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27 March 2017

Mr. Ian Anderson
President and Accountable Officer
Trans Mountain Pipeline ULC
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Email [REDACTED]

Dear Mr. Anderson:

**Notification of the National Energy Board's (Board or NEB)
Final Audit Report Trans Mountain Pipelines ULC. (TMPU)**

On 18 August 2016, the National Energy Board (NEB or the Board) informed TMPU of its intent to audit Trans Mountain' NEB regulated facilities. The audit focused on the patrol activities conducted as required by sub-element 4.1 *Inspection, Measurement and Monitoring*, of the NEB Management System and Protection Program Audit Protocol.

The findings of the audit are based upon an assessment of whether TMPU was compliant with the regulatory requirements contained within:

- The *National Energy Board Act*;
- The *National Energy Board Onshore Pipeline Regulations*;
- The *National Energy Board Damage Prevention Regulations*;
- *Canadian Standards Association (CSA) Z662 – 15 – Oil and Gas Pipeline Systems*; and
TMPU's policies, programs, practices and procedures.

TMPU was required to demonstrate the adequacy and effectiveness of the methods it has selected and employed within its management system and programs to meet the regulatory requirements listed above. Throughout this audit, the Board evaluated patrol activities in the context of the protection programs and the management system.

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Upon receipt of the final Audit Report, TMPU is required to file with the Board for approval, a Corrective Action Plan (CAP) that describes the methods and timing for addressing the non-compliances identified through this audit. The CAP shall be filed within 30 days of the final Audit Report being issued by the Board.

The Board will post the approved CAP public on the website and will continue to monitor and assess all of TMPU's corrective actions with respect to this audit until they are fully implemented. The Board will also continue to monitor the implementation and effectiveness of TMPU's management system and programs through targeted compliance verification activities as a part of its on-going regulatory mandate.

If you require any further information or clarification, please contact Marnie Sparling, Lead Auditor, at 403-629-6394.

Yours truly,

Original signed by

Sheri Young
Secretary of the Board

c.c.

[REDACTED]

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National Energy
Board



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National Energy Board Onshore Pipeline Regulations (OPR)
Final Audit Report of the Trans Mountain Pipelines ULC. (TMPU)
Pipeline Patrol Activities

File OF-Surv-OpAud-T260-2016-2017-01

Suite 2700, 300-5th Avenue SW
Calgary, AB T2P 5J2

27 March 2017

Canada 

Executive Summary

Companies regulated by the National Energy Board (NEB or the Board) must demonstrate a proactive commitment to continual improvement in safety, security and environmental protection. Pipeline companies under the Board's regulation are required to incorporate adequate, effective and implemented management systems into their day-to-day operations.

This report documents the Board's audit of the above ground monitoring and surveillance activities (collectively referred to as patrol activities) implemented by Trans Mountain ULC (TMPU) for its NEB-regulated pipeline facilities. The audit focussed on sub-element 4.1 ***Inspection, Measurement and Monitoring*** of the National Energy Board Management System and Protection Program Audit Protocol published in July 2013. Given the scope of this audit, it also included the requirements contained within the *Damage Prevention Regulations – Obligations of Pipeline Companies* (DPR-O) and the Canadian Standards Association- Oil and Gas Pipeline Systems (CSA Z662-15).

The Board conducted the audit using two sets of protocols. The protocol in Appendix I focused on the requirements for patrol activities described in sub-element 4.1: Inspection, Measurement and Monitoring. In Appendix II, the Board evaluated how the company's patrol activities are linked to the other elements of the TMPU's management system information inputs and outputs. These links are indicators of the level to which a management system is implemented at the program activity level.

During the audit, the Board verified that TMPU conducts several types of ROW patrol activities to identify and report hazards and potential hazards on its rights-of-way. TMPU also demonstrated that it leverages its patrol activities to inform its Integrity and Environmental Protection Programs. The Board also found that TMPU was able to demonstrate that the majority of its management system processes had been integrated with the patrol activities. Detailed assessments are provided in Appendix I and II of this audit report.

Over the course of the audit, the Board identified non-compliances in the following areas:

- Finding 1: TMPU's draft Land Use Monitoring Standard was not implemented at the time of the audit
- Finding 2: TMPU did not demonstrate that it is documenting its assessment of all the issues listed in CSA Z662-15 clause 10.6.1. Finding 3: TMPU's legal list as it pertains to patrols is maintained at an insufficient level of detail
- Finding 4: TMPU has not established and implemented a process for identifying and verifying competencies of its contractors with respect to its patrol activities
- Finding 5: TMPU did not demonstrate that its communication plan was fully implemented as required by the OPR.

Within 30 days of the Final Audit Report being issued, TMPU must develop and submit a Corrective Action Plan (CAP) for Board approval. The CAP must outline how TMPU intends to resolve the non-compliances identified by this audit.

The Board will verify that the corrective actions are completed in a timely manner and applied consistently across TMPU's system. The Board will continue to monitor the implementation and effectiveness of TMPU's management system and programs through targeted compliance verification activities as part of its ongoing regulatory mandate.

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1.0 Introduction:

The NEB's purpose is to promote safety and security, environmental protection, and efficient energy infrastructure and markets in the Canadian public interest within the mandate set by Parliament in the regulation of pipelines, energy development and trade. In order to assure that pipelines are designed, constructed, operated and abandoned in a manner that ensures the safety and security of the public and the company's employees; the safety of the pipeline and property; and protection of the environment, the Board has developed regulations requiring companies to establish and implement documented management systems applicable to specified technical management and protection programs. These management systems and programs must take into consideration all applicable requirements of the NEB Act and its associated regulations, as well as the *Canada Labour Code, Part II*. The Board's management system requirements are described within the OPR, sections 6.1 through 6.6.

To evaluate compliance with its regulations, the Board audits the management system and programs of regulated companies. The Board requires each regulated company to demonstrate that they have established and implemented, adequate and effective methods for proactively identifying and managing hazards and risks.

This audit is one in a series of focused audits that the Board is conducting of company right of way (ROW) patrol activities and is focused on sub-element 4.1 ***Inspection, Measuring and Monitoring*** of the National Energy Board Management System and Protection Program Audit Protocol published in July 2013.

The Board developed its audit protocols to verify that company patrol activities are compliant with the requirements, appropriately implemented and managed. During the audit, the Board reviews documentation and samples records provided by the company in its demonstration of compliance and interviews corporate and regionally-based staff. The Board also conducts inspections of a representative sample of company facilities. This enables the Board to evaluate the adequacy, effectiveness and implementation of the management system and programs. The Board bases the scope and location of the inspections on the needs of the audit. The inspections follow the Board's standard inspection processes and practices. Although they inform the audit, inspections are considered independent of the audit. If unsafe or non-compliant activities are identified during an inspection, they are enforced as set out by the Board's standard inspection and enforcement practices.

After completing its field activities, the Board develops and issues a Draft Audit Report (this document). The Draft Audit Report is submitted to the company for its review and to provide the company the opportunity to submit its comments to the Board. The Board will take the company's comments into consideration before issuing the Final Audit Report. The Final Audit Report outlines the Board's audit activities and provides evaluations of the company's compliance with the applicable regulatory requirements. Once the Board issues the Final Audit Report, the company must submit and implement a Corrective Action Plan to address all non-compliances identified. Final Audit Reports are published on the Board's website. The audit results are integrated into the NEB's risk-informed lifecycle approach to compliance assurance.

2.0 Background

The NEB expects pipeline companies to operate in a systematic, comprehensive and proactive manner that manages risks. The Board expects companies to have effective, fully developed and implemented management systems and protection programs that provide for continual improvement.

As required by the OPR, companies must establish, implement and maintain effective management systems and protection programs in order to anticipate, prevent, mitigate and manage conditions that may adversely affect the safety and security of the company's pipelines, employees, the general public, as well as the protection of property and the environment.

In fiscal year 2016/17 the Board is piloting a new approach to audits. It identified the need to conduct a series of audits focused on company patrol activities. This decision was based on an internal analysis of compliance data and application of the NEB risk model. This model combines different aspects of the pipeline system's location, product etc. with the companies' performance in other compliance areas. Trans Mountain Pipelines ULC. (TMPU) was therefore selected to be audited based on its compliance history and relative risk presented by its pipeline system. This audit focused on sub-element 4.1, *Inspection, Measurement and Monitoring* of the National Energy Board Management System and Protection Program Audit Protocol, published in July 2013, which has the following expectations:

“The company shall have an established, implemented and effective process for inspecting and monitoring the company's activities and facilities to evaluate the adequacy and effectiveness of the protection programs and for taking corrective and preventive actions if deficiencies are identified. The evaluation shall include compliance with legal requirements.

The company shall have an established, implemented and effective process for evaluating the adequacy and effectiveness of the company's management system, and for monitoring, measuring and documenting the company's performance in meeting its obligations to perform its activities in a manner that ensures the safety and security of the public, company employees and the pipeline, and protection of property and the environment.

The company shall have an established, maintained and effective data management system for monitoring and analyzing the trends in hazards, incidents and near-misses. The company shall have documentation and records resulting from the inspection and monitoring activities for its programs.

The company management system shall ensure coordination between its protection programs, and the company should integrate the results of its inspection and monitoring activities with other data in its hazard identification and analysis, risk assessments, performance measures and annual management reviews, to ensure continual improvement in meeting the company's obligations for safety, security and protection of the environment.”



3.0 Audit Objectives and Scope

The objective of the audit was to evaluate TMPU's performance against the applicable requirements specifically as they relate to patrol activities. The scope of the audit focused on sub-element 4.1 of the Board's audit protocol to verify that patrol activities are adequately identifying issues noted on the rights-of way to promote environmental protection, pipeline integrity, emergency response, security and damage prevention. The Board also examined the degree to which patrol activities were integrated with the company's management system to ensure the protection of the environment and the safety and security of the public.

This audit was based on the requirements for federally regulated pipeline companies to conduct patrols of their rights of way to actively monitor hazards and potential hazards that could jeopardize the safety of people and the environment. The information gathered and issues observed by patrol activities must be communicated to the appropriate protection programs for tracking and resolution. Equally important, the hazards identified by the protection programs must inform the patrol activities to promote effective monitoring of these hazards. For this audit, TMPU was audited against the requirements contained within the following legal requirements as they relate to patrol activities:

- The *National Energy Board Act*;
- The *National Energy Board Onshore Pipeline Regulations*;
- The *National Energy Board Damage Prevention Regulations*;
- Canadian Standards Association (CSA) Z662 – 15 – Oil and Gas Pipeline Systems; and
- TMPU's policies, programs, practices and procedures.

During the audit, the NEB conducted field inspections, reviewed documentation and interviewed the company's staff with the aim to:

- obtain a snapshot of the patrol activities being conducted;
- assess the implementation of company management systems as they relate to pipeline patrols;
- allow for a broader assessment of industry performance with regards to pipeline patrols; and
- provide clarity around the Board's expectations regarding these patrol activities.

4.0 Audit Process, Methodology and Activities

The Board informed TMPU of its intention to audit its NEB regulated facilities in a letter dated 15 August 2016. Following the issuance of this letter, Board audit staff met with TMPU to arrange and coordinate this audit. The Board also provided TMPU with the audit protocols (Appendices I and II), an information request guidance document as well as discussion questions to help TMPU prepare for the audit, and provide access to documentation and records to demonstrate its compliance. Appendix I is divided into five sections, with each section covering a partial component of the Board's expectations for sub-element 4.1. In Appendix II, the Board's Audit Protocol identifies five Management System elements which are further broken down into 17 sub-elements. Each sub-element reflects a number of regulatory requirements. As this audit is

focussed on patrol activities and related inputs and outputs from other protection programs, many of the processes required by the OPR were considered within the scope of this audit. TMPU established a digital access portal for Board staff to review documentation and records.

On 9 September 2016, an opening meeting was conducted with representatives from TMPU in Calgary, Alberta to confirm the Board’s audit objectives, scope and process. The opening meeting was followed by various field level audit activities as described in the table below. Throughout the audit, Board audit staff gave TMPU daily summaries which included requests for additional documentation and interviews.

On 28 November 2016, the Board sent a pre-closeout information request to TMPU. This document outlined where gaps in information were identified during field activities, interviews and documentation review to date. An audit close-out meeting was held on 20 December 2016 to provide TMPU with a description of the recommendations that staff would be bringing to the Board for decision.

Summary of Audit Activities
<ul style="list-style-type: none"> • Audit Opening meeting – 9 September 2016 • Field Verification Activities: <ul style="list-style-type: none"> Interviews Hope BC – 4 October Aerial Patrol, Burnaby Terminal to Sumas/ Hope– 5 October, 2016 Interviews Burnaby, 6 October 2016 Interviews, Sherwood Park and Edmonton – 7 October, 2016 Ground patrol – Sherwood Park- 7 October, 2016 Interviews, Calgary- 18 October, 2016 Interviews and Document Review onsite- Calgary 3 and 4 November 2016 • Audit Closing Meeting – 20 December 2016

5.0 Summary of Audit Findings

During this audit, TMPU was required to demonstrate the adequacy and effectiveness of its management system, programs and its processes as they relate to pipeline patrols. The Board reviewed documentation and records provided by TMPU, conducted inspections and interviewed TMPU’s staff.

