

National Energy
Board



Office national
de l'énergie

File OF-Surv-OpAud-T217-2016-2017 01
18 January 2017

Mr. John Ferris
President and Chief Executive Officer,
Accountable Officer
Trans-Northern Pipelines Inc.
310-45 Vogell Road
Richmond Hill, ON L4B3PG
Email [REDACTED]

Dear Mr. Ferris:

National Energy Board's (Board or NEB) Final Audit Report Trans-Northern Pipelines Inc. (Trans-Northern)

On 14 July 2016, the National Energy Board (NEB or the Board) informed Trans-Northern of its intent to audit Trans-Northern's 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. Throughout this audit, the Board evaluated patrol activities in the context of the protection programs and the management system.

Summary of the Audit

In its review, the Board verified that Trans-Northern undertakes several types of aerial and ground patrol activities to identify hazards and potential hazards on its rights of way (ROW). The Board determined that Trans-Northern could demonstrate that some aspects of its management system including the goals and targets and policy were linked to its patrol activities.

The following points summarize gaps which are reflected in the Non-Compliant findings made by the Board in its audit of Trans-Northern's patrol activities:

- management system processes such as training, communication and document management were not fully implemented with regards to patrol activities;
- environmental and integrity issues identified by patrol were not consistently reported, communicated and effectively tracked to resolution;
- oversight procedures to review and assess patrol activities in order to verify ongoing suitability, adequacy and effectiveness of the activities and those staff and contractors responsible for them were not fully implemented;

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- resolution of past corrective actions related to patrols was not timely in some situations; and
- procedures related to patrol activities were not consistently developed and implemented in accordance with all legal requirements.

As outlined in the regulations, the Board holds Senior Management accountable 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. Accordingly, Senior Management is accountable to provide the direction for the programs and activities and establish the focus for continual improvement.

On or before 20 February 2017, Trans-Northern is required to file a Corrective Action Plan (CAP) with the Board for approval. The CAP shall describe the methods and timing for addressing the non-compliances identified in this final Audit Report. Once approved, the Board will make the CAP public and will continue to monitor and assess all of Trans-Northern's corrective actions with respect to this audit until they are fully implemented.

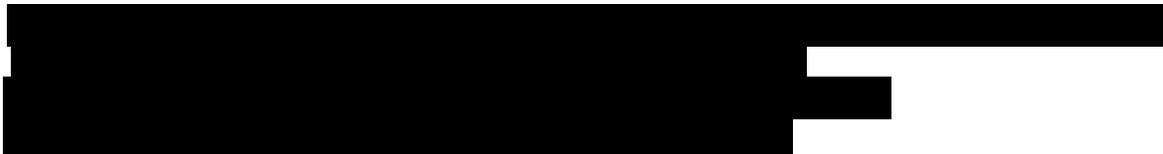
If you require any further information or clarification, please contact System Operations, at 1-800-899-1265.

Yours truly,

Original signed by

Sheri Young
Secretary of the Board

c.c.

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National Energy Board Onshore Pipeline Regulations (OPR)
**Final Audit Report of the Trans-Northern Pipeline Inc. (Trans-Northern)
Pipeline Patrol Activities**

File OF-Surv-OpAud-T217-2016-2017-01

Trans-Northern Pipelines Inc.
310-45 Vogell Road
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18 January 2017

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) of Trans-Northern Pipelines Inc. (Trans-Northern). Specifically, this audit focussed on the adequacy and effectiveness of the patrol activities for Trans-Northern's 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 (CSA Z662-15).

The Board conducted the audit using the audit protocols detailed in Appendices I and II. Appendix I focused solely on sub-element 4.1 Inspection, Measurement and Monitoring, whereas Appendix II evaluated how the company's patrol activities interacted with the other elements of the Trans-Northern's management system; specifically as they relate to the inputs and outputs and linkages between the other management system elements.

