Pipeline ULC (TMPU)  
Addendum Final Audit Report – Emergency Management (EM) Program  
Fire Preparedness Planning**

On 22 December 2017, the National Energy Board (NEB or Board) released its Final Audit Report detailing the audit of TMPU's Management System and Emergency Management Program. In that report, the Board indicated that its original audit plan had included specific activities to assess TMPU's response preparation for fires at its Westridge, Burnaby and Edmonton Terminals; however, at the time of the report's release this assessment was not complete. The Board released its Final Audit Report without the fire preparedness activities assessment in order to allow TMPU to develop and implement any required corrective and preventive actions for the protection of people and the environment in a timely manner. The Board indicated that it would issue a subsequent report relative to the fire protection at the terminals, once it had completed that assessment.

The Board has now completed the required review of the fire response assessment and is issuing this letter-report as an addendum to its original Final Audit Report.

In this audit report addendum, as in the Final Audit Report, the Board made findings in relation to TMPU's Management System and Emergency Management program. The findings of the audit are based upon an assessment of whether TMPU demonstrated compliance with the regulatory requirements contained within:

- the *National Energy Board Act* (NEB Act); and,
- the *National Energy Board Onshore Pipeline Regulations* (OPR).

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## **Fire Preparedness Assessment Summary**

As noted, this letter is intended to be an addendum to the Board's 22 December 2017 Final Audit Report. That report documents the Board's audit and assessment of TMPU's Management System and its Emergency Management Program against the requirements of the NEB Act and OPR. However, at the time of the release of its report, the Board had not finished its audit of TMPU's response preparation for fires at its Westridge, Burnaby and Edmonton Terminals. It further indicated that "a subsequent report will be issued relative to the fire protection at terminals, once the Board has completed [that] work." This letter is intended to fulfil this commitment. The Board assessed TMPU's fire preparedness activities at the noted terminal facilities during the period from January 2016 to March 2019.

The previously released Final Audit Report included a full assessment of TMPU's Management System and Emergency Management Program which are applicable to the terminal fire preparedness activities as a specific set of hazards to be managed as per the OPR. The findings made in that report therefore are expected to apply to the management of TMPU's fire preparedness and response activities as appropriate and relevant as well as any issues identified in this addendum. In this part of its audit, the Board assessed TMPU's EM Program plans, practices, facilities, human resource allocations and activities (including equipment and maintenance thereof) to determine whether the identified fire related hazards and risks had been managed as required. The Board audited TMPU's fire preparedness management activities within the context of the requirements of the OPR focussing on the applicable management system requirements identified in section 6 and 6.1 through 6.6 and the EM program requirements identified in section 32 through 35. This assessment was done through document and record reviews, interviews with TMPU staff and contractors, information requests and site visits.

In addition, the Board contracted PLC Fire Safety Solutions, (PLC) to assist with the technical review of fire suppression systems and related infrastructure at the terminals. PLC was contracted to provide independent advice to Board staff specifically regarding the fire suppression and response plans and equipment. PLC's review involved documentation review and in-field activities starting in January 2016. The Board received PLC's final report in December 2016.

As per the Board's standard audit practice, TMPU was provided an opportunity to review PLC's initial findings and its report. TMPU provided comments in a letter dated 31 January 2017. In its response, TMPU asserted that the Board should disregard PLC's report in its entirety for reasons that included:

- PLC's incorrect application and interpretation of standards and regulations in its assessment of TMPU's facilities and activities; and
- PLC, as agent of the Board, failing to adhere to the principles of procedural fairness to which TMPU is entitled.

The Board reviewed PLC's report in conjunction with TMPU's response and internal NEB operational and legal analysis. Following the consideration of the various inputs, the Board has confirmed that several of PLC's findings were based on the incorrect application and interpretation of the OPR and other regulatory requirements. As a result, the Board has determined that, in accordance with its mandate to promote the consistent application of its regulations, it would not adopt the PLC report in its entirety.

The Board has considered the TMPU concerns about procedural fairness and is of the view that procedural fairness was not breached. While there was an initial lack of clarity about whether TMPU was being audited to legal requirements, that issue has been resolved. TMPU had opportunities to meet with PLC auditors and Board auditors on a number of occasions. TMPU also had an opportunity to provide detailed comments on the PLC report which the Board considered and in some instances accepted. TMPU also had an opportunity to respond to the Board's information requests issued after the PLC report.