The Board’s audit of TMPU’ regulated facilities found TMPU is conducting several types of ROW patrol activities for its NEB regulated facilities and that TMPU has implemented processes for the reporting of potential unauthorized activities noted during patrol activities as required by the DPR-O. The Board verified that TMPU has integrated its patrol activities into the majority of the management system sub-elements including the policy and commitment, hazard identification, risk assessment and control, goals, objectives and targets, management of change and management review. However, the Board noted five findings of non-compliance related to: monitoring of adjacent lands; observing conditions and activities; failure to demonstrate an

adequate list of legal requirements; lack of process to evaluate the contractors conducting patrol activities; and failure to demonstrate that its internal communication plan had been fully implemented:

- Finding 1: TMPU's draft Land Use Monitoring Standard was not implemented at the time of the audit.
- Finding 2: TMPU did not demonstrate that it is documenting its assessment of all the issues noted in CSA Z662-15 clause 10.6.1.
- Finding 3: The Board noted that, at the time of the audit, TMPU's legal list as it pertains to patrols is maintained at an insufficient level of detail.
- Finding 4: TMPU has not established and implemented a process for identifying and verifying competencies of its contractors with respect to its patrol activities.
- Finding 5: TMPU did not demonstrate that its internal communication plan was fully implemented as required by the OPR.

The full assessment is available in Appendices I and II of this report.

6.0 Conclusions

Companies regulated by the NEB must demonstrate a proactive commitment to continual improvement in safety, security and environmental protection. Pipeline companies under the Board's regulation must establish and implement effective management systems in their day-to-day operations. In conducting this review, the Board has determined that TMPU is conducting patrol activities and its management system, for the most part, has been consistently implemented with regards to its patrol activities.

Upon receipt of the final report, TMPU must develop a corrective action plan describing its proposed methods to resolve the non-compliances identified in Appendices I and II and the timeline in which corrective actions will be completed. TMPU is required to submit its corrective action plan for Board approval within 30 days of the final Audit Report being issued. The Board will make its final Audit Report and TMPU's approved corrective action plan public on the Board's website.

The Board will assess the implementation of TMPU's corrective actions 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 patrol activities.



7.0 Audit Terminology and Definitions

(The Board has applied the following definitions and explanations in measuring the various requirements included in this audit. They follow or incorporate legislated definitions or guidance and practices established by the Board, where available.)

Adequate: The management system, programs or processes complies with the scope, documentation requirements and, where applicable, the stated goals and outcomes of the NEB Act, its associated regulations and referenced standards. Within the Board's regulatory requirements, this is demonstrated through documentation.

Audit: A systematic, documented verification process of objectively obtaining and evaluating evidence to determine whether specified activities, events, conditions management systems or information about these matters conform to audit criteria and legal requirements, and communicating the results of the process to the company.

Compliant: A program element meets legal requirements. The company has demonstrated that it has developed and implemented programs, processes and procedures that meet legal requirements.

Corrective Action Plan: Addresses the non-compliances identified in the audit report, and explains the methods and actions that will be used to correct them.

Developed: A process or other requirement has been created in the format required and meets the described regulatory requirements.

Effective: A process or other requirement meets its stated goals, objectives, targets and regulated outcomes. Continual improvement is being demonstrated. Within the Board's regulatory requirements, this is primarily demonstrated by records of inspection, measurement, monitoring, investigation, quality assurance, audit and management review processes as outlined in the OPR.

Established: A process or other requirement has been developed in the format required. It has been approved and endorsed for use by the appropriate management authority and communicated throughout the organization. All staff and persons working on behalf of the company or others that may require knowledge of the requirement are aware of the process requirements and its application. Staff has been trained on how to use the process or other requirement. The company has demonstrated that the process or other requirement has been implemented on a permanent basis. As a measure of "permanent basis", the Board requires the requirement to be implemented, meeting all of the prescribed requirements, for three months.

Finding: The evaluation or determination of the compliance of programs or elements in meeting the requirements of the *National Energy Board Act* and its associated regulations.

Implemented: A process or other requirement has been approved and endorsed for use by the appropriate management authority. It has been communicated throughout the organization. All staff and persons working on behalf of the company or others that may require knowledge of the



requirement are aware of the process requirements and its application. Staff have been trained on how to use the process or other requirement. Staff and others working on behalf of the company have demonstrated use of the process or other requirement. Records and interviews have provided evidence of full implementation of the requirement, as prescribed (i. e. the process or procedures are not partially utilized).

Inventory: A documented compilation of required items. It must be kept in a manner that allows it to be integrated into the management system and management system processes without further definition or analysis.

List: A documented compilation of required items. It must be kept in a manner that allows it to be integrated into the management system and management system processes without further definition or analysis.

Maintained: A process or other requirement has been kept current in the format required and continues to meet regulatory requirements. With documents, the company must demonstrate that it meets the document management requirements in OPR, section 6.5 (1) (o). With records, the company must demonstrate that it meets the records management requirements in OPR, section 6.5 (1) (p).

Management System: The system set out in OPR sections 6.1 to 6.6. It is a systematic approach designed to effectively manage and reduce risk, and promote continual improvement. The system includes the organizational structures, resources, accountabilities, policies, processes and procedures required for the organization to meet its obligations related to safety, security and environmental protection.

(The Board has applied the following interpretation of the OPR for evaluating compliance of management systems applicable to its regulated facilities.)

As noted above, the NEB management system requirements are set out in OPR sections 6.1 to 6.6. Therefore, in evaluating a company's management system, the Board considers more than the specific requirements of Section 6.1. It considers how well the company has developed, incorporated and implemented the policies and goals on which it must base its management system as described in section 6.3; its organizational structure as described in section 6.4; and considers the establishment, implementation, development and/or maintenance of the processes, inventory and list described in section 6.5(1). As stated in sections 6.1 (c) and (d), the company's management system and processes must apply and be applied to the programs described in section 55.

Non-Compliant: A program element does not meet legal requirements. The company has not demonstrated that it has developed and implemented programs, processes and procedures that meet the legal requirements. A corrective action plan must be developed and implemented.

Practice: A repeated or customary action that is well understood by the persons authorized to carry it out.



Procedure: A documented series of steps followed in a regular and defined order, thereby allowing individual activities to be completed in an effective and safe manner. A procedure also outlines the roles, responsibilities and authorities required for completing each step.

Process: A documented series of actions that take place in an established order and are directed toward a specific result. A process also outlines the roles, responsibilities and authorities involved in the actions. A process may contain a set of procedures, if required.

(The Board has applied the following interpretation of the OPR for evaluating compliance of management system processes applicable to its regulated facilities.)

OPR section 6.5(1) establishes the basic requirements for management system processes. In evaluating a company's management system processes, the Board considers whether each process or requirement: has been established, implemented, developed or maintained as described within each section; whether the process is documented; and whether the process is designed to address the requirements of the process, for example a process for identifying and analyzing all hazards and potential hazards. Processes must contain explicit required actions including roles, responsibilities and authorities for staff establishing, managing and implementing the processes. The Board considers this to constitute a common 5 w's and h approach (who, what, where, when, why and how). The Board recognizes that the OPR processes have multiple requirements; companies may therefore establish and implement multiple processes, as long as they are designed to meet the legal requirements and integrate any processes linkages contemplated by the OPR section. Processes may incorporate or contain linkage to procedures, where required to meet the process requirements.

As the processes constitute part of the management system, the required processes must be developed in a manner that allows them to function as part of the system. The system requirements are described in OPR section 6.1. The processes must be designed in a manner that contributes to the company following its policies and goals established and required by section 6.3.

Further, OPR section 6.5 (1) indicates that each process must be part of the management system and the programs referred to in OPR section 55. Therefore, to be compliant, the process must also be designed in a manner which considers the specific technical requirements associated with each program and is applied to and meets the process requirements within each program. The Board recognizes that a single process may not meet all of the programs; in these cases it is acceptable to establish governance processes as long as they meet the process requirements (as described above) and direct the program processes to be established and implemented in a consistent manner that allows for the management system to function as described in 6.1.

Program: A documented set of processes and procedures designed to regularly accomplish a result. A program outlines how plans, processes and procedures are linked; in other words, how each one contributes to the result. A company regularly plans and evaluates its program to check that the program is achieving the intended results.

(The Board has applied the following interpretation of the OPR for evaluating compliance of programs required by the NEB regulations.)

The program must include details on the activities to be completed including what, by whom, when, and how. The program must also include the resources required to complete the activities.

8.0 Abbreviations

CAP: Corrective Action Plan

CLC: *Canada Labour Code Part II*

COHSR: Canada Occupational Health and Safety Regulations

CSA Z662-15: CSA Standard Z662 entitled *Oil and Gas Pipeline Systems*, 2015 version

DPR-A: *National Energy Board Damage Prevention Regulations- Authorizations*

DPR-O: *National Energy Board Damage Prevention Regulations – Obligations of Pipeline Companies*

EHS: Environment, health and safety

GOT: Goals, Objectives and Targets

MOC: Management of Change

NEB: National Energy Board

OEMS: Operations Excellence Management System

OPR: *National Energy Board Onshore Pipeline Regulations*

ROW: Right-of-Way

APPENDIX I

PIPELINE PATROL AUDIT - EVALUATION OF SUB-ELEMENT 4.1

4.0 CHECKING AND CORRECTIVE ACTION

4.1 Inspection, Measurement and Monitoring

The company shall have an established, implemented and effective process for inspecting and monitoring the company's activities and facilities to evaluate the adequacy and effectiveness of the protection programs and for taking corrective and preventive actions if deficiencies are identified. The evaluation shall include compliance with legal requirements.

The company shall have an established, implemented and effective process for evaluating the adequacy and effectiveness of the company's management system, and for monitoring, measuring and documenting the company's performance in meeting its obligations to perform its activities in a manner that ensures the safety and security of the public, company employees and the pipeline, and protection of property and the environment.

The company shall have an established, maintained and effective data management system for monitoring and analyzing the trends in hazards, incidents and near-misses. The company shall have documentation and records resulting from the inspection and monitoring activities for its programs.

The company management system shall ensure coordination between its protection programs, and the company should integrate the results of its inspection and monitoring activities with other data in its hazard identification and analysis, risk assessments, performance measures and annual management reviews, to ensure continual improvement in meeting the company's obligations for safety, security and protection of the environment.

Requirements:

OPR s. 6.1(d), 6.5(1)(g), (s), (u), (v), (w), (x), 39, 56

CSA 10.6.1, 10.6.1.2, 10.6.210.7 (class location)

DPR-O s.16 (b)(c)

NEB Assessment

Appendix I focuses solely on the various types of patrol activities conducted pursuant to the legal requirements. An evaluation of the patrol activities in the context of the management system and the process requirements is provided in Appendix II of this report.

1.1 Inspecting and Monitoring

The Board expects companies to have an established, implemented and effective process for inspecting and monitoring the company's activities and facilities to evaluate the adequacy and effectiveness of the protection programs. In order to verify the implementation of the right-of-way (ROW) monitoring activities, the NEB attended a selection of aerial and vehicle ROW patrols conducted in both urban and rural settings.

Given the scope of this audit, these processes and protection programs were not reviewed for compliance or adequacy. Rather, the Board conducted a focused audit of the company's pipeline patrol activities which is typically part of the surveillance and monitoring program. Patrol activities are one method used by companies to monitor the effectiveness of the protection programs. The review in this appendix relates directly to the patrol activities that TMPU had in place at the time of the audit. The Board noted that at the time of the audit, TMPU was conducting the following types of ROW patrols:

- Ground Patrol – TMPU has established ground patrol schedules for certain sections of its ROW in Vancouver and Edmonton based on levels of third party activity.
- Aerial Patrol – TMPU's rights of way are patrolled by helicopter. The Aerial Right of Way Patrol scope of work outlines the various patrol routes and frequency. Each flight has an observer who is responsible for identifying potential hazards and communicating issues to the ground crews in each region. These contract employees use GIS information obtained from TMPU to identify areas of known activity along the ROW and alert each area if other activities are present. The observer communicates with TMPU staff when the helicopter is entering their area. The scope of work for these inspections focuses on the identification and reporting of potential unauthorized activity, but TMPU also demonstrated that it uses its aerial patrol to identify and monitor natural hazards through established communication practices.
- Natural Hazards – TMPU's Pipeline Integrity Group has contracted an engineering firm specifically to monitor areas where the potential exists for naturally occurring hydrotechnical, geotechnical and seismic hazards along its rights-of way. Internally referred to as the "natural hazards" program, it manages the proactive identification, documentation, monitoring and resolution of geotechnical issues. Reports are issues they submit include site observations, photographs and depth of cover measurements and recommendations for further inspection, mitigation and additional aerial or ground patrol monitoring. This program includes:
 - an annual two week ground patrol/inspection of the entire pipeline system
 - ongoing support for the identification, monitoring and resolution of any "natural hazards"
 - investigations of events on the ROW related to natural hazards (e.g. landslides)
- Depth of Cover / Cathodic protection survey – Depth of cover is monitored by the Integrity Team. While the scope of this audit is limited to patrol activities, the Board notes that TMPU has scheduled other activities in order to monitor its depth of cover and cathodic protection. It has retained contractors to undertake regular cathodic protection and depth of cover surveys. Depth of cover data is entered into the GIS system for ongoing monitoring.
- Integrated Vegetation Management – Parts of TMPU's ROW is located in areas where vegetation that may potentially interfere with the visibility and accessibility requires

ongoing monitoring and must include environmental considerations related to species at risk. At the time of the audit, this program document dated January 2016 was marked “Final Draft”. Also, vegetation management is described in TMPU’s implemented Right of Way Maintenance Standard.

- Signage Maintenance Strategy – As part of its ROW maintenance, TMPU staff photograph and geotag each of its ROW markers. Inspections conducted during the audit verified that signage was present in accordance with its procedures and CSA requirements.

Conclusion

Given the scope of the audit and the documents reviewed, the Board did not find any issues of non-compliance for this aspect of the requirement.