The Board's audit of Trans-Northern's federally regulated facilities found that Trans-Northern demonstrated that it conducts various types of patrol activities to identify hazards on its rights of way, particularly relating to the identification and management of potential unauthorized third party activity. As patrol activities are expected to identify several types of hazards along the rights of way, the audit found that Trans-Northern's practices regarding several aspects of its patrols did not meet the Board's requirements. A detailed assessment of the patrol activities documented in Appendix I of this audit report

The Board also assessed the extent to which Trans-Northern's management system processes were integrated with its patrol activities. The Board also evaluated whether Trans-Northern could demonstrate an established link to its patrol activities where required. The details of this assessment are outlined in Appendix II of this audit report.

Trans-Northern was able to demonstrate that some of the governance sub-elements had been integrated with the patrol activities including its overarching Health and Safety policy, its Management of Change process and its development of goals and targets. The Board also noted that Trans-Northern was conducting several types of patrols. Interviews and document review confirmed that Trans-Northern's patrol activities were being conducted in order to identify and prevent unauthorized activities.

During its evaluation, the Board noted several deficiencies which impacted the planning, execution, evaluation and resolution of issues identified by patrol activities. As the resolution of issues on the ROW is paramount to the safety of people and the environment, the Board is of the



view that addressing these deficiencies within the patrol activities will contribute to improve safety. The majority of the Non-Compliant findings fell into these categories:

- failure to demonstrate that its patrol activities are being conducted in accordance with all of the legal requirements;
 - further described in Appendix I within sub-elements: 1.2,2.1, 2.2, 2.3, 3.1
- failure to demonstrate the consistent and formal identification, documentation, communication and resolution of issues identified by patrol activities;
 - further described Appendix II within sub-elements: 2.1, 3.5, 3.6,4.4, 5.1
- lack of evaluation of the patrol activities and the staff and contractors conducting them to ensure the ongoing effectiveness, adequacy and suitability of these activities and identify areas for improvement;
 - further described Appendix II within sub-elements: 3.4, 4.3, 5.1

Within 30 days of the Final Audit Report being issued, Trans-Northern must develop and submit a Corrective Action Plan (CAP) for Board approval. The CAP must outline how Trans-Northern intends to resolve the non-compliances identified by this audit. In its CAP, Trans-Northern must address the main issues described above as well as the management system deficiencies that contribute to those issues. In order for Trans-Northern to meet its regulatory obligations, it must demonstrate that its senior management is actively and formally directing the improvements to its system in general to improve to its patrols in particular. This active direction should result in the establishment of effective patrol activities that ensure the identification, communication and mitigation of hazards, the integration of legal requirements and include measuring its performance to promote continual improvement.

The Board will verify that the corrective actions are completed in a timely manner and applied consistently across Trans-Northern's system. The Board will continue to monitor the implementation and effectiveness of Trans-Northern'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 expects pipeline companies to operate in a systematic, comprehensive and proactive manner that manages risks. As required by the *National Energy Board Onshore Pipeline Regulations* (OPR), the Board expects that companies have effective, fully developed and implemented management systems and protection programs that provide for continual improvement. A carefully-designed and well-implemented management system supports a strong culture of safety, and is fundamental to keeping people safe and protecting the environment.

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 evaluate Trans-Northern Pipelines Inc.'s (Trans-Northern) patrol activities and to verify that they are appropriately implemented and managed. To this end, the Board conducted interviews with corporate and regionally-based staff; field inspections and reviewed documentation and records related to patrol activities. This enabled the Board to evaluate the adequacy, effectiveness and implementation of the patrol program. The Board based the scope and location of the field 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 actioned as set out by the Board's standard inspection and enforcement practices.

After completing its field activities, the Board developed and issued a Draft Audit Report (this document). The Draft 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 Board is piloting a new approach to audits in the fiscal year 2016/17. 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-Northern Pipelines Inc. (Trans-Northern) was therefore selected to be audited based on its compliance history and relative risk presented by its pipeline system.