While the PLC report has not been fully adopted by the Board, the PLC report did contain certain information that could be used to inform other audit activities. The report identified a number of potential deficiencies that could be considered to relate to hazards and associated risk that TMPU would need to provide additional information in order for the Board to assess the suitability of the company's Emergency Management Program as it relates to fire response. The Board followed up on these potential deficiencies to assess the company's terminal fire preparedness activities. Throughout the period covered in this audit and the additional fire preparedness review, TMPU provided access to all available requested information. It also continued to make improvements to its EM program.

Based on the information provided by TMPU, with the exception of the two areas noted below, the Board did not identify any new areas of Non-Compliance that were not already included in the Board's previously released Final Audit Report.

During the audit, the Board identified issues associated with TMPU's established response time goals for assembling staff and contractors to initiate the extinguishment of tank fires. Specifically, the Board noted that TMPU has established a goal of 6 hours to assemble its staff and contractors in the event of a tank fire. However, during the audit TMPU provided information indicating that, in certain conditions, a tank boil-over event could potentially occur before the 6 hour response goal. For example, for one of the scenarios provided, a tank with a low level of product could escalate from a full surface fire to a boil-over event in 5.1 hours. The Board is therefore requiring TMPU to incorporate a four (4) hour fire response goal within its EM program to address this inconsistency. The Board is of the view that this represents a goal that reflects response requirements and a contingency buffer.

A gap was also identified within TMPU's EM exercise program. In particular, the Board noted that TMPU did not conduct unannounced exercises to test its response capability in line with its EM plans.

During the audit, TMPU indicated that its EM exercise design practice does not include undertaking unannounced exercises. TMPU indicated that they use the exercises as training opportunities; therefore, communicating or announcing exercises prior to undertaking them allows for better involvement rates for staff and contractors and better learning outcomes. The Board does not dispute these facts and notes that TMPU undertakes a significant number of exercises each year. However, the Board notes that TMPU's EM program, as it relates to terminal fires, involves the use of staff and third party contractors that are required to assemble from off-site prior to initiating a response. Given all of the variables to be tested, the resources required and the potential consequences of an event, the Board is of the view that TMPU's strict reliance on planned exercises does not allow for the identification of previously unanticipated complications that could interfere with an effective response at its terminals.

The Board is therefore directing TMPU to incorporate regular unannounced exercises into its EM exercise program as a required practice.

The Board's review of TMPU's fire preparedness focussed on the company's Burnaby, Westridge and Edmonton facilities. While the Board has made specific directions related to the Edmonton and Burnaby Terminals (Items 1 and 2 in its attachment to this letter), it expects, as with all of its audit findings, that TMPU will take a systematic approach when implementing its corrective and preventive actions. It is expected that, TMPU will develop and implement preventive actions to establish fire response goals and have unannounced exercises at each of its facilities based on the analysis of their individual fire hazards in a manner consistent with the above direction and the consequences identified during its analyses of its hazards. The Board will include the review of TMPU's activities related to this item at its other facilities in the Board's on-going compliance verification program.

Further, as the Board considers an unannounced demonstration of an ability to implement a response to tank fires to be of importance. Therefore, within 12 months of the establishment and integration of the four (4) hour response targets, as described in 1a) of Attachment 1 to this letter, the Board will direct TMPU to undertake a full deployment exercise at one of its Edmonton or Burnaby Terminals. The exercise will be unannounced and will be initiated at the time and location of the Board's choosing. Board staff will be on site to announce the exercise and observe and evaluate TMPU's response. This exercise may be considered towards TMPU's compliance with Board Direction 2c) of Attachment 1.

As the Board has provided specific direction for TMPU, no additional Corrective and Preventive Action Plan is required to be filed with the Board for approval. The Board will monitor and assess TMPU's response to these directions as part of its on-going compliance verification activities associated with the rest of this audit until they are fully implemented to assure the safety of people and the environment. The Board will also continue to monitor the implementation and effectiveness of TMPU's EM program and management system through targeted compliance verification activities as a part of its on-going regulatory mandate.

The Board's priority is to protect Canadians and the environment. Accordingly, the Board requires all companies to regularly evaluate and continually improve the effectiveness of their management systems and to build and maintain a strong safety culture.