1.2 Evaluating adequacy and taking corrective action

The Board also requires companies to evaluate the adequacy and effectiveness of the protection programs and for taking corrective and preventive actions if deficiencies are identified. During the audit, the Board reviewed records of various types of patrol activities as part of its surveillance and monitoring program. TMPU was able to demonstrate that it has established practices to identify, evaluate, track, communicate and resolve issues related to hazards and potential hazards on the rights –of –way identified on patrols.

Although the Board determined that the internal communication plan was not yet fully implemented (see sub-element 3.5 of Appendix II), TMPU provided documentation demonstrating that it has established practices for the communication and tracking of ROW issues. At the time of the audit, TMPU provided records related to its Natural Hazards Program, depth of cover and unauthorized activities to demonstrate that these issues were identified by patrols and then communicated to the appropriate team for evaluation and tracking and resolution. Based on the review of the records, the Board is satisfied that TMPU demonstrated it had practices in place to meet this requirement.

Conclusion

Given the scope of the audit and the documents reviewed, the Board did not find any issues of non-compliance for this aspect of the requirement.

2.0 Right of Way Patrols

Regulatory Requirements

DPR-O s. 16(b): The damage prevention program that a pipeline company is required to develop, implement and maintain under section 47.2 of the *National Energy Board Onshore Pipeline Regulations* must include ongoing monitoring of any changes in the use of the land on which a pipeline is located and the land that is adjacent to that land.

CSA Z662-15, Clause 10.6.1.1, Pipeline patrolling:

Operating companies shall periodically patrol their pipelines in order to observe conditions and activities on and adjacent to their rights-of-way that can affect the safety and operation of the pipelines. Particular attention shall be given to the following:

- a) construction activity;
- b) dredging operations;
- c) erosion;
- d) ice effects;
- e) scour;
- f) seismic activity;
- g) soil slides;
- h) subsidence;
- i) loss of cover;
- j) evidence of leaks; and
- k) unauthorized activities.

CSA Z662-15, Clause 10.6.1.2:

The frequency of pipeline patrolling shall be determined by considering such factors as

- a) operating pressure;
- b) pipeline size;
- c) population density;
- d) service fluid;
- e) terrain;
- f) weather; and
- g) agricultural and other land use.

NEB Assessment

2.1 Monitoring of adjacent lands (DPR-O s.16)

The National Energy Board *Damage Prevention Regulations – Obligations of Pipeline Companies* (DPR-O) requirements came into effect on 19 June 2016. The DPR-O requires that companies develop a Damage Prevention Program which includes ongoing monitoring of any changes in the use of the land on which a pipeline is located and the land that is adjacent to that land. Guidance provided by the Board indicates that the monitoring of lands adjacent to the ROW should include the monitoring of changes in the use of the land on which a pipeline is located and the adjacent land is required in order for a company to effectively identify hazards and manage the risks related to pipeline damage prevention over time.

At the time of the audit, TMPU provided a draft copy Land Use Monitoring Standard for review. In interviews, TMPU staff stated that this standard was developed to reflect the requirements of the DPR-O. As this standard had not been approved or implemented at the time of the audit, it was not reviewed during the audit to verify its adequacy or compliance to the DPR-O.

Conclusion

Although TMPU provided its draft Land Use Monitoring Standard for review, this document was not implemented at the time of the audit. As a result, the Board has determined that TMPU is in non-compliance with DPR-O s.16 (b). The Board requires that a CAP be developed to address this non-compliance.

2.2 Observing conditions and activities (CSA clause 10.6.1.1)

The Board reviewed TMPU's procedures and report samples for both its aerial and ground patrols. TMPU was able to demonstrate that it has established several types of patrol activities to monitor its rights of way and that these patrols resulted in the identification of potential hazards on the rights of way such as unauthorized third party activity. In addition to its Damage Prevention Program, TMPU has integrated its patrols into its Integrity and Environmental Management programs in order to identify and monitor natural hazards such as areas of potential scour and soil slides. TMPU has long term contracts with expert third parties to conduct ongoing monitoring of geo-hazards.

The aerial patrol report templates contain reference to third party activity, evidence of leakage and unsatisfactory surface conditions on/ adjacent to the pipeline. A review indicates Ground patrol fills out a Stakeholder contact form which includes a list of "issue types" including damage prevention and vegetation management, its Pipeline Procedures includes a list of "any indication of activities or events".

During the review of the report templates used for both ground and aerial patrol, the Board found that the templates do not explicitly include the potential hazards as identified in TMPU's procedures or that are listed in CSA. Instead these reports stated either "no sightings or any incidents of concern" or listed potential unauthorized activities. Although the procedures for both the aerial and ground patrol include lists of potential hazards that should be monitored during patrols, the reports from these patrols do not confirm with documentation that an assessment of the various potential issues has occurred.

The Board is of the view that reporting only what is out of the norm, or by exception, does not typically allow for an adequate demonstration of the ongoing monitoring of developing trends that can affect the safety and operation of the pipeline. Also, this type of reporting does not provide documentation to confirm that an assessment of the potential issues as identified in CSA has occurred during the patrols.

Conclusion

Due to the fact that both the aerial and ground patrols report by exception, that is, only note when an issue is present, TMPU could not demonstrate that it is documenting its assessment of all the issues as noted in CSA Z662-15 clause 10.6.1. As a result, the Board has determined that TMPU is in non-compliance with this requirement. The Board requires that a CAP be developed

to address this non-compliance.

2.3 Frequency of inspections (CSA clause 10.6.1.2)

TMPU's procedure document titled *The Conducting Right of Way Ground Patrol*, section 2.3 outlines the considerations for scheduling of patrol activities. The list includes the majority of the factors listed in CSA for consideration. TMPU has included a list of factors to be considered in its determination of pipeline patrol frequency that reflects the requirements outlined in CSA in order to address the factors for its ROW (Section 2.3.2 of its DP Manual- Pipeline protection procedures.)TMPU's list includes: environmentally sensitive areas, land use, population density, access, level of construction activity and topography. Upon review of TMPU's list of factors, the Board is of the view that TMPU has established a list of criteria for the scheduling of patrols that is appropriate to its system and therefore meets the intention of CSA 10.6.1.2.

TMPU also demonstrated that these factors are considered in a regular review for determining ongoing suitability of pipeline patrol schedule for both ROW patrol and natural hazard patrols. The Board also notes that the Damage Prevention Program tracks the number of kilometers patrolled and number of issues identified in its annual reporting to Senior Management to measure the impact and effectiveness of these activities.

TMPU's has established an aerial patrol frequency for each section that varies from weekly to monthly depending on time of year. In addition to its regular patrols, TMPU also dispatches extra patrols to monitor issues such as potential natural hazards and environment concerns.

Conclusion

Given the scope of the audit and the documents reviewed, the Board did not find any issues of non-compliance for this aspect of the requirement.

3.0 Reporting

Regulatory Requirements

OPR s. 52 (1): A company shall immediately notify the Board of any incident relating to the construction, operation or abandonment of its pipeline and shall submit a preliminary and detailed incident report to the Board as soon as practicable.

DPR-O s. 7: Even if the condition set out in paragraph 13(1)(a) of the *National Energy Board Pipeline Damage Prevention Regulations – Authorizations* is met, when the operation of vehicles or mobile equipment across a pipeline at specific locations for the purposes of performing an agricultural activity could impair the pipeline's safety or security, the pipeline company must identify those locations and notify the following persons in writing of those locations:

- (a) landowners of the specific locations in question; and
- (b) persons that are engaged in agricultural activities, rent or lease the land or work as service providers or employees at the specific locations in question.

DPR-O s. 11(1): The pipeline company must immediately report to the Board:

- (a) every contravention of the *National Energy Board Pipeline Damage Prevention Regulations – Authorizations*;
- (b) all damage to its pipe caused or identified during the construction of a facility across, on, along or under a pipeline, the operation, maintenance or removal of a facility, an activity that caused a ground disturbance within the prescribed area or the operation of vehicles or mobile equipment across the pipeline; and
- (c) any activity related to the construction of a facility across, on, along or under a pipeline, an activity that caused a ground disturbance within the prescribed area or the operation of vehicles or mobile equipment across a pipeline that the pipeline company considers could impair the safety or security of the pipe.

Requirements:

OPR s. 52(1)

DPR-O s. 7, 11

NEB Assessment

3.1 Notification of locations regarding low risk agricultural activity (DPR-O s.7)

The Board issued the Order MO-21-2010, *Exemption Order Respecting Crossings By Agricultural Vehicles Or Mobile Equipment* on 22 December 2010. This Order required that regulated companies identify areas of their rights-of-way where low-risk agricultural crossings may jeopardize the safe and secure operation of the pipelines. With the release of the DPR-O, requirements for the monitoring of agricultural lands to promote safe operations are incorporated into section 7.

During the audit, TMPU provided records to demonstrate that its identification and resolution of issues related to depth of cover was applied to agricultural lands. TMPU was able to demonstrate that it has an ongoing depth of cover monitoring process that is managed by the Integrity Group with connections to its Damage Prevention Program in cases involving agricultural lands. The process for the identification and resolution of these issues is outlined in its Depth of Cover Survey and Reporting Procedure, released in July 2016. This procedure includes the steps to resolve issues of depth of cover roles and responsibilities for the Integrity, Damage Prevention and Lands Teams. For the purposes of this audit, TMPU demonstrated that it has established a proactive depth of cover monitoring practices which includes agricultural lands.

Conclusion

Given the scope of the audit and the documents reviewed, the Board did not find any issues of non-compliance for this requirement.

3.2 Reporting unauthorized activities (DPR-O s. 11)

TMPU's Pipeline Protection Manual, outlines its procedure for reporting incidents and unauthorized activities to the Board. Through interviews and record review, the audit verified

that TMPU staff and contractors follow this procedure when they discover unauthorized activities on the ROW during patrols process in place to report instances of potential unauthorized activities within the organization as well as to the NEB. Also demonstrated that these unauthorized activities are documented and reported to the Board, communicated throughout the organization and tracked to resolution. It also demonstrated that it was tracking, trending and reporting annually on the unauthorized activities to Senior Management.

Through document and record reviews and interviews in the regions, the Board confirmed that TMPU staff and contractors were aware of the inspection and related reporting requirements particularly as they relate to potential mechanical damage from unauthorized third party activities.

TMPU outlines its unauthorized activity reporting in section 3.1 of its Pipeline Protection Manual. Unauthorized activities noted during patrol are reported in the stakeholder engagement form. Follow-up actions taken are also documented in the stakeholder engagement form. Internally, unauthorized activities are tracked and reported by region quarterly. The Board verified that TMPU has been identifying, tracking and reporting issues of unauthorized activity in accordance with regulatory requirements.

Conclusion

Given the scope of the audit and the documents reviewed, the Board did not find any issues of non-compliance for this requirement.

APPENDIX II

PIPELINE PATROL AUDIT – INTERACTION WITH OTHER MANAGEMENT SYSTEM SUB-ELEMENTS

1.0 POLICY AND COMMITMENT

1.1 Leadership Accountability

The company shall have an accountable officer appointed who has the appropriate authority over the company's human and financial resources required to establish, implement and maintain its management system and protection programs, and to ensure that the company meets its obligations for safety, security and protection of the environment. The company shall have notified the Board of the identity of the accountable officer within 30 days of the appointment and ensure that the accountable officer submits a signed statement to the Board accepting the responsibilities of their position.

References:

OPR 6.2(3), 6.3, 6.4

NEB Assessment

The Board requires the company to appoint an accountable officer. The accountable officer must be given appropriate authority over the company's human and financial resources for ensuring that the company meets its obligations for safety, security and protection of the environment. On 9 May 2013, Trans Mountain Pipelines ULC. (TMPU) submitted written notice to the Board indicating that its President, Ian Anderson, had been appointed as the accountable officer. In its submission, TMPU confirmed that its accountable officer has the authority over the human and financial resources required to meet the Board's expectations.

Conclusion

The audit verified that TMPU has established the role of the Accountable Officer who has signed a letter confirming that he has the responsibility and authority with respect to sub-element 4.1 Inspection, Measurement and Monitoring. Based on the review conducted and considering the scope of this audit, the Board did not identify any issues of non-compliance in relation to sub-element 1.1 - Leadership and Accountability.

1.2 Policy and Commitment Statements

Expectations: The company shall have documented policies and goals intended to ensure activities are conducted in a manner that ensures the safety and security of the public, workers, the pipeline, and protection of property and the environment. The company shall base its management system and protection programs on those policies and goals. The company shall include goals for the prevention of ruptures, liquids and gas releases, fatalities and injuries and for the response to incidents and emergency situations. The company shall have a policy for the internal reporting of hazards, potential hazards, incidents and near-misses that include the conditions under which a person who makes a report will be granted immunity from disciplinary action.

The company's accountable officer shall prepare a policy statement that sets out the company's commitment to these policies and goals and shall communicate that statement to the company's employees.

References: OPR s 6.3 CSA 3.1.2 (a)

NEB Assessment

TMPU provided its Policy on Environment, Health and Safety (EHS), as signed by the President dated November 2012. During the audit, the Board noted that the policies were available to employees and part of the management system. The policy statements include commitments to not harming people and protecting the environment. It also includes the circumstances under which disciplinary action for those that knowingly engage in or condone environmental health or safety violations.

The Board also noted that the EHS policy has been integrated by TMPU's employees and contractors when conducting patrols. During the interviews with staff and contractors, they referred to their personal accountability for the safety of the pipeline when performing patrol-related activities. These employees and contractors described personal authority and obligation to intervene with third parties to ensure that the procedures were being adhered to during activities along the rights-of-way.

Conclusion

The audit verified that TMPU has the policies to address the above expectations as they relate to inspection and monitoring. Based on the review conducted and considering the scope of this audit, the Board did not identify any issues of non-compliance in relation to sub-element 1.2 - Policy and Commitment.