Trans-Northern is owned equally by Suncor Energy Inc., Shell Canada Limited and Imperial Oil Limited. It operates an approximately 850 kilometre pipeline that supplies refined products (gasoline, jet fuel and fuel oil) from refineries in Ontario and Quebec to the Montreal and Toronto airports as well as major fuel outlets in the Ottawa area. More information on the federally regulated system is available in Appendix III of this audit report.

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 Trans-Northern'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 requirement that federally regulated pipeline companies are required 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, Trans-Northern 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 Damage Prevention Regulations;
- Canadian Standards Association (CSA) Z662 – 15 – Oil and Gas Pipeline Systems; and
- Trans-Northern'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 Trans-Northern of its intention to audit its NEB regulated facilities in a letter dated 14 July 2016. Following the issuance of this letter, Board audit staff met with Trans-Northern to arrange and coordinate this audit. The Board also provided Trans-Northern with an information request guidance document as well as discussion questions to help Trans-Northern prepare for the audit, and provide access to documentation and records to demonstrate its compliance. Trans-Northern established a digital access portal for Board staff to review documentation and records.

On 26 July 2016, an opening meeting was conducted with representatives from Trans-Northern 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 Trans-Northern daily summaries which included requests for additional documentation and interviews.

On 2 September 2016, the Board sent a pre-closeout information request to Trans-Northern outlining potential deficiencies identified during field activities to request additional information prior to compiling its draft audit report. An audit close-out meeting was held on 21 October 2016 to provide Trans-Northern 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 - 26 July 2016 • Audit interviews, Elmbank office – 16 August 2016 • Pipeline ground patrol (GTA joint patrol) – 17 August 2016 • Audit interviews, Lancaster office- 22 August 2016 • Pipeline patrol aerial, Lancaster/ Montreal – 22 August 2016 • Audit interviews, Montreal office- 22-23 August 2016 • Pipeline ground patrol, Montreal- 23 August 2016

5.0 Summary of Audit Findings

In order for the patrol activities to be assessed for compliance to the requirements as well as their role in the company’s protection programs, the activities were audited using two complimentary protocols. Appendix I is divided in 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. If a company’s program is found to be deficient with respect to any regulatory requirement as it relates to pipeline patrols, a Corrective Action Plan (CAP) will be required in order to demonstrate to the Board that appropriate actions will be taken to address the deficiency.

The following summary represents an overview of the Board’s audit findings for Trans-Northern’s patrol activities based on information provided for the audit.



Appendix I

In Appendix I, Trans-Northern's patrol activities were audited against the relevant legal requirements to answer the question:

Does the company conduct its patrol activities in accordance with all applicable legal requirements?

The Board was able to verify that Trans-Northern is conducting several types of ROW patrol activities for its NEB regulated facilities including:

- daily ground patrols in the Greater Toronto Area;
- weekly aerial patrol of the entire system;
- ground patrol conducted at a minimum of every 10 days of its 17 elevated consequence areas; and
- an annual line walk of the entire system.

In addition, the audit verified that Trans-Northern conducts focused inspections to monitor specific threats along its rights-of-way, which include:

- an annual cathodic protection survey; and
- scour assessments for selected water crossings.

The Board also found that Trans-Northern has implemented processes particularly for the reporting of potential unauthorized activities noted during patrol activities as required by the DPR-O. The Non-Compliant findings described in Appendix I were attributed to a failure to ensure that Trans-Northern's patrol activities are being conducted in accordance with all of the legal requirements. The full assessment is available in Appendix I of this report.

Appendix II

With Appendix II, Trans-Northern's patrol activities were audited and evaluated against the processes, procedures and standards that it identifies as being part of its management system and protection programs.

The Appendix II protocol focuses on the following question:

Can the company demonstrate that the patrol activities and the resulting inputs and outputs are linked to the management system processes required by the OPR?