The National Energy Board is committed to providing access regarding safety and environmental information to all Canadians. In order to meet this commitment, the Board posts safety and environmental related documents on its website (please see <http://www.nelb-one.gc.ca/clf-nsi/rsftyndthnvrnmnt/sfty/sfcmpctn-eng.html> ). As per its standard audit practice, the Board will post this Addendum to its Final Audit Report on its website.

While the Board is committed to this endeavour, it recognizes its obligations under the *Access to Information Act* (Act) and intends on consulting with third parties prior to posting any documents. Therefore, should your company have any objections to the release of the attached document(s), or to specific parts of the attached document(s), please provide a list of those objections along with a detailed rationale and specific reference to applicable sections of the Act within seven (7) calendar days of the date of this letter. Should you fail to provide input, the documents may be posted without your input.

Please note that, with the exception of your executive staff which the Board considers publicly known figures of your company, all personal information relating to your employees will be redacted by our office pursuant to the *Privacy Act*.

If you require any further information or clarification, please contact Ken Colosimo, Technical Leader, Audits, Systems Operations Business Unit at 403-471-3101 or toll free at 1-800-899-1265.

Yours truly,

*Original signed by L. George for*

Sheri Young  
Secretary of the Board

c.c. Ms. Megan Sartore, Regulatory Advisor, Regulatory Affairs  
Email: [REDACTED]

## **Attachment 1:**

### **Fire Preparedness and Response Assessment Details and Specific Direction**

#### **1 Introduction**

In accordance with section 49(3) of the *National Energy Board Act* (NEB Act), the National Energy Board (NEB or the Board) conducted a compliance audit of Trans Mountain Pipeline ULC's (TMPU) Management System and Emergency Management (EM) program. On 22 December 2017, the National Energy Board released its Final Audit Report detailing the audit of TMPU's Management System and Emergency Management Program. In that report, the Board indicated that its original audit plan included specific activities to assess TMPU's response preparation for fires at its Westridge, Burnaby and Edmonton Terminals; however, at the time of the report's release that assessment was not complete. In order to ensure the timely resolution of issues noted in the audit, the Board released its Final Audit Report without the fire preparedness assessment. The Board indicated that it would issue a subsequent report relative to the fire protection at the terminals, once the Board had completed that assessment.

The Board has now completed the required review of the fire response and is hereby issuing this letter-report as an addendum to its original 2017 Final Audit Report.

##### **1.1.1 Audit Objective**

The objective of this audit was to verify that TMPU is complying with the *National Energy Board Onshore Pipeline Regulations* (OPR). Specifically, the Board audited TMPU's fire preparedness and response activities as they relate to its Edmonton, Burnaby and Westridge Terminals.

##### **1.2.1 Audit Scope**

The final regulatory scope of the audit included relevant sections of:

- The NEB Act; and
- The OPR.

The Board's audit plan contained specific activities to assess TMPU's response preparation for fires at its Westridge, Burnaby and Edmonton Terminals.

##### **1.3.1 TMPU Overview**

TMPU operates the Trans Mountain Pipeline that is approximately 1150 kilometers long from Edmonton, Alberta to Burnaby, British Columbia. There are twenty-three active pump stations located along the pipeline route. The line capacity is approximately 300,000 barrel per day (bpd) and the line flow is eight kilometers per hour. In addition to the pump stations, four terminals in Edmonton, Kamloops, Abbotsford and Burnaby house storage tanks for incoming feeder pipelines and tanker loading facilities. Presently, the terminals have the following number of storage tanks - Edmonton Terminal 35, Kamloops 2, Sumas (Abbotsford) 6 and Burnaby 13. Additionally, the Board regulates TMPU's Westridge Marine Terminal near Burnaby, British Columbia.

## **2 Assessment of Compliance**

### **2.1.1 General**

To determine compliance, the Board evaluated TMPU's documents and records and conducted interviews with company personnel and contractors on issues relevant to the audit scope and criteria. The Board applied the working definitions listed in Appendix III – Terminology and Definitions, included in its 22 December 2017 Final Audit Report.

There are two possible audit findings assigned to any item by the Board in this audit:

- Compliant (see attached list of definitions); and
- Non-Compliant (see attached list of definitions).