2.0 PLANNING

2.1 Hazards Identification, Risk Assessment and Control¹

Expectations: The company shall have an established, implemented and effective process for identifying and analyzing all hazards and potential hazards. The company shall establish and maintain an inventory of hazards and potential hazards. The company shall have an established, implemented and effective process for evaluating the risk associated with these hazards, including the risks related to normal and abnormal operating conditions. As part of its formal risk assessment, a company shall keep records to demonstrate the implementation of the hazard identification and risk assessment processes.

The company shall have an established, implemented and effective process for the internal reporting of hazards, potential hazards, incidents, and near-misses and for taking corrective and preventive actions, including the steps to manage imminent hazards. The company shall have

¹ Hazard: Source or situation with a potential for harm in terms of injury of ill health, damage to property, damage to workplace environment, or a combination of these. Risk: Combination of the likelihood and consequence(s) of a specified hazardous event occurring

and maintain a data management system for monitoring and analyzing the trends in hazards, incidents, and near-misses.

The company shall have an established, implemented and effective process for developing and implementing controls to prevent, manage and mitigate the identified hazards and risks. The company shall communicate those controls to anyone exposed to the risks.

References:

OPR 6.5 (1)(c), (d),(e), 40, 47, 48

CSA Z662-15 clause 10.6.1, 10.6.2, 10.1,10.7

DPR-O s.7,9,10,11,16(b)(c)

NEB Assessment

The Board expects companies to have an established, implemented and effective process for identifying and analyzing all hazards and potential hazards. In addition, the Board expects companies to establish and maintain an inventory of hazards and potential hazards. Although the review of the hazard identification process is outside the scope of this audit, the Board examined the methods and the extent to which the identification, tracking and evaluation of hazards was reflected within TMPU's patrol activities.

Identifying Hazards and Potential Hazards

In order to demonstrate that it has integrated its patrol activities with hazard identification, TMPU provided its risk register for review. At the time of the audit, this register was managed and maintained manually to track and assess types of hazards and potential hazards. It includes the inherent and residual risk and identifies the mitigating measures in place.

Through interviews with staff and records provided for review, TMPU demonstrated how hazards or potential hazards identified by patrols are initially documented on the Integrity Hazard Identification forms. Once reported, hazards are evaluated, assessed and assigned for monitoring. If mitigation is required, it is tracked through work orders. New types of hazards are added to the Pipeline Protection Risk Register for evaluation and tracking. For the Damage Prevention Program, a form is completed and sent to Integrity in Calgary to assess the hazard and determine the follow-up action required. If this was a new hazard, it would be added to the risk registry.

TMPU also provided documentation to demonstrate how the identification of hazards within the protection programs has resulted in changes to the patrols. For example, extra patrols were recommended by the Natural Hazards program to monitor areas along the ROW impacted by the Spring freshet. Upon further assessment of the hazard, Spring patrols were added to the schedule for every May and June.

Analysis of Hazards and Potential Hazards

At the time of the audit, TMPU staff demonstrated that hazards identified on the ROW were reported through the distribution of patrol reports and the risk register assessment.

TMPU has several programs that are linked to the identification of hazards on its ROW. These include:

•Ground / Aerial patrols of urban, rural and remote areas. Patrol reports are distributed throughout the protection programs for review. During the audit, TMPU provided documentation demonstrating that it had conducted an analysis of the occurrences of potential unauthorized activities reported on or near its ROW to senior management. Included in the analysis, many of these occurrences were discovered during patrol activities. This information was communicated to the Public Awareness Program.

•The Natural Hazards Program – Based in the Integrity Program, this program tracks hazards and potential hazards that arise because of terrain as well as those that develop due to seasonal conditions along the ROW such as annual freshets and the impact of spring thaw on water crossings.

•Cathodic Protection Survey/ Depth of Cover – Based in the Integrity Program, this program manages surveys of the ROW that are conducted and obtains depth of cover information which is stored in the GIS system for ongoing monitoring.

The Board is of the view that TMPU has established patrol activities and has linked those activities to its hazard identification and risk evaluation processes.

Conclusion

Based on the review of documents provided, the Board noted that TMPU was able to demonstrate that it has established patrol activities as controls for hazards on the ROW including natural hazards. The audit found that TMPU conducts frequent and various types of patrols, as discussed in Appendix I of this report.

2.2 Legal Requirements

Expectations: The company shall have an established, implemented and effective process for identifying, and monitoring compliance with, all legal requirements that are applicable to the company in matters of safety, security and protection of the environment. The company shall have and maintain a list of those legal requirements. The company shall have a documented process to identify and resolve non-compliances as they relate to legal requirements, which includes updating the management and protection programs as required.

References:

OPR 6.5(1) (g)(h)(i)

NEB Assessment

The TMPU pipelines are operated by Kinder Morgan Canada (KMC) in accordance with KMC's Integrated Safety and Loss Management System (ISLMS). Section 10 of the ISLMS document describes KMC's process for monitoring of legal requirements for the Trans Mountain Pipelines. TMPU also provided the Legal Requirements Standard. Although TMPU's overall compliance monitoring processes was not in scope for this audit, the legal list as it relates to the patrol activities was requested for review. TMPU provided its legal list which included the titles of :

- Federal and provincial acts and regulations;
- Board Certificates and Orders;

- CSA Standards; and
- Other international standards.

At the time of the audit, TMPU was updating its process for maintaining its legal list to increase its integration into the ISLMS and to break it down to the requirement level. TMPU estimates that this project will be complete and implemented in 2017. Also, TMPU was in the process of updating its procedures to reflect the requirements of the Damage Prevention Regulations.

Conclusion

TMPU demonstrated that it is tracking and listing legal requirements and that its list included NEB Orders and Certificates. However, the Board noted that, at the time of the audit, the legal list as it pertains to patrols is maintained at an insufficient level of detail. Therefore this list is non-compliant with OPR 6.5(1) (h). As a result, the Board requires TMPU to develop a CAP to address this deficiency.

The Board notes that the legal list affects several sub-elements within the management system as it relates to the patrol activities. By addressing the deficiencies related to the maintenance of the legal list, this list will impact related processes such as Internal Audits and Document Control.

2.3 Goals, Objectives and Targets

Expectations: The company shall have an established, implemented and effective process for developing and setting goals, objectives and specific targets relevant to the risks and hazards associated with the company's facilities and activities (i.e. construction, operations and maintenance). The company's process for setting objectives and specific targets shall ensure that the objectives and targets are those required to achieve their goals, and shall ensure that the objectives and targets are reviewed annually. The company shall include goals for the prevention of ruptures, liquids and gas releases, fatalities and injuries and for the response to incidents and emergency situations.

The company's goals shall be communicated to employees. The company shall develop performance measures for assessing the company's success in achieving its goals, objectives, and targets. The company shall annually review its performance in achieving its goals, objectives and targets and performance of its management system. The company shall document its annual review of its performance, including the actions taken during the year to correct any deficiencies identified in its quality assurance program, in an annual report, signed by the accountable officer.

References:

OPR sections 6.3, 6.5(1)(a), (b), 6.6

CSA 3.1.2 (h)

NEB Assessment

TMPU provided its 2016 Integrated Safety and Loss Management System goals, objectives and targets (GOTs). Through documentation provided for the audit, TMPU demonstrated that it has established GOTs for the prevention of releases and the communication of hazards on the ROW at a corporate level which it measures at the program level. For the Damage Prevention Program,

there are GOTs which are specifically related to patrol activities, such as number of kilometers patrolled per year and number of unauthorized activities identified. These program goals are reflected in goals measured for staff performance.

In its 2015 and 2016 Safety and Loss Management Dashboards, TMPU illustrated its objectives and targets related to the identification, communication and resolution of issues identified on patrol. These goals are given targets that are reported and measured annually. In addition, at the team level, TMPU tracks its signage maintenance by tracking work orders and number of kilometers patrolled.

Conclusion

The audit verified that Trans-Mountain has GOTs that are specifically linked to its patrol activities. Based on the review conducted and considering the scope of this audit, the Board did not identify any issues of non-compliance in relation to sub-element 1.2 – Goals, Objectives and Targets.

2.4 Organizational Structure, Roles and Responsibilities

Expectations: The company shall have a documented organizational structure that enables it to meet the requirements of its management system and its obligations to carry out activities in a manner that ensures the safety and security of the public, company employees, the pipeline, and protection of property and the environment. The documented structure shall enable the company to determine and communicate the roles, responsibilities and authority of the officers and employees at all levels. The company shall document contractor's responsibilities in its construction and maintenance safety manuals.

The documented organizational structure shall also enable the company to demonstrate that the human resources allocated to establishing, implementing, and maintaining, the management system are sufficient to meet the requirements of the management system and to meet the company's obligations to design, construct, operate or abandon its facilities to ensure the safety and security of the public and the company's employees, and the protection of property and the environment. The company shall complete an annual documented evaluation of need in order to demonstrate adequate human resourcing to meet these obligations.

References:

OPR 6. 3, 6.4, 6.5 (c)(j)(k)(l)

CSA 3.1.2 (b)(c)

NEB Assessment

The Board expects companies to follow a documented organizational structure that enables it to meet the requirements of its management system and its obligations to carry out activities in a manner that ensures the safety and security of the public, company employees, the pipeline, and protection of property and the environment. The documented structure shall enable the company to determine and communicate the roles, responsibilities and authority of the officers and employees at all levels.

During the audit, TMPU indicated that its Damage Prevention group is primarily responsible for patrol activities. According to the organizational chart provided, staff and contractors that conduct patrols report to the Manager, Damage Prevention and Public Awareness through supervisors for the Western and Central Regions respectively. Interviews confirmed staff are provided with job descriptions that include responsibilities regarding patrols. Also, the contractors were aware of their responsibilities outlined in the Statement of Work which is reviewed annually.

Along with a documented organizational structure, the Board expects companies to demonstrate an ongoing ability to sustain its activities. The Board requires that companies demonstrate that the human resources required to establish and maintain its activities are sufficient to meet operational and regulatory requirements based on an annual documented evaluation of need. For patrol activities, TMPU includes the assessment of staff levels within its documented Damage Prevention Annual Work Plan. This plan includes an assessment of the various activities performed by the Damage Prevention Team and was introduced based on the OPR requirements.

Based on the interviews and the documentation reviewed, the Board is of the view that TMPU demonstrated it has been conducting its evaluations of resource levels for patrols since 2012. At that time, based on an assessment of activity near the ROW, the Damage Prevention Team outlined the need for full-time pipeline patrollers to address the requirements for increased ground patrols in both operating regions.

Conclusion

The audit verified that TMPU has an Organizational Structure that meets the above expectations as they relate to its patrol activities. Based on the review conducted and considering the scope of this audit, the Board did not identify any issues of non-compliance in relation to sub-element 2.4. Organizational Structure, Roles and Responsibilities.

3.0 IMPLEMENTATION

3.1 Operational Control-Normal Operations

Expectations: The company shall have an established, implemented and effective process for developing and implementing corrective, mitigative, preventive and protective controls associated with the hazards and risks identified in elements 2.0 and 3.0, and for communicating these controls to anyone who is exposed to the risks.

The company shall have an established, implemented and effective process for coordinating, controlling and managing the operational activities of employees and other people working with or on behalf of the company.

References:

OPR s.39,OPR s. 6.5(1)(e), (f), (q)
CSA 3.1.2(f),10.6.1, 10.6.1.2,10.6.2

NEB Assessment

The Board requires that companies have an established, implemented and effective process for developing and implementing corrective, mitigative, preventive and protective controls associated with the hazards and risks. Considering that the scope of this audit is limited to the assessment of patrol activities, and based on the information provided during interviews and related inspections, the Board is of the view that TMPU conducts patrol activities as part of its suite of controls for hazards on the ROW.

As discussed in Appendix I of this report, TMPU conducts various types of patrol activities as a control measure to monitor several types of hazards relating to activities and conditions on the ROW. TMPU's ROW maintenance also includes sign maintenance and vegetation management on its ROW. Inspections conducted during the audit verified that signage was present and visible in the areas observed including parks, residential neighbourhoods and industrial areas.

The Board also requires companies to establish and implement a process for coordinating and controlling the operational activities of employees and other people working with or on behalf of the company so that each person is aware of the activities of others and has the information that will enable them to perform their duties in a manner that is safe, ensures the security of the pipeline and protects the environment.

Although patrol activities are managed by the Damage Prevention Program, they are also leveraged to monitor hazards identified by other programs, such as the Natural Hazards Program. TMPU has also utilized its aerial patrols to obtain information regarding environmental issues such as caribou migration. Another example of program integration is the ROW maintenance that involves input from the patrols, the Environment Team and Compliance Team to ensure the needs of each group are met with regards to brushing activities.

Conclusion

The audit verified that TMPU has a process that includes patrols activities that meets the above expectations. Based on the review conducted and considering the scope of this audit, the Board did not identify any issues of non-compliance in relation to sub-element 3.1 Operational Control-Normal Operations.

3.2 Operational Control-Upset or Abnormal Operating Conditions

Expectations: The company shall establish and maintain plans and procedures to identify the potential for upset or abnormal operating conditions, accidental releases, incidents and emergency situations. The company shall also define proposed responses to these events and prevent and mitigate the likely consequence and/or impacts of these events. The procedures must be periodically tested and reviewed and revised where appropriate (for example, after upset or abnormal events). The company shall have an established, implemented and effective process for developing contingency plans for abnormal events that may occur during construction, operation, maintenance, abandonment or emergency situations.