The audit found that Trans-Northern has integrated its patrol activities into some of the management system sub-elements including:

- the policy;
- the goals and targets;
- Management of Change; and

- aspects of the sub-elements that relate to its Damage Prevention Program.

However, with the exception of the Damage Prevention Program, the Board found that the inputs and outputs from the patrol activities have not been consistently integrated into the management system.

The Non-Compliant findings described in Appendix II were due to:

- failure to demonstrate the consistent and formal identification, documentation, communication and resolution of issues identified by patrol activities;
 - further described in Appendix II within sub-elements: 2.1, 3.5, 3.6, 4.4, 5.1; and
- lack of evaluation of the patrol activities and the staff and contractors conducting them to ensure the ongoing effectiveness, adequacy and suitability of these activities and identify areas for improvement;
 - further described in Appendix II within sub-elements: 3.4, 4.3, 5.1

The full assessment is available in Appendix 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 although Trans-Northern is conducting patrol activities, there are several sub-elements of its management system that have not been consistently implemented with regards to its patrol activities.

Upon receipt of the final report, Trans-Northern 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. Trans-Northern 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 Trans-Northern's approved corrective action plan public on the Board's website.

The Board will assess the implementation of Trans-Northern'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 Trans-Northern'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 INSPECTION, MEASUREMENT AND MONITORING

1.0 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 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 sections 6.1(d), 6.5(1)(g), (s), (u), (v), (w), (x), 39, 56

CSA C662-15 clauses 10.6.1, 10.6.1.2, 10.6.2, 10.7 (class location)

DPR-O s.16 (b)

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 Trans-Northern had in place at the time of the audit.

Trans-Northern's NEB regulated facilities consist of 895 kilometres of ROW in urban and rural areas of Ontario and Quebec. According to its Trans-Northern's Pipeline Integrity Management Standard (PIMS), right of way surveillance is one of the proactive measures Trans-Northern has implemented to address the threat of mechanical damage. In order to monitor its rights of way and conduct inspections to monitor conditions on and near its facilities, Trans-Northern has scheduled various types of pipeline patrols. These activities are described as follows:

- **Ground patrol:** Trans-Northern conducts daily vehicle ground patrol of the ROW in the Greater Toronto Area. These patrols are conducted by a contractor for the Joint Pipeline Group who have shared or adjacent rights of way in urban Toronto where there is frequent third party activity. These inspections include checking fenced facilities for signs of tampering and vandalism. Trans-Northern also conducts a daily patrol of the ROW in Montreal-Nord. These inspections are planned and documented.
- **10 day patrol:** This vehicle patrol is conducted at a minimum of every 10 days of the 17 areas that have been designated as elevated consequence areas (ECAs);
- **Annual line walk:** Trans-Northern conducts an annual line walk from Nanticoke to Montreal including all laterals. These patrols are typically conducted in the Spring and Fall.
- **Aerial Patrol:** Trans-Northern conducts weekly aerial patrols of its ROW by fixed wing aircraft. Until recently, aerial patrol was conducted by a pilot alone who would be accountable for identifying and reporting issues on the ROW. At the time of the audit, Trans-Northern aerial patrol procedure was changing to add an observer on every flight.
- **Cathodic protection survey:** While the scope of this audit is limited to patrol activities, the Board notes that Trans-Northern has scheduled other activities in order to monitor its cathodic protection; it has retained contractors to undertake an annual corrosion survey.
- **Water Crossings / Scour Assessments:** Assessments of river crossings for the effects of scour is monitored through separate ROW monitoring activities. According to the Trans-Northern Pipeline Integrity Management Standard 2014, river crossings are to be inspected on a five year frequency. Trans-Northern provided its latest scour assessment for selected river crossings for review. The report indicates that similar reports for other river crossings in December 2014 and August 2015, the criteria for selection of river was not provided for this audit.

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. In cases where issues relating to unauthorized activities were documented in the reports, the Board noted that Trans-Northern demonstrated that it had a process for reporting, tracking, communicating and resolving these issues using a work order system.