### **2.2.1 Assessment – TMPU Terminal Fire Preparedness and Response**

The Board assessed TMPU's activities related to its EM Program plans, practices, facilities, human resource allocations and activities (including equipment and maintenance thereof) to determine whether the identified fire related hazards and risks had been managed as required. The Board audited TMPU's fire preparedness management activities within the context of the requirements of the OPR focusing on the applicable management system requirements identified in section 6 and 6.1 through 6.6 and the EM program requirements identified in section 32 through 35.

The assessment was done through document and record reviews, interviews with TMPU staff and contractors, information requests and site visits. The Board's auditors were guided by the Board's published audit protocol taking into consideration that this assessment was only an assessment of one EM area related to fire hazards at its specified terminals. The Board included a review of TMPU's hazard identification, analysis and management and the development of risk controls related to fire. The Board reviewed TMPU's facility design, EM fire plans, practices, response equipment and maintenance thereof, human resource allocations and training, competency and exercise activities.

The Board's audit results indicated that TMPU's EM program and facilities as they relate to fire preparedness and response can be considered adequate within the existing regulatory requirements of the Board. As with other areas of its EM program, TMPU has exerted a considerable amount of effort and resources in the development of fire preparedness plans and practices.

Based on the information provided by TMPU, with the exception of the two areas noted below, the Board did not identify any new areas of Non-Compliance that were not already included in the Board's previously released 2017 Final Audit Report.

The Board identified issues relating to TMPU's response planning goals for assembling staff and contractors and initiating extinguishment of tank fires and the design of its EM exercise program relating to unannounced exercises to demonstrate and test its response capability within its stated plans and contract resources.

### **2.3.1 Non-Compliance – Goals for Responding to Tank Fires**

During the audit, TMPU indicated that its response target time to assemble people and resources on-site to extinguish a tank fire is six (6) hours. TMPU provided information, however, it indicated that, under certain conditions, for example, a tank with a low level of product, it is possible to have a tank boil-over event in 5.1 hours. Boil-over events can lead to the most significant consequences associated with a fire. The Board is of the view that emergency response programs, especially goals for the timing of responses should be based on the analysis of the hazards associated with companies' facilities and activities. Therefore, the Board is of the view that TMPU will need to establish program goals that correspond to analysis of its hazards to ensure that escalation of incidents does not occur due to a failure to respond in a timely manner.

The Board is of the view that this deficiency related to TMPU's response time goals constitutes a Non-Compliance with OPR section 6.3(1)(b) – *“The company shall establish documented policies and goals for meeting its obligations under section 6, including (b) goals for the prevention of ruptures, liquid and gas releases, fatalities and injuries and for the response to incidents and emergency situations.”*

#### **Board Direction #1**

1. TMPU is directed to establish and integrate the following fire response targets into its Emergency Response Program and fire response plans as described below.
  - a) For its Burnaby and Edmonton Terminals, TMPU must establish and integrate into all fire plans and associated planning and preparedness activities, a four (4) hour response target time to initiate extinguishment of a full surface tank fire for the largest tank at each facility.
  - b) TMPU must implement the direction described in 1 a) within six (6) months of the issuance of this letter. TMPU must keep records for Board review, demonstrating the changes to TMPU's program(s) required by this direction, as well as the changes planned and implemented to comply with the Board's direction.

The Board notes that its review of TMPU's fire preparedness focussed on the Burnaby, Westridge and Edmonton facilities. While the Board has made specific directions related to the Edmonton and Burnaby Terminals, it expects, as with all of its audit findings, that TMPU will take a systematic approach to addressing these findings. It is therefore expected that, based on the Board's assessment and issue identification, TMPU will develop and implement preventive actions to assess and address response time goals and targets based on the analysis of its fire hazards at all of its regulated facilities in a manner consistent with the above direction and the risks identified. The Board will include the review of TMPU's activities related to this item at TMPU's other facilities in its on-going compliance verification program.

### **2.4.1 Emergency Response Exercises**

During the audit, the Board determined that TMPU has established and implemented a robust emergency response exercise program for training its staff and contractors and for testing and



practicing the implementation of its emergency response plans. Further, during the audit, TMPU demonstrated that it maintains fire response equipment and fire trained staff throughout its system in accordance with its assessment of the needs of the facilities. TMPU demonstrated that it has designed its plans to include utilizing company staff, contractors and industry responders. These groups are expected to assemble on-site from various locations prior to initiating a response. The Board confirmed that TMPU has secured agreements with offsite resources to respond to emergency fire incidents at its terminals.