References:
OPR 6.5(1)(c)(d)(f)(t)
CSA 3.1.2 f)ii, h)vi

NEB Assessment

Given the scope of this audit is focused on patrol activities, the Board's review of this sub-element was limited to considering the role of patrol activities during upset conditions. Considering that patrol activities are only relied on for the identification of potential upset conditions, the Board verified that TMPU has implemented procedures for identifying and communicating potential upset conditions on the ROW. Interviews with staff and contractors as well as a review of the documentation confirmed procedures for the communication of imminent hazards on the ROW are in place and understood by staff and contractors.

Conclusion

Based on the scope of this audit and the information reviewed, the Board did not identify any issues of non-compliance in relation to sub-element 3.2 Operational Control- Upset or Abnormal Conditions.

3.3 Management of Change

Expectations: The company shall have an established, implemented and effective process for identifying and managing any change that could affect safety, security or protection of the environment, including any new hazard or risk, any change in a design, specification, standard or procedure and any change in the company's organizational structure or the legal requirements applicable to the company.

References:
OPR 6.5(1)(i)
CSA3.1.2 (g)

NEB Assessment

TMPU's Management of Change is described in its Operational Change Management Standard which is part of its Integrated Safety and Loss Management System. Due to the scope of this audit, this process was not reviewed for adequacy or compliance to the OPR.

Specific to patrols, TMPU advised, that depending on the type and nature of the change requested, the Change Management Request Form triggers a series of reviews by stakeholders across the organization. For example, once the changes to documentation have been approved, the process includes that older versions are removed and replaced. During the audit, TMPU was able to demonstrate that this process was applied to its patrol procedures.

Conclusion

The audit verified that TMPU has a Management of Change (MOC) process that is triggered by regulations that impact ROW monitoring and surveillance. As a result, based on the scope of this audit and the information reviewed, the Board did not identify any areas of non-compliance with sub-element 3.3 Management of Change.

3.4 Training, Competence and Evaluation

Expectations: The company shall have an established, implemented and effective process for developing competency requirements and training programs that provide employees and other persons working with or on behalf of the company with the training that will enable them to perform their duties in a manner that is safe, ensures the security of the pipeline and protects the environment.

The company shall have an established, implemented and effective 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. The company shall have an established, implemented and effective process for making employees and other persons working with or on behalf of the company aware of their responsibilities in relation to the processes and procedures required by the management system or the company's protection programs.

The company shall have established and implemented an effective process for generating and managing training documents and records.

References:

OPR s.6.5(1)(j), (k), (l), (p),46

CSA 3.1.2(c)

NEB Assessment

The Board requires companies to have processes for developing competency requirements and training programs that provide employees and other persons working with or on behalf of the company with the training that will enable them to perform their duties in a manner that is safe, ensures the security of the pipeline and protects the environment. Given that patrol activities are the scope of this audit, the Board focused its assessment of the training program and competency evaluations on the expectations for staff and contractors who conduct patrols.

At TMPU, staff training for patrol activities is contained within the Knowledge and Experience Enhancement Program (KEEP) and a Business Unit Training matrix is used to capture training requirements for Pipeline Protection staff. TMPU provided a description and skill packets for the three modules that relate to ROW maintenance. Pipeline Protection staff complete several skills packets including:

- Conducting Right-of-Way Patrols
- Knowledge of the KMC Right-of-Way
- Demonstrate Knowledge of Pipeline Protection Zones

TMPU also provided its "KMC Environmental Awareness" training which includes a knowledge evaluation for participants. The course is designed to introduce employees to aspects of the Environmental Protection Plan and key environmental issues associated with its operations. Competence of the patrollers is confirmed through testing and reviewed during performance reviews.

For aerial patrol, TMPU has outlined its expectations in the scope of work which is reviewed annually. In addition, pilots and observers attend a “Yearly- Aerial Patrol Training / Review” which includes a presentation of potential hazards and the expectation for reporting and communication. On occasion, TMPU staff will also monitor contract pilots and observers during the year but written evaluations are not completed. At the time of the audit, TMPU advised that it was in the process of developing its process for the evaluation of competence of its contractors who conduct patrols.

In reviewing the training, the Board included the expectation outlined in CSA clause 10.6.1.1 that requires “particular attention” be given to several possible activities and conditions on the ROW. In section 2.2 of Appendix I of this report, the Board clarified that it expects companies to report on the presence of these conditions and activities. With this requirement in mind, the Board is of the view that in order for these conditions and activities to be identified by patrol and reported as required, companies should demonstrate that these topics are addressed in training. At the time of the audit, TMPU could not confirm that its suite of training for patrollers and contractors has not been evaluated to ensure that it enables staff and contractors to identify the conditions and activities as listed in CSA clause 10.6.1.1.

Conclusion

While TMPU demonstrated that it has developed and implemented a process for identifying, tracking and managing training for staff and contractors conducting patrols, and that it could not confirm that its training provides patrol staff and contractors with the adequate awareness to identify the issues as listed in CSA. The Board also found that TMPU has not established and implemented a process for identifying and verifying competencies of its contractors with respect to its patrol activities. As a result, the Board finds TMPU in non-compliance with NEB OPR s. 6.5(1)(k). The Board requires TMPU to develop a corrective action plan to address the described deficiencies.

3.5 Communication

Expectations: The company shall have an established, implemented and effective process for the internal and external communication of information relating to safety, security and environmental protection. The process should include procedures for communication with the public; workers; contractors; regulatory agencies; and emergency responders.

References:

OPR 6.5(1)(m)(q)

CSA Z662 clause 3.1.2(d), g)(v)

NEB Assessment

During the audit, TMPU provided documentation and records indicating that it has external and internal processes for communicating information and processes relating to its ROW maintenance and surveillance program.

Throughout the audit, TMPU provided documentation to demonstrate that it was communicating issues by practice. TMPU was, however, unable to demonstrate a communication process or

procedure for the internal communication of issues related to legal requirements, to staff and contractors who conduct patrols. In addition, the audit reviewed several patrol reports and noted that, through its Natural Hazards monitoring program as well as its Depth of Cover monitoring, TMPU was communicating issues noted on patrol to the appropriate protection program to manage and resolve. Section 8 of the scope of work for aerial patrols outlines the Kinder Morgan's expectation for during patrols. Within the Damage Prevention Team, communication occurs through regular meetings and an annual pipeline protection forum.

Throughout this audit, the Board noted that TMPU demonstrated that informal communication between teams is occurring regarding issues on the ROW. TMPU provided several examples of environmental, damage prevention and integrity related issues that were initially reported by patrols and subsequently assigned for resolution to another team. In addition examples of the protection programs communicating issues to be monitored by patrols were also provided. While TMPU's internal communication of these issues appears consistent and pervasive, the Board noted that many of these communications occur by practice in emails rather than as the result of a documented communication plan. Also, it is unclear whether these emails become part of the official files or if these emails constitute adequate documentation of the communication of these issues in accordance with its communication plan.

At the time of the audit, TMPU was implementing an Internal Communication Standard at the corporate level and communication plans at the team level as part of its ongoing ISLMS implementation. TMPU provided its Internal Communication Standard document for review. TMPU indicated that, at the time of the audit, it was in the process of implementing its internal communication plan for the Damage Prevention Team.

Although the external communication plan is largely the responsibility of the Public Awareness and Lands departments, and therefore outside the scope of this audit, the Board included aspects of external communication for safety on the ROW by reviewing the contents of TMPU's external website. The Board noted that TMPU has posted information related to its patrols as well as safety information relating to call before you dig.

Conclusion

While TMPU demonstrated that there is communication of issues concerning the ROW from the patrollers to the programs as well as from the programs to the patrols, it did not demonstrate that this communication was occurring as the result of a documented communication plan. Based on the Board's evaluation of TMPU's communication practices against the requirements and the scope of this audit, the Board has determined that TMPU is non-compliant with NEB OPR s. 6.5(1)(m). TMPU will have to develop corrective actions to address the described deficiencies.

3.6 Documentation and Document Control

Expectations: The company shall have an established, implemented and effective process for identifying the documents required for the company to meet its obligations to conduct activities in a manner that ensures the safety and security of the public, company employees, the pipeline, and protection of property and the environment. The documents shall include all of the processes

and procedures required as part of the company's management system.

The company shall have an established, implemented and effective process for preparing, reviewing, revising and controlling documents, including a process for obtaining approval of the documents by the appropriate authority. The documentation should be reviewed and revised at regular and planned intervals.

Documents shall be revised where changes are required as a result of legal requirements. Documents should be revised immediately where changes may result in significant negative consequences.

References:

OPR 6.5(1)(i),(n),(o), 6.5(3)

CSA 3.1.2 (e)

NEB Assessment

The Board expects to have an established, implemented and effective process for identifying the documents required for the company to meet its obligations to conduct activities in a manner that ensures the safety and security of the public, company employees, the pipeline, and protection of property and the environment. TMPU's Integrated Safety and Loss Management System, Section 5, the Controlled Document Standard, is the overarching document management procedure. According to the document, this standard describes the requirements for the maintenance and management of controlled documents including those relating to ROW surveillance. Due to the scope of this audit, the Board focused its review on the examination of procedures and templates related to patrol activities which are managed by the Damage Prevention Team.

At the time of the audit, TMPU was able to demonstrate:

- it was undertaking annual reviews and updates to its procedures;
- regulatory changes did trigger a review of procedures;
- staff are trained on the controlled document standard;
- controlled documents were accessible to staff on a shared drive;
- procedures relating to ROW patrol were subject to the guidelines of the document hierarchy;
- the procedures related to ROW patrols were subject to the Operational Change Management Standard; and
- changes to the documentation were communicated to staff.

Upon examination of the content of the procedures, however, the Board noted deficiencies noted elsewhere in this audit will impact the procedures and templates related to patrol activities. At the time of the audit, the Board noted deficiencies within the patrol procedures that relate to the failure to adequately maintain its legal references. For example, patrol procedures were not updated to reflect the changes in the DPR. For example the Pipeline Protection Management System (September 2012) still refers to the NEB *Pipeline Crossing Regulations* which were repealed in June of 2016. Also, it appears to have not been updated for CSA Z662-11, or 15 or the update to the OPR in 2012.

In consideration of the fact that this audit is a review of the impact of the management system on the patrol activities, the Board has determined that the root cause of this deficiency is directly related to TMPU's lack of integration of its legal list which is discussed in section 2.2 of this appendix. Once the legal list is complete it will be integrated into the documents in accordance with the document control standard.

Also, deficiencies were noted in Appendix I of this report relating to a lack of documenting the potential hazards as listed in CSA. The Board is of the view that addressing that deficiency will impact the templates used by staff and contractors conducting patrols.

Conclusion

The audit verified that TMPU Document Control process that applies to the procedures related to pipeline patrols. As a result, based on the scope of this audit and the information reviewed, the Board did not identify any areas of non-compliance with sub-element 3.6 Documents and Document Control.

4.0 CHECKING AND CORRECTIVE ACTION

4.1 Inspection, Measurement and Monitoring

Expectations: The company shall have an established, implemented and effective process for inspecting and monitoring the company's activities and facilities to evaluate the adequacy and effectiveness of the protection programs and for taking corrective and preventive actions if deficiencies are identified. The evaluation shall include compliance with legal requirements.

The company shall have an established, implemented and effective process for evaluating the adequacy and effectiveness of the company's management system, and for monitoring, measuring and documenting the company's performance in meeting its obligations to perform its activities in a manner that ensures the safety and security of the public, company employees, the pipeline, and protection of property and the environment.

The company shall have an established, maintained and effective data management system for monitoring and analyzing the trends in hazards, incidents and near-misses. The company shall have documentation and records resulting from the inspection and monitoring activities for its programs.

The company management system shall ensure coordination between its protection programs, and the company should integrate the results of its inspection and monitoring activities with other data in its hazard identification and analysis, risk assessments, performance measures, and annual management reviews, to ensure continual improvement in meeting the company's obligations for safety, security and protection of the environment.

References:

OPR s. 6.1(d), 6.5(1)(g), (s), (u), (v), (w), (x), 56
CSA 10.6.1, 10.6.1.2, 10.6.210.7 (class location)
DPR-O s.16(b)

NEB Assessment

See Appendix I – Pipeline Patrol Audit – For the evaluation of sub-element 4.1

4.2 Investigations of Incidents, Near-misses and Non-compliances

Expectations: The company shall have an established, implemented and effective process for reporting on hazards, potential hazards, incidents and near-misses, and for taking corrective and preventive actions. This should include conducting investigations where required or where hazards, potential hazards, incidents and near-misses have or could have resulted in the safety and security of the public, workers, the pipeline, and protection of property and the environment being appreciably significantly compromised.

The company shall have an established, maintained and effective data management system for monitoring and analyzing the trends in hazards, incidents and near-misses.

The company should integrate the results of their reporting on hazards, potential hazards, incidents and near-misses with other data in hazard identification and analysis, risk assessments, performance measures, and annual management reviews, to ensure continual improvement in meeting the company's obligations for safety, security and protection of the environment.

References:

OPR s. 6.5(1)(r), (s), (u), (w), (x), 52

DPR-O s.11

NEB Assessment

The Board expects companies to have an established, implemented and effective process for reporting on hazards, potential hazards, incidents and near-misses, and for taking corrective and preventive actions. Given the focused scope of this audit, the Board evaluated the processes described in the expectations for this sub-element only as they related to patrol activities.

Reporting on hazards, potential hazards, incidents and near-misses

Through document and record reviews, the Board confirmed that TMPU had implemented a procedure for reporting and tracking third party unauthorized activities as well as natural hazards such as landslides and erosion. Patrol reports are distributed to several operational teams including Damage Prevention and Integrity. TMPU demonstrated that in the event a potential unauthorized activity is reported by patrols, field personnel are dispatched to conduct a follow-up investigation to determine if damage to the facilities or environment had occurred. Also, TMPU demonstrated that issues relating to integrity and environmental hazards were communicated to the Integrity Team to manage and resolve.

Trending and Analysis

Given that the scope of this audit is limited to patrols, the Board reviewed which, if any aspect, of the patrol activities were subject to periodic review. Based on interviews and documentation provided, the Board verified that TMPU was conducting trending and analysis of information obtained by patrols such as the identification of unauthorized activities by patrols. In its annual internal reporting, TMPU also includes the number of kilometers patrolled, the number of issues identified by patrols as well method of detection of issues on the ROW. It uses these statistics in order to monitor ongoing effectiveness of the patrol method, timing and frequency. These trends

are communicated to various levels through quarterly reporting and at annual meetings of the pipeline protection staff.

Conclusion

The audit verified that TMPU has an established process to evaluate and track issues to resolutions that includes those issues identified by patrols. As a result, based on the scope of this audit and the information reviewed, the Board did not identify any areas of non-compliance with sub-element 4.2 Investigations of Incidents, Near-misses and Non-compliances.

4.3 Internal Audit

Expectations: The company shall have an established, implemented and effective quality assurance program for the management system and for each protection program, including a process for conducting regular inspections and audits and for taking corrective and preventive actions if deficiencies are identified. The audit process should identify and manage the training and competency requirements for staff carrying out the audits.

The company should integrate the results of their audits with other data in identification and analysis, risk assessment, performance measures, and annual management review, to ensure continual improvement in meeting the company's obligations for safety, security and protection of the environment.

References:

OPRs.6.1, 6.5(1)(w), (x), 40, 47, 48

CSA 3.1.2 h(v)(vi)(vii)

NEB Assessment

The Board expects companies to have an implemented and effective quality assurance program for the management system and for each protection program, including a process for conducting regular inspections and audits and for taking corrective and preventive actions if deficiencies are identified. Considering the scope of this audit, the Board only evaluated the quality assurance program as it applies to the patrol activities.

During the audit, TMPU provided its 2015 Damage Prevention compliance audit which was conducted by an expert third party. The findings from this audit were documented and managed by the Kinder Morgan Canada (KMC) Compliance Department with corrective reviews and updates taking place quarterly. Although this audit was conducted prior to the OPR requirement for an audit of the Damage Prevention Program, the Board notes that the protocol for this audit did not include OPR section 39 (Surveillance and Monitoring Program) or applicable CSA requirements.

Despite the fact that the audit protocols applied to the internal audit were incomplete, the Board has determined that TMPU has an internal audit process in place that includes an assessment of its patrol and damage prevention-related activities. Furthermore, the Board has determined that the root cause of this deficiency is directly related to TMPU's lack of a legal list which is discussed in section 2.2 of this appendix. Once the legal list is complete and integrated into the

quality assurance program, it should form the basis for protocols for future audits.

Conclusion

The audit verified that TMPU has an established process to conduct internal audits and tracks findings to resolution. The Board also notes that the CAP for sub-element 2.2 of this report will address the deficiencies with the audit protocols. As a result, based on the scope of this audit and the information reviewed, the Board did not identify any areas of non-compliance with sub-element 4.3 Internal Audit.

4.4 Records Management

Expectations: The company shall have an established, implemented and effective process for generating, retaining, and maintaining records that document the implementation of the management system and its protection programs and for providing access to those who require them in the course of their duties.

References:

OPR s 6.1, 6.5(1)(p), 40, 47, 48

CSA 3.1.2 (e) , 10.4.4.1

NEB Assessment

TMPU's Damage Prevention team manages the records relating to patrols including the patrol reports to reflect the requirements of the corporate Records Management Standard. Records managed by the Damage Prevention team include third party permits and one call request verifications as well as patrol reports. The Records Management Matrix outlines the record owners, the types of records, and the review frequency assigned to each type of record. According to matrix, these reports are kept on a shared drive to be accessible to staff and are the subject of an annual review. There is also a monthly review of patrol records to verify that all observations have been noted and assigned for follow-up. As part of this audit, the Board reviewed several records related to unauthorized activities on the ROW. TMPU was able to provide files that included the assessment of the event and photos as well as any follow-up that occurred.

Records relating to the Natural Hazards program, including issues noted and monitored by patrols, are managed by a third party in the Cambio database. This information is accessible to the TMPU Integrity Team to facilitate ongoing monitoring.

Conclusion

The audit verified that TMPU has an established process to record its patrol activities. As a result, based on the scope of this audit and the information reviewed, the Board did not identify any areas of non-compliance with sub-element 4.4 Records Management.

5.0 MANAGEMENT REVIEW

5.1 Management Review

Expectations: The company shall have an established, implemented and effective process for conducting an annual management review of the management system and each protection program and for ensuring continual improvement in meeting the company's obligations to perform its activities in a manner that ensures the safety and security of the public, company employees, the pipeline, and protection of property and the environment. The management review should include a review of any decisions, actions and commitments which relate to the improvement of the management system and protection programs, and the company's overall performance.

The company shall complete an annual report for the previous calendar year, signed by the accountable officer, that describes the performance of the company's management system in meeting its obligations for safety, security and protection of the environment and the company's achievement of its goals, objectives and targets during that year, as measured by the performance measures developed under the management system and any actions taken during that year to correct deficiencies identified by the quality assurance program. The company shall submit to the Board a statement, signed by the accountable officer, no later than April 30 of each year, indicating that it has completed its annual report.

References:

OPR sections 6.1, 6.5(1)(w), (x), 6.6, 40, 47, 48

CSA 3.1.2 (h)(vii)

NEB Assessment

The Board expects companies to have an established, implemented and effective process for conducting an annual management review of the management system and each protection program. Given that the scope of this audit is focused solely on patrol activities and its links to the management system, the ISLMS was not reviewed or evaluated as part of the current audit.

During this audit, the Board verified that several sub-elements of the management system were linked to the patrol activities including:

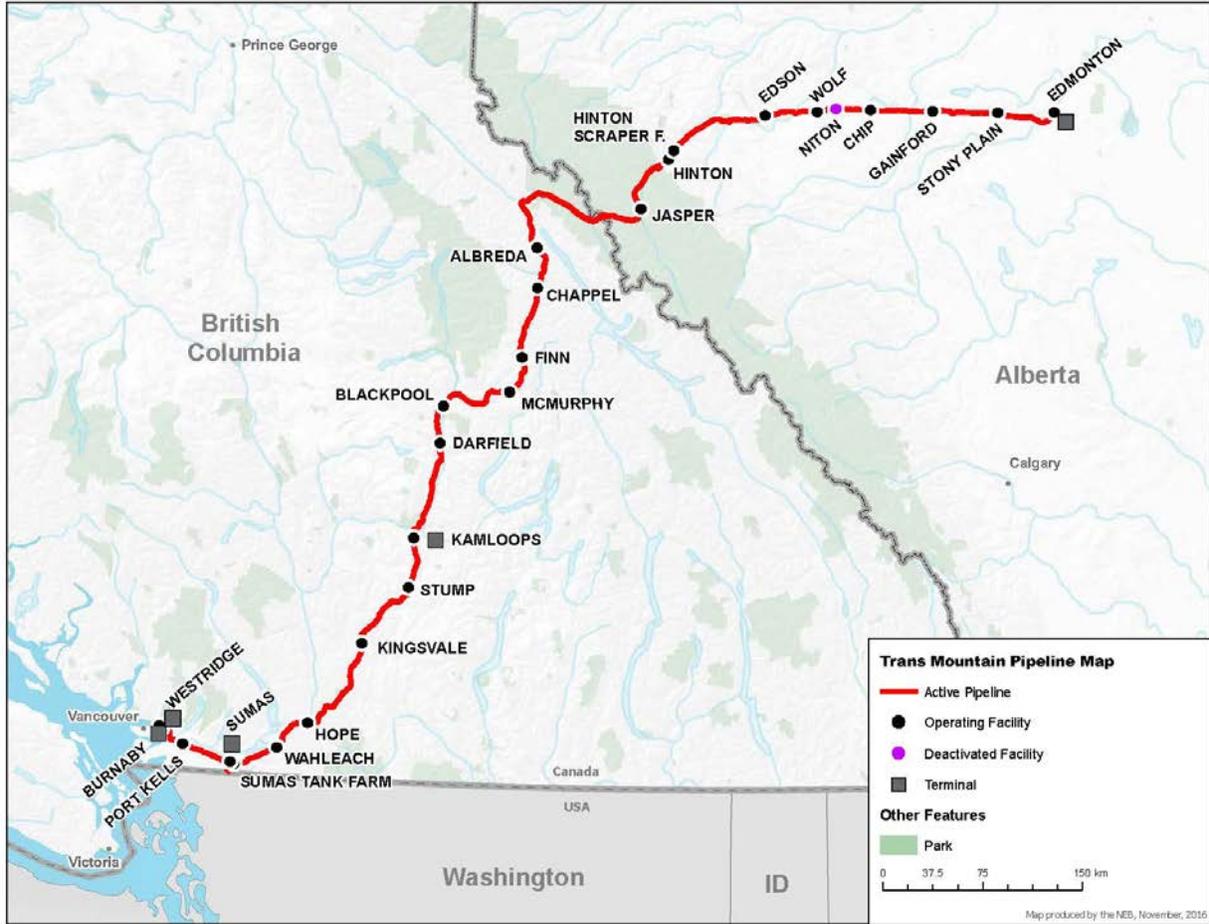
- an EHS policy that reflects OPR requirements;
- an annual report as required by the OPR that includes statistics related to patrol activities;
- the inclusion of the Damage Prevention Program into its overall Quality Assurance Plan.

Also, TMPU was able to demonstrate that Senior Management is providing active oversight through its Quality Assurance Plan and GOT dashboards. TMPU demonstrated that its Quality Assurance Plan includes the Damage Prevention Program (which includes patrols) by having an expert third party audit in 2015. Also, the Corporate GOT dashboards included aspects of the patrol activities such as number of kilometres patrolled and unauthorized activities reported which demonstrates that these targets were reviewed at the Senior level. Also, TMPU was able to demonstrate that its evaluation of need included consideration of patrol activities in its overall determination of staffing levels.

Conclusion

The audit verified that TMPU has an established process to conduct an annual management review which included information related to ROW surveillance and patrol activities. As a result, based on the scope of this audit and the information reviewed, the Board did not identify any areas of non-compliance with sub-element 5.1 Management Review.

APPENDIX III TRANS MOUNTAIN PIPELINES ULC MAP AND SYSTEM DESCRIPTION



The NEB-regulated TMPU system consists of terminals, storage tanks and pump stations and transports crude oil, refined and semi-refined products through 1150 km of pipe. TMPU moves product from Edmonton, AB, through Kamloops and Abbotsford, BC to marketing terminals and refineries in the central British Columbia region, the Greater Vancouver area and the Puget Sound area in Washington State.

APPENDIX IV

TRANS MOUNTAIN PIPELINES ULC.

COMPANY REPRESENTATIVES INTERVIEWED – Pipeline Patrol audit

*names to be redacted upon the release of the report

Company Representative Interviewed	Job Title
Hugh Harden	Vice-President, Operations and Engineering
[REDACTED]	Director Western Region
[REDACTED]	Manager, Damage Prevention and Public Awareness
[REDACTED]	Manager, Integrity Implementation
[REDACTED]	Director, Financial Planning and Regulatory
[REDACTED]	Manager, Compliance
[REDACTED]	Manager Integrity Programs and Risk Engineering
[REDACTED]	Senior Director, Technical Services and Engineering
[REDACTED]	Pipeline Protection Supervisor, Western Region
[REDACTED]	Pipeline Protection Technician
[REDACTED]	Pipeline Protection Patroller
[REDACTED]	Land Representative
[REDACTED]	Pipeline Patroller
[REDACTED]	Senior Technical Specialist, Pipeline Integrity
[REDACTED]	Administration Assistant, Pipeline Protection
[REDACTED]	Supervisor, Pipeline Protection, Central Region
[REDACTED]	Pipeline Protection Technician
[REDACTED]	Regulatory Coordinator
[REDACTED]	Manager, Drafting and GIS
Contractors	Company Name
[REDACTED]	Valley Helicopters
[REDACTED]	Valley Helicopters
[REDACTED]	BGC Engineering

APPENDIX V
TRANS MOUNTAIN PIPELINE ULC. (TMPU)
DOCUMENTS REVIEWED*

Document Title
1 Inspection Measurement and Monitoring Standard
Land Use Monitoring Standard (draft) SOP for Aerial Patrol 2.2 Pipeline Protection Management Systems (generally and specifically Section 12.0 Aerial Patrol) 4) 4 1 1 Conducting RoW Ground Patrols 5) Aerial Patrol Scope of Work (generally and specifically Section 5.0 Observation Guidelines)
1) 2.0 Training Management Plan 2) 2.1 KEEP Canada Practice 3) 3.0.1 General Training Standard 4) 3.1.1 Operations and Maintenance Training Standard 5) Training Record Reports 6) Patrol Training Packets Email 7) Event Evaluation Form Valley Helicopters January 2014
1) 2.2 Pipeline Protection Management Systems (generally and specifically Section 12.0 Aerial Patrol) – 2) 4 1 1 Conducting RoW Ground Patrols (- I.1.0(a)) 3) Aerial Patrol Scope of Work (generally and specifically Section 5.0 Observation Guidelines) (-I.1.0(a))
1) SOP for Aerial Patrol (-I.1.0(a)) 2) 4 1 1 Conducting RoW Ground Patrols (generally and specifically Section 2.3 Scheduling RoW Ground Patrols) (-I.1.0(a))
1) 2015 Western Region RoW Ground Patrol Schedule 2) 2016 Western Region RoW Ground Patrol Schedule 3) Paperwork Filing Process
4 1 1 Conducting RoW Ground Patrols (generally and specifically Section 6.0 Abnormal Operating Conditions, Section 6.2 Task-Specific Abnormal Operating Conditions) (-I.1.0(a))
Email: FW determining air patrol frequency 2015
a. June 2016 Sighting Summary b. November 2015 Sighting Summary c. September 2015 Sighting Summary d. UA Discovery by Ground Patrol 2015 - Western Region e. UA Discovery by Ground Patrol 2016 - Western Region f. 15-09-23-06-9 g. 15-11-04-01-5 h. 16-06-16-03-2 i. UA Discovery by Ground Patrol - Central Region

* Document titles are shown as presented in the electronic portal from TMPU

<ul style="list-style-type: none"> 2) 2015 Sightings (folder name) 3) 2015 Western Region Ground Patrols (folder name) 4) 2016 Sightings (folder name) 5) 2016 Western Region Ground Patrols (folder name)
<ul style="list-style-type: none"> 1) UA Tracking Spreadsheets (Folder name) <ul style="list-style-type: none"> a. UA Tracking Spreadsheet 2013 b. UA Tracking Spreadsheet 2014 c. UA Tracking Spreadsheet 2015 2) DIRT Tracking Spreadsheets <ul style="list-style-type: none"> a. 2013_DIRT Upload_UA Tracking Spreadsheet b. 2014_DIRT Upload_UA Tracking Spreadsheet c. 2015_DIRT Upload_UA Tracking Spreadsheet 1) Requested UA Reports <ul style="list-style-type: none"> a) 2015.01.28_UA_KP1129.955_Report_CAs_City of Surrey and Corix Utilities_UX2015-006 b) 2015.04.08_UA_KP1121.500_Report_CAs_TFG Landscape Maintenance Township Langley_UX2015-034UA c) 2015.04.21_UA_KP1130.447_Report_Corrective Actions_Landstar Projects Ltd_UX2015-043 d) 2016.01.21_UA_Report_Landstar Proj, AandG Excavating Ltd_File38356_UX2016-003 e) 2016.09.23_UA_Report_Fox Design Studio_Lees Trees_UX2016-144 f) 2016.11.01_UA_Report_RLI Building_File 48047_UX2016-169
<ul style="list-style-type: none"> 1) 2.1 Pipeline Patrol Management Plan 2) 3.1.2 Responding to RoW Patrol Notifications 3) 3.1.3 Unauthorized Activity Reporting 4) 3 1 1 Right-of-Way Maintenance Standard 5) KMC RoW IVMP March 30 2016
<ul style="list-style-type: none"> a. June 2016 Sighting Summary (- I.1.1(f)) b. November 2015 Sighting Summary (- I.1.1(f)) c. September 2015 Sighting Summary (- I.1.1(f)) d. UA Discovery by Ground Patrol 2015 - Western Region (- I.1.1(f)) e. UA Discovery by Ground Patrol 2016 - Western Region (- I.1.1(f)) f. 15-09-23-06-9 (- I.1.1(f)) g. 15-11-04-01-5 (- I.1.1(f)) h. 16-06-16-03-2 (- I.1.1(f)) i. UA Discovery by Ground Patrol - Central Region (- I.1.1(f))
<ul style="list-style-type: none"> 1) 2.1 Pipeline Patrol Management Plan (- I.2.0(a)) 2) Training of Program Managers and Directors on Completing the Annual Human Resources Evaluation of Need 3) Human Resources Sufficiency Template
1) Accountable Officer Role Profile (ROCS)
2) ISLMS DPP_ 2016 Annual Human Resources Sufficiency Evaluation_Final
Goals, Objectives and Targets Standard
1) 2.1 Pipeline Patrol Management Plan (- I.2.0(a))

<p>2) 2.2 Pipeline Protection Management Systems (generally and specifically Section 12.0 Aerial Patrol) (- I.1.0(a))</p> <p>3) ISLMS Policy Statement</p> <p>4) Business Code of Conduct and Ethics</p>
<p>1) 2.2 Pipeline Protection Management Systems (generally and specifically Section 6.0 Risk Reduction) (- I.1.0(a))</p> <p>2) 3.8 Hazard Identification and Risk Assessment Standard</p>
<p>1) 2016 PLP Risk Register</p> <p>2) Patroller Presentation</p> <p>3) 2016 Forum Risk Register Landscape</p> <p>4) Aerial Patrol Scope of Work (generally and specifically Section 4.1.5 Communication, Section 8.0 Communications During Patrols, Section 9.4 KMC Follow-up) (- I.1.0(a))</p> <p>5) Sixth Annual Pipeline Protection Forum Agenda - DRAFT</p>
<p>1) Damage Prevention Committee agenda and presentation</p> <p>2) 2015 Western Region RoW Ground Patrol Schedule (- I.1.1((d))</p> <p>3) 2016 Western Region RoW Ground Patrol Schedule (- I.1.1((d))</p>
<p>1) 2.2 Pipeline Protection Management Systems (generally and specifically Section 6.0 Risk Reduction) (- I.1.0(a))</p> <p>2) 3.8 Hazard Identification and Risk Assessment Standard</p>
<p>1) Legal Requirements Standard</p> <p>2) Legal Requirements Procedure Draft B</p>
<p>1) Legal Requirements List</p> <p>2) Damage Prevention Regulations - Legal Requirements Review</p>
<p>1) Damage Prevention Program_2016 Goals, Objectives and Targets</p> <p>2) 2015 KMC Safety and Loss Management Dashboard_YEAR END</p> <p>3) 2016 KMC Safety and Loss Management Dashboard_Q2 Results_Final</p>
<p>1) 2016 PLP Activity Stats (Ver2 0 DP Committee)</p> <p>2) Patroller Presentation (- II.2.1(b))</p> <p>3) 2016 Damage Prevention Committee Meeting Agenda(1 0)</p>
<p>2.2 Pipeline Protection Management System (generally and specifically Section 7.0 Roles and Responsibilities, Section 7.1 Pipeline Protection Organization) (- I.1.0(a))</p>
<p>1) Draft CCAP document for Air Patrol (CQS-DP002 Aerial Patroller(draft 1)_FLG_Sept6_16)</p> <p>2) Aerial Patrol Scope of Work (- I.1.0(a))</p>
<p>57305 Valley (Contract)</p>
<p>1) 2.2 Pipeline Protection Management System (generally and specifically Section 7.0 Roles and Responsibilities, Section 7.1 Pipeline Protection Organization, Section 7.1.6 Pipeline Patroller) (- I.1.0(a))</p> <p>2) Patrol Job Description</p>
<p>DPP_ 2016 Annual Human Resources Sufficiency Evaluation_Final (- II.1.1(c))</p>
<p>1) Aerial Patrol Scope of Work (- I.1.0(a))</p> <p>2) 3.1.2 Responding to RoW Patrol Notifications (- I.2.0(a))</p> <p>3) 4 1 1 Conducting RoW Ground Patrols (draft 4) (- I.1.0(a))</p>

4) RoW Patrol Reports (Folder name)

- a. June 2016 Sighting Summary (- I.1.1(f))
- b. November 2015 Sighting Summary (- I.1.1(f))
- c. September 2015 Sighting Summary (- I.1.1(f))
- d. 15-09-23-06-9 (- I.1.1(f))
- e. 15-11-04-01-5 (- I.1.1(f))
- f. 16-06-16-03-2 (- I.1.1(f))
- g. UA Discovery by Ground Patrol 2015 - Western Region (- I.1.1(f))
- h. UA Discovery by Ground Patrol 2016 - Western Region (- I.1.1(f))
- i. UA Discovery by Ground Patrol - Central Region (- I.1.1(f))

5) DIRT Tracking Spreadsheets (Folder name)

- a. 2013_DIRT Upload_UA Tracking Spreadsheet (- I.1.1(g))
- b. 2014_DIRT Upload_UA Tracking Spreadsheet (- I.1.1(g))
- c. 2015_DIRT Upload_UA Tracking Spreadsheet (- I.1.1(g))

6) UA Tracking Spreadsheet (Folder name)

- a. UA Tracking Spreadsheet 2013 (- I.1.1(g))
- b. UA Tracking Spreadsheet 2014 (- I.1.1(g))
- c. UA Tracking Spreadsheet 2015 (- I.1.1(g))
- d. UA Tracking Spreadsheet 2016 (- I.1.1(g))

1) Aerial Patrol Scope of Work (- I.1.0(a))

2) Draft CAPP Air Patrol Contractor (CQS-DP002 Aerial Patroller(draft 1)_FLG_Sept6_16) (- II.2.4(b))

1) Aerial Patrol Scope of Work (- I.1.0(a))

2) Draft CAPP Air Patrol Contractor (CQS-DP002 Aerial Patroller(draft 1)_FLG_Sept6_16) (- II.2.4(b))

1) RoW Patrol Reports (folder name):

- a. June 2016 Sighting Summary (- I.1.1(f))
- b. November 2015 Sighting Summary (- I.1.1(f))
- c. September 2015 Sighting Summary (- I.1.1(f))
- d. UA Discovery by Ground Patrol 2015 - Western Region (- I.1.1(f))
- e. UA Discovery by Ground Patrol 2016 - Western Region (- I.1.1(f))
- f. 15-09-23-06-9 (- I.1.1(f))
- g. 15-11-04-01-5 (- I.1.1(f))
- h. 16-06-16-03-2 (- I.1.1(f))
- i. UA Discovery by Ground Patrol - Central Region (- I.1.1(f))

1) UA Tracking Spreadsheet (Folder name)

- a. UA Tracking Spreadsheet 2013 (- I.1.1(g))
- b. UA Tracking Spreadsheet 2014 (- I.1.1(g))
- c. UA Tracking Spreadsheet 2015 (- I.1.1(g))
- d. UA Tracking Spreadsheet 2016

2) DIRT Tracking Spreadsheets (Folder name)

- a. 2013_DIRT Upload_UA Tracking Spreadsheet (- I.1.1(g))
- b. 2014_DIRT Upload_UA Tracking Spreadsheet (- I.1.1(g))

c. 2015_DIRT Upload_UA Tracking Spreadsheet (- I.1.1(g))
1) 4 1 1 Conducting RoW Ground Patrols (draft 4) (generally and specifically Section 6.0 Abnormal Operating Conditions, Section 6.2 Task-Specific Abnormal Operating Conditions) (- I.1.0(a)) 2) 2.2 Pipeline Protection Management Systems (Section 12.0 Aerial Patrol) (- I.1.0(a)) 3) Aerial Patrol Scope of Work (Section 7.5 Incident or Emergency Response) (- I.1.0(a))
1) UA Tracking Spreadsheet (Folder name) a. UA Tracking Spreadsheet 2013 (- I.1.1(g)) b. UA Tracking Spreadsheet 2014 (- I.1.1(g)) c. UA Tracking Spreadsheet 2015 (- I.1.1(g)) d. UA Tracking Spreadsheet 2016 2) DIRT Tracking Spreadsheets (Folder name) a. 2013_DIRT Upload_UA Tracking Spreadsheet (- I.1.1(g)) b. 2014_DIRT Upload_UA Tracking Spreadsheet (- I.1.1(g)) c. 2015_DIRT Upload_UA Tracking Spreadsheet (- I.1.1(g))
1) Change Management Standard 2) CMR Form 3) CMR Approval Authority Matrix
Ground Patrol CMR Approval 2015
1) 2.0 Training Management Plan (- I.1.0(c)) 2) 2.1 KEEP Canada Practice (- I.1.0(c)) 3) 3.0.1 General Training Standard (- I.1.0(c)) 4) 3.1.1 Operations and Maintenance Training Standard (- I.1.0(c)) 5) Training Record Reports (- I.1.0(c)) 6) Patrol Training Packets Email (- I.1.0(c)) 7) Event Evaluation Form Valley Helicopters January 2014
- documents provided above in Appendix II 3.4(a)
- documents provided above in Appendix II 3.4(a)
1) 2.2 Pipeline Protection Management Systems (generally and specifically Section 12.0 Aerial Patrol, Section 12.0 Aerial Patrol) (- I.1.0(a)) 2) Aerial Patrol Scope of Work (generally and specifically Section 4.1.5 Communication, Section 8.0 Communications During Patrols, Section 9.0 Written Observation Reports) (- II.0(a)) 3) 4 1 1 Conducting RoW Ground Patrols (draft 4) (generally and specifically Section 5.2 Document the RoW Patrol) (- I.1.0(a))
- documents provided above in Appendix II 3.5(a)
1) Controlled Document Standard 2) Document Hierarchy and Types
Email: FW: Approved- CMR Form- Conducting RoW Ground Patrol
3.1.2 Responding to RoW Patrol Notifications (- I.2.0(a))
1) 2016 Western Region RoW Ground Patrol Schedule (- I.1.1(c)) 2) 2015 Western Region RoW Ground Patrol Schedule (- I.1.1(c))
1) Email: FW Depth of Cover Hazard Screening Reports - Sumas to US (Aug 2016)

2) Email: FW Terry Fox Creek Encroachment - KP473.6
3) Email: FW 2014 aerial inspection
1) RoW Patrol Reports (folder name): a. June 2016 Sighting Summary (- I.1.1(f)) b. November 2015 Sighting Summary (- I.1.1(f)) c. September 2015 Sighting Summary (- I.1.1(f)) d. UA Discovery by Ground Patrol 2015 - Western Region (- I.1.1(f)) e. UA Discovery by Ground Patrol 2016 - Western Region (- I.1.1(f)) f. 15-09-23-06-9 (- I.1.1(f)) g. 15-11-04-01-5 (- I.1.1(f)) h. 16-06-16-03-2 (- I.1.1(f)) i. UA Discovery by Ground Patrol - Central Region (- I.1.1(f))
2) 3 1 1 Right-of-Way Maintenance Standard (- I.2.0(a))
3) KMC RoW IVMP March 30 2016 (- I.2.0(a))
1) 3.1.2 Responding to RoW Patrol Notifications (- I.2.0(a))
2) 3.1.3 Unauthorized Activity Reporting (- I.2.0(a))
3) 2.2 Pipeline Protection Management Systems (generally and specifically Section 12.0) (- I.1.0(a))
4) Aerial Patrol Scope of Work (Section 9.4 KMC Follow-up) (- I.1.0(a))
1) UA Tracking Spreadsheet (Folder name) a. UA Tracking Spreadsheet 2013 (- I.1.1(g)) b. UA Tracking Spreadsheet 2014 (- I.1.1(g)) c. UA Tracking Spreadsheet 2015 (- I.1.1(g)) d. UA Tracking Spreadsheet 2016
2) DIRT Tracking Spreadsheets (Folder name) a. 2013_DIRT Upload_UA Tracking Spreadsheet (- I.1.1(g)) b. 2014_DIRT Upload_UA Tracking Spreadsheet (- I.1.1(g)) c. 2015_DIRT Upload_UA Tracking Spreadsheet (- I.1.1(g))
1) Aerial Patrol Scope of Work (- I.1.0(a))
2) 4 1 1 Conducting RoW Ground Patrols (draft 4) (- I.1.0(a))
3) 2.1 Pipeline Protection Requirements (generally and specifically Section 5.0 RoW Signage, Section 4.0 RoW Monitoring) (- document I2.0(a))
1) Damage Prevention Program Audit_02FEB2015 - data room
2) ISLMS Project Manager Self Assessment Damage Prevention - data room
2015 Damage Prevention Audit_CAPA Tracker - data room
Records Management Standard
- documents provided above in Appendix II 4.4(a)
1) ISLMS Governance Plan
2) 3.1 Quality Assurance Plan
1) Kinder Morgan Canada 2014 Annual Quality Assurance Report - data room
2) Kinder Morgan Canada 2015 Quality Assurance Annual Report - data room
KMC Environmental Awareness

<ul style="list-style-type: none"> 1) 2.1 Pipeline Patrol Management Plan (- I.2.0(a)) 2) 2.2 Pipeline Protection Management Systems (- I.1.0(b)) 3) 3.1.2 Responding to RoW Patrol Notifications (- I.2.0(a)) 4) 4 1 1 Conducting RoW Ground Patrols (- I.1.0(a))
<p>Demonstration and dissemination demonstrated through:</p> <ul style="list-style-type: none"> 1) Email meeting invitation and attached documentation Damage Prevention Regulations - Legal Requirements Review (- II 2.2(b)) 2) 2016 06 20_Regulatory Update_Pipeline Safety Act_Pipeline DP Regulation 3) PLP Forum Meeting Minutes 2016
<ul style="list-style-type: none"> 1) 2 2 Integrity Hazard Identification Form - 2014-TMPL-HI-010 2) 2014-TMPL-HI-010 - Closed 3) August 19 2014 photos of KM 473.6 Terry Fox Creek Encroachment
<ul style="list-style-type: none"> 1) FW: Aerial Report Zones Western Region 2) Additional zones to the Metro Vancouver area
<ul style="list-style-type: none"> 1) Central Region - 3 Year Signage Program 2015-2017 2) Ivara Signage Work Order 3) Signage Valemount 4) Western Region - 3 Year Signage Program 2015-2017
<ul style="list-style-type: none"> 1) 2015 Western Region RoW Ground Patrol Schedule (- I.1.1(c)) 2) 2016 Western Region RoW Ground Patrol Schedule (- I.1.1(c)) 3) Outlook Calendar Western PLP Oct 2 - 8 4) Outlook Calendar Western PLP Sep 18 - 24
<p>Email: Re: IVARA Description</p>
<ul style="list-style-type: none"> 1) Depth of Cover Procedure Flow Chart - Original 2) LOW DOC MANAGEMENT AND MITIGATION FLOW CHARTS REV B NOV 2 2016 3) 3.7 Depth of Cover Verification Standard (rev 0, draft 5) 4) 4.7.1 Depth of Cover Survey and Reporting Procedure 5) GIS STANDARD -AG LANDS Rev 1, Oct 26 2016 6) GIS STANDARD -DOC Rev 2, Oct 20 2016 7) 4. Examples of low DOC resulting in a hazard id <ul style="list-style-type: none"> a) KP 162.7 - 2016-TMPL-HI-014 <ul style="list-style-type: none"> i) KM162.942 DOC screening report ii) Hazard ID Form 2016-TMPL-HI-014 - Closed b) KP 769.86 (Whispering Pines) <ul style="list-style-type: none"> i) Depth of Cover Screening Report Kamloops KM782.289 ii) 07_12_17_Whispering Pines Debris Flow iii) Mitigation Plan iv) Reclamation Plan KP 782 v) Field Reclamation Summary Report c) KP 1113.366 - 2016-TMPL-HI-009 <ul style="list-style-type: none"> i) 16-05-09-03-2

<ul style="list-style-type: none"> ii) Hazard Id Form 2016-TMPL-HI-009 - Closed d) KP 1117.581 - 2016-TMPL-HI-008 i) 20130509152102840 ii) KM1117.55 iii) 2016-TMPL-HI-008 - Closed
8) Examples of low DOC not resulting in a hazard id
a) Examples of confirmed depth of cover screening reports(Edmonton-Burnaby)
1) Email M.P -
1) Audit -NEB- 2016 PLP (2) FW KEEP
Email: FW: Albrede Crossing 1&3 - aerial photos
Response to Comment in Daily Summary 2016.10.04
ROW-Patrol-Response (link from FW determining air patrol frequency)
<ul style="list-style-type: none"> 1) air patrol frequency table #9 kilometers patrolled 2) email chain regarding review of patrol frequency
<ul style="list-style-type: none"> 1) 2 2 Integrity Hazard Identification Form - 2014-TMPL-HI-010 2) 2014-TMPL-HI-010 - Closed 3) August 19 2014 photos of KM 473.6 Terry Fox Creek Encroachment
<ul style="list-style-type: none"> 1) OC_HEAT_AB_USERDEFINED_FINAL 2) OC_HEAT_BC_USERDEFINED_FINAL 3) UA_HEAT_AB_USERDEFINED_FINAL 4) UA_HEAT_BC_USERDEFINED_FINAL
Records Management Standard (- II.4.4(a))
2016 goals for dept performance
S.J's performance review
PLP performance indicators
air patrol frequency table #9 kilometers patrolled
<ul style="list-style-type: none"> 1) Audit -NEB- 2016 PLP (please note: divided by individual with separate sheet on the bottom organized by last name) 2) FW KEEP
Demonstration and dissemination demonstrated through:
<ul style="list-style-type: none"> 1) Email meeting invitation and attached documentation Damage Prevention Regulations - Legal Requirements Review (- II 2.2(b)) 2) 2016 06 20_Regulatory Update_Pipeline Safety Act_Pipeline DP Regulation 3) PLP Forum Meeting Minutes 2016
PLP Forum DP Committee presentations
PLP Forum DP Committee presentations
<ul style="list-style-type: none"> 1) 2 2 Integrity Hazard Identification Form - 2014-TMPL-HI-010 2) 2014-TMPL-HI-010 - Closed 3) August 19 2014 photos of KM 473.6 Terry Fox Creek Encroachment 4) email chain regarding review of patrol frequency
PLP performance indicators

1) Damage Prevention Program_2016 Goals, Objectives and Targets (- II.2.3(a))
2) PLP Forum DP Committee presentations
1) Aerial Patrol Considerations - MEMO - 19_June_2009
2) 2009-Pipeline Patroller
1) 4797981-42-KMCA
2) KMC_TMPL_2016_Re-inspection_Proposal
1) FW 2016-TMPL-HI-013
2) FW Additional Photos of Erosion at KM 811.0 (2016-TMPL-HI-011)
3) FW Kirby Slope (HID 1423)
4) FW Request for site visit at KP 1031
5) FW soil erosion near ROW at TMPL KP 808.9
KMC's Natural Hazard Monitoring and Control Standard
4_10_1_Cambio_Database_Procedure
2015 Hazard Identification Summary
KMC Emergency Response Line Overview
3 2 5 Pipeline Natural Hazard Monitoring and Control Standard
Goals, Objectives and Targets Standard (- II.1.2(a))
2.7 ISLMS Human Resources Evaluation Procedure
IMPACT Scope Description
Damage Prevention Program Audit_02FEB2015 - data room (- II.4.3(b))
DOC Contract with EMAC Executed
1) 3 2 5 Pipeline Natural Hazard Monitoring and Control Standard (- DS(mm))
2) 4 1 2 Integrity Hazard Identification and Review Procedure
(- DS(gg))
1) 6.1 Internal Communication Standard Template
2) 6.1 Internal Communication Standard
3) DPP_Internal_Communication_Plan_2016_July_18
4) PA_Internal_Communication_Plan_2016_July_18
(- DS(rr))
2015 TMPL Geohazard Re-Inspection Report FINAL
1) RE Air patrol during freshet
2) 15-03-31-06-4 (1031 0) - soil erosion
3) 2015-TMPL-HI-013 New Integrity Hazard Identification Form - Closed
4) KP 1031 Erosion site mitigation photos
2015 Hazard Identification Summary (- DS(kk))
4 1 2 Integrity Hazard Identification and Review Procedure
3.1 Quality Assurance Pan (- II.5.0(a))
1) 2015 Safety and Loss Management Dashboard - data room
2) 2016 Safety and Loss Management Dashboard - data room
2015 Damage Prevention Audit_CAPA Tracker - data room (- II.4.3(c))
1) Kinder Morgan Canada 2014 Annual Quality Assurance Report - data room (- II.5.0(b))

2) Kinder Morgan Canada 2015 Quality Assurance Annual Report - data room (- II.5.0(b))
2.6 ISLMS Management Review Procedure
2016 KMC and BGC Scope of Work Kick-Off Meeting Agenda
1) KP 162.7 - 2016-TMPL-HI-014 (- DS(j), DS(k)) 2) KP 769.86 (Whispering Pines)(- DS(j), DS(k)) 3) KP 1113.366 - 2016-TMPL-HI-009 (- DS(j), DS(k)) 4) KP 1117.581 - 2016-TMPL-HI-008 (- DS(j), DS(k)) 5) DOC Screening Reports (folder)
FW Hazard Id's triggered by Heli Patrol reports
1) - response to PC.I.1.1 Right of Way Patrols in NEB_DM_PROD-#980470-v2-TMPU_precloseout_IR_appendixI - Response 2) 4 1 1 Conducting ROW Ground Patrols 3) Aerial Patrol Scope of Work
1) - response to PC.I.2.0 Reporting in NEB_DM_PROD-#980470-v2-TMPU_precloseout_IR_appendixI - Response 2) Depth of Cover Survey and Damage Prevention Flow Chart Agricultural Lands 3) Depth of Cover Survey and Damage Prevention Flow Chart Inspection and Monitoring 4) 4.7.1 Damage Prevention Program Depth of Cover Survey and Reporting Procedure (current process)
- response to PC.I.2.0 Reporting in NEB_DM_PROD-#980470-v2-TMPU_precloseout_IR_appendixI - Response
- response to PC.II.2.2 Legal Requirements in NEB_DM_PROD-#984254-v1-TMPL_pre-close-out_IR_AppendixII - Response
Damage Prevention Program_ Organizational Structure
CMR Form C0412 - Approved
1) - response to PC.II.3.4 Training, Competence and Evaluation in NEB_DM_PROD-#984254-v1-TMPL_pre-close-out_IR_AppendixII - Response 2) Conducting Right-of-Way Patrols Skill Packet 3) Training Records Sign-Off Form - Conducting Right-of-Way Patrols 4) Knowledge of KMC Right-of-Way Skill Packet 5) Training Records Sign-Off Form – Knowledge of KMC Right-of-Way 6) Demonstrate Knowledge of Pipeline Protection Zones Skill Packet 7) KMC0208 (example completed Training Records Sign-off Form) 8) Aerial Patrol Scope of Work 9) Aerial Patrol Training - Burnaby CA 10-25-16
1) - response to PC.II.3.4 Training, Competence and Evaluation in NEB_DM_PROD-#984254-v1-TMPL_pre-close-out_IR_AppendixII - Response 2) 2.1 KEEP Canada Practice 3) 4.1 Contractor Competency Assurance Plan 4) CQS-DP002 Aerial Patroller
- response to PC.II.3.6 Documentation and Document Control in NEB_DM_PROD-#984254-v1-TMPL_pre-close-out_IR_AppendixII - Response

- response to PC.II.3.6 Documentation and Document Control in NEB_DM_PROD-#984254-v1-TMPL_pre-close-out_IR_AppendixII - Response

- response to PC.II.3.6 Documentation and Document Control in NEB_DM_PROD-#984254-v1-TMPL_pre-close-out_IR_AppendixII - Response

1) - response to PC.II.4.3 Internal Audit in NEB_DM_PROD-#984254-v1-TMPL_pre-close-out_IR_AppendixII - Response

2) ISMS Compliance Audit Plan

3) 3.2 ISLMS Compliance Audit Standard (draft)

4) Workflow Issue Management System (WIMS) User Guide

1) - response to PC.II.4.4 Records Management in NEB_DM_PROD-#984254-v1-TMPL_pre-close-out_IR_AppendixII - Response

2) Damage Prevention Program_Records Management Matrix