The Board also notes that Trans-Northern is identifying some environmental and integrity issues such as pipeline exposures or vegetation management in its patrol reports. However, despite these issues being noted by patrols, Trans-Northern could not demonstrate that it was consistently tracking these issues to resolution through the work order system or communicating them internally to ensure coordination between the protection programs.

Despite the number of types of patrol activities being conducted, Trans-Northern did not demonstrate that it is evaluating the effectiveness of these activities to verify that they were adequate or effective. This issue is discussed in subsequent sections of this report.

The Board noted several issues with respect to pipeline identification along its ROW. During its review of records, the Board noted instances of signage deficiencies previously noted by Trans-Northern which remained deficient years later. In addition, during the inspections, the Board identified several ROW markers that did not contain any cautionary statement as required by CSA Z662-15 clause 10.5.3.3.

These issues and the specific corrective actions required are further examined in Appendix II.

Conclusion

The audit verified that Trans-Northern is conducting several types of ground and aerial patrol activities. The Board also noted that the patrols identify issues of potential unauthorized activity.

However, the Board found that Trans-Northern did not demonstrate that it had a consistent process for taking corrective action for all reported issues including any environmental or integrity issues identified by patrol activities. Therefore, the Board has determined that Trans-Northern is in non-compliance with OPR s. 6.5(1)(u) as it relates to pipeline patrol activities. As a result, the Board requires that Trans-Northern develop a CAP to address this non-compliance.

In order to ensure that the CAPs related to reporting and tracking of issues noted by patrols are implemented across all of the protection programs, the Board will verify that all issues noted by the various types of ROW surveillance and monitoring (including cathodic protection, and scour assessments) are being tracked and managed to resolution during the CAP review period.

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.

2.2 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.

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

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. At the time of the audit, Trans-Northern did not demonstrate that it has revised its patrol activities to account for the additional requirements outlined in the DPR-O s.16(b).

Conclusion

As it has not developed or implemented a method to monitor lands adjacent to ROWs as required by the DPR-O s. 16(b), the Board has determined that Trans-Northern is in non-compliance with this requirement. As a result, 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)

Trans-Northern's Right of Way Maintenance and Surveillance Procedure includes the list of CSA-Z662-15 conditions to pay attention to during patrols. Through a review of inspection reports, the Board confirmed that inspection reports were being generated after each inspection. However, a review of a sample of ground and aerial inspection reports identified that these reports did not include confirmation that the CSA-Z662-15 clause 10.6.1.1. conditions and Right of Way Maintenance and Surveillance Procedure activities were being monitored or assessed during patrols. The Board noted that the inspection reports did not account for the monitoring of conditions and activities as listed in CSA. Instead these reports stated either "no issues" or listed potential unauthorized activities. The Board is of the view that only reporting what is out of the norm, or by exception, does not typically allow for a demonstration of the ongoing monitoring of developing trends that can affect the safety and operation of the pipeline nor does it confirm with documentation that an assessment of the various potential issues has occurred.

The Board noted that the majority of the ROW that was inspected during the audit was maintained for visibility and appropriate signage present. However, despite being in areas that are patrolled frequently, the Board identified several instances where ROW signage was inadequate. There were locations where signage was not legible, obscured by vegetation, or damaged or missing and therefore did not meet the requirements of CSA Z662-15. In order to promote timely resolution of these non-compliances, they were addressed through the Board's inspection process. However, the Board considers that these deficiencies indicate inconsistent and inadequate implementation of Trans-Northern's Right of Way Maintenance and Surveillance Procedure and Trans-Northern's Pipeline Integrity Management Standard. These deficiencies are an indicator that Trans-Northern has not assessed the effectiveness of these patrols to ensure they are meeting all of the expectations of the legal requirements as well as Trans-Northern's procedures.

Conclusion

Due to the fact that both the aerial and ground patrols report by exception, that is, only note when activity or an issue is present, Trans-Northern could not demonstrate that it is monitoring all the issues as noted in CSA Z662-15 clause 10.6.1.1. As a result, the Board has determined that Trans-Northern 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)

As detailed in section 1.0 of this appendix, Trans-Northern patrols its ROW at scheduled intervals and various means. Trans-Northern provided documentation related to its patrols and ROW maintenance standards. Section 7 of Trans-Northern's Pipeline Integrity Management Standard (PIMS) includes a list of 17 areas that have been designated "elevated consequence areas" based on the potential consequences of an incident at those locations. According to the PIMS Section 7.14.6 Inspection, Testing, Patrol and Monitoring Frequency, these areas are "subject to more rigid operational and pipeline monitoring standards". In fact, "Right of Way" inspection is listed as one of the 9 action categories in place to monitor these areas. Interviews and document review confirmed that these areas are subject to ground patrol at a frequency of a minimum of every 10 days. These areas are also monitored by aerial patrol on a weekly basis.

Although Trans-Northern was able to demonstrate that it has designated certain areas as Elevated Consequence Areas (ECAs) and that this designation had an impact on patrol frequency, Trans-Northern did not provide documented criteria for establishing its frequency of patrols. Without criteria for determining the ECAs, the Board was unable to establish which factors were used to determine "the consequence of a leak" for the ECAs. Further, in its determination of patrol frequency in the absence of criteria, Trans-Northern could not demonstrate that it has considered all of the factors listed in CSA clause 10.6.1.2 which represent inherent hazards that could affect the probability of an incident such as population density or land-use.

Conclusion

Although Trans-Northern demonstrated that it had established a frequency for its patrols, it did not provide its criteria for the determination of frequency and therefore could not demonstrate it was considering all of the factors as required by CSA Z662-15 clause 10.6.1.2. As a result, the Board has determined that Trans-Northern is in non-compliance with this requirement. The Board requires that a CAP be developed to address this non-compliance.

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.

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. In its 30 March 2011 submission to the Board, Trans-Northern reported, that while several specific sections of its pipeline have been surveyed to identify locations where low-risk agricultural crossings may jeopardize the safe and secure operation of its pipeline, it had not conducted an “end to end depth of cover survey” of the pipeline. In interviews, staff indicated that depth of cover was evaluated during maintenance activities or when the pipe was exposed for crossings. Staff also indicated that Trans-Northern will be capturing depth of cover readings in the ESRI database as part of the GIS system that is currently being implemented.

For this audit, Trans-Northern provided its Risk Assessment Worksheet which includes third party strikes, third party damage and ROW encroachments. Although not an identified hazard, Trans-Northern monitors depth of cover when a pipe is exposed during integrity digs, third party crossings and other maintenance activity. Also, Trans-Northern notes instances of exposed pipe discovered during its patrols activities. Upon review of the annual line walk reports, the Board noted instances where sections of exposed pipe were reported, Trans-Northern was not able to demonstrate that it had tracked these issues to resolution. This issue is examined further in Appendix II of this report.

Trans-Northern did not demonstrate that it has a process for proactively monitoring depth of cover on agricultural lands that would enable it to identify areas where low-risk agricultural activity would jeopardize the safety of the pipeline.

Conclusion

Trans-Northern could not demonstrate that it has procedures or patrols to monitor depth of cover to identify areas where low-risk agricultural activities would jeopardize the safety of the pipeline as required by the DPR-O s.7. As a result, Trans-Northern is in non-compliance with this requirement. The Board requires that a CAP be developed to address this non-compliance.

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

Trans-Northern's Emergency Response Plan, Section 8.3 Incident Reporting to the Regulator, outlines its procedure for reporting incidents and unauthorized activities to the Board. Through interviews and record review, the audit verified that Trans-Northern staff and contractors follow this procedure when they discover unauthorized activities on the ROW during patrols.

Trans-Northern was able to demonstrate that it has a process in place to report instances of potential unauthorized activities. It 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.

Trans-Northern's field staff were conducting inspections of its rights of way with aerial, vehicle and foot patrols in accordance with its 2016 Right of Way Maintenance and Surveillance Procedure. Through document and record reviews and interviews in the regions, the Board confirmed that Trans-Northern staff were aware of the inspection and related reporting requirements particularly as they relate to potential mechanical damage from unauthorized third party activities. However, Trans-Northern was not able to provide an assessment of its aerial patrol program which would confirm that this type of inspection meets the intent of the regulatory requirements and considered to be effective.

A review of the aerial patrol reports filed by the pilot indicates that the pilot identifies areas where construction / excavation activity is occurring. In order to test the effectiveness of the particular patrol, Trans-Northern does not advise the pilots of planned activity along the ROW. Record review indicates that where the pilot reports "Ongoing construction near PL", staff in the office review the patrol report and verify with a check mark whether the construction sites are known to Trans-Northern. Once reported to the Board, these hard copy files are then filed electronically or kept in hard copy at the office depending on the region.

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

Expectations: 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 s. 6.2(3)

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 14 April 2015, Trans-Northern Pipelines Inc. (Trans-Northern) submitted written notice to the Board indicating that its President and Chief Executive Officer, John Ferris, had been appointed as the accountable officer. In its submission, Trans-Northern confirmed that its accountable officer has the authority over the human and financial resources required to meet the Board's substantive expectations.

Conclusion:

The audit verified that Trans-Northern has established the role of the Accountable Officer who 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 Z662-15 clause 3.1.2 (a)

NEB Assessment:

As this audit was conducted of the pipeline patrol activities, Trans-Northern provided its Policy on Environment, Health, Safety, Security, Emergency Response and Operational Integrity as signed by the President and CEO dated April 2015 and its Event Reporting Policy as signed by the President and CEO dated July 2015. 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 the protection of people, property, and the environment. Non-retaliation and non-retribution commitments are made to employees and contractors to encourage the reporting of all hazards, potential hazards, incidents and near misses to protect those who lawfully provide information.

The Board also noted that the HSE policy has been integrated by Trans-Northern's employees and contractors when conducting patrols. During the interviews with staff and contractors, they consistently emphasized their personal accountability for public and worker safety 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 Trans-Northern 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 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 sections 6.5 (1)(c), (d),(e), 40, 47, 48

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

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

NEB Assessment:

Identifying Hazards and Potential Hazards and Inventory

Trans-Northern provided a number of documented procedures related to hazard identification for review including:

- Right of Way Maintenance and Surveillance Procedures;
- Event Reporting and Investigation Procedure; and
- Event Reporting Policy.

The *Rights-of-way (ROW) Surveillance Procedure* outlines how hazards and potential hazards are identified through periodic monitoring of the conditions and activities along its right of way through aerial and ground patrols. The procedure makes reference to the various activities and

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

conditions that “shall be given attention” that corresponds with the CSA Z662-11 clause 10.6.1.1. The procedure also lists specific activities and conditions that should be monitored during aerial patrols and foot patrols. It is unclear from the documentation provided if these conditions and activities as identified in the procedures form part of the Trans-Northern inventory of hazards and potential hazards or if they are listed only in the procedures.

Trans-Northern also provided the section of its TNPI Risk High Level Risk Assessment worksheet that applies to its patrols. This spreadsheet includes a static list of identified risks, potential impacts, mitigations in place and the mitigation required. The audit found that Trans-Northern’s worksheet is comprised of high level risk categories such as encroachment and loss of containment due to third party strike. Trans-Northern did not demonstrate that this list was capturing newly identified or specific risks on the ROW from its patrols for evaluation.

Also, although patrols are included in the worksheet as a mitigation or control in place for the identified risk of third party damage, Trans-Northern did not include any details or evaluation criteria that are applied to determine their effectiveness. Statements such as “Consider further controls to protect pipeline” or “No further actions to be taken” were noted. The worksheet also included recommendations to be implemented with no target date assigned. In the Board’s view, these statements do not reflect an adequate assessment of these hazards or the proposed controls.

Companies are required to 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. At the time of the audit, Trans-Northern was using Intelx software which allows its personnel to enter hazards, potential hazards, incidents and near-misses as they are identified. A review of patrol reports indicated that reports of unauthorized activity such as encroachments were being entered into the system from patrol reports. However, the audit found that although some environmental and integrity hazards were being identified by the various patrol activities, they were not being captured and added to the worksheet or the Intelx system. The Board also noted that Trans-Northern did not have procedures to ensure that all identified hazards from the patrols for each region were being entered into Intelx for evaluation and management.

Analysis of Hazards and Potential Hazards

During the audit, Trans-Northern provided documentation demonstrating that it had conducted an analysis of the occurrences of unauthorized activities reported on or near its ROW to senior management. According to the analysis, many of these occurrences were discovered during patrol activities.

However, Trans-Northern did not demonstrate that hazard identification from other protection programs was informing the patrols. For example, although invasive species was identified as an environmental issue on the ROW, Trans-Northern did not demonstrate that its staff or contractors conducting patrols were aware or trained to identify this issue during patrols and report back.

With the exception of hazards related to third party damage discussed above, the Board found no documentation to indicate that all new hazards or potential hazards identified by patrols are being analyzed, communicated or assessed. As a result, the Board requires that Trans-Northern develop a CAP to address this non-compliance. (see section 3.5 of this Report)

Controls

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

Conclusion:

Regarding its patrol activities, Trans-Northern demonstrated that it has established and implemented some aspects of Hazard Identification, Risk Assessment and Controls. Based on the documents provided and interviews with staff and contractors, the Board determined that Trans-Northern focuses its patrol activities on the identification of hazards and potential hazards related to damage prevention and third party activity.

The audit found that other potential hazards that were listed in the ROW procedure were not being adequately accounted for during patrols. In particular, Trans-Northern was not able to demonstrate that its patrols were consistently identifying environmental or integrity-related hazards or potential hazards.

Also, with the exception of damage prevention, Trans-Northern did not demonstrate a fully implemented process for the evaluation of risk as described in the regulations. As a result, the Board finds Trans-Northern in non-compliance with the requirements of NEB OPR sections 6.5(1)(e) and (f) to evaluate and manage risks and develop and implement corresponding controls and requires Trans-Northern develop a CAP to address these deficiencies.

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 sections 6.5(1) (g), (h), (i)

NEB Assessment:

Trans-Northern provided its overarching Operations Excellence Management System (OEMS) document as part of the review. This high level document dated 2015, includes a section titled: Element 3- Legal Requirements and Compliance which includes a description of the processes to monitoring compliance that are to be developed and implemented.

The scope of this audit does not include an evaluation of Trans-Northern's overall compliance monitoring processes. Therefore within the scope of this audit, the Board reviewed the excerpts from Trans-Northern's legal list as it pertains to patrols. For this review, Trans-Northern provided concordance tables for the regulations directly related to the patrol activities. These concordance tables included a breakdown of the legal requirements contained within the OPR and the DPR and include the responsible position and documents impacted by these requirements. The Board notes that the concordance tables alone do not constitute a legal list as required. However, Trans-Northern also provided its 2013 internal audit protocols for review. Developed by one of its owner companies, the protocol was created from a list of legislation provided by Trans-Northern. Upon review of these protocols and considering the level of detail with which they were prepared, the Board is of the view that this protocol was derived using a methodology that demonstrates an acceptable practice for the creation of a legal list. Therefore the Board determined that because Trans-Northern had access to this protocol, it has satisfied the requirements for a legal list given the scope of this audit.

Conclusion:

Trans-