In reviewing the design of TMPU's exercise plans and programs, however, the Board noted that TMPU does not include unannounced exercises to test its responders' ability to assemble and respond to a tank fire. Considering the potential consequences of fire incidents at its tank facilities and the importance of demonstrating that the existing plans can be implemented utilizing the established response structures, the Board is of the view that TMPU must augment its existing exercise program with regular, planned, unannounced exercises that focus on its ability to assemble the responders to initiate a fire response at its terminals.

The Board is of the view that this gap in the exercise program constitutes a Non-Compliance with OPR sections 6.5(1)(k) and 32. Section 6.5(1)(k) indicates "*A company shall, as part of its management system and the programs referred to in section 55, (k) establish and implement a process for verifying that employees and other persons working with or on behalf of the company are trained and competent and for supervising them to ensure that they perform their duties in a manner that is safe, ensures the security of the pipeline and protects the environment*". OPR section 32 indicates "*A company shall develop, implement and maintain an emergency management program that anticipates, prevents, manages and mitigates conditions during an emergency that could adversely affect property, the environment or the safety of workers or the public.*"

## **Board Direction #2**

2. TMPU is directed to incorporate unannounced (to its response staff and contract staff), full deployment exercise(s) into its annual training and exercise plans as described below.
  - a) TMPU must design its unannounced exercises to test and assess its staff, contract and industry responders' ability to assemble and respond to a full surface tank fire for the largest tank within each of its tank facilities within the response target times as described in 1 a), above using the procedures and practices described within its EM Program documentation and site-specific fire response plans. The exercise plans must incorporate the various constraints to a timely response that can be reasonably predicted based on its fire plans and site-specific considerations including, but not limited to location, access and human resource plans.
  - b) TMPU must complete unannounced, full deployment exercises at its Burnaby and Edmonton facilities within eight (8) months and ten (10) months, respectively, of receipt of this letter.

- c) Following the initial Board directed exercises, TMPU is directed to incorporate similar exercises applicable to its tank facilities into its on-going training and exercise program and on a schedule to be developed and implemented by TMPU that reflects the fire hazard analysis and associated consequences at each facility but not to exceed a frequency of three (3) years.

### **3 Conclusion**

The Board has completed its review of the fire preparedness assessment and has considered it in conjunction with the audit of TMPU's EM Program. Based on the information provided by TMPU, the Board has concluded that TMPU's processes and practices, have addressed the majority of the requirements associated with the company's emergency hazards and associated risk related to fire. This conclusion is consistent with the Board's previously released Final Audit Report for TMPU's EM Program.

Over the course of the audit and subsequent review, TMPU demonstrated that it has developed site-specific plans and procedures and the acquisition and positioning of fire response equipment at its terminal facilities. In addition, it undertakes training and exercises in aid of its preparedness and maintains contracts with expert responders to ensure effective responses.

Following the outcome of this review, the Board expects TMPU to address the two identified deficiencies by undertaking the directions included in this audit report addendum. No enforcement actions are immediately required to address the identified Non-Compliant findings. As the Board has provided specific direction for TMPU to follow, no additional Corrective and Preventive Action Plan is required to be filed with the Board. The Board will monitor and assess TMPU's response to these directions as part of its on-going compliance verification activities associated with the rest of this audit until they are fully implemented to assure the safety of people and the environment. The Board will also continue to monitor the implementation and effectiveness of TMPU's EM Program and management system throughout its lifecycle using targeted compliance verification activities as a part of its on-going regulatory mandate.

The Board will post this Addendum to its Final Audit Report on its website. Prior to publishing the addendum TMPU will be offered an opportunity to review the report and request redactions based on the *Access to Information Act and Privacy Act*. The Board will monitor and assess the implementation of its directions noted in this Addendum and all TMPU's CAPAs to confirm they are completed in a timely manner and on a system wide basis until they are fully implemented. The Board will also continue to monitor the overall implementation and effectiveness of TMPU's EM Program and Management System through targeted compliance verification activities as a part of its ongoing regulatory mandate.

The Board will make its final Audit Report and TMPU's approved corrective action plan public on the Board's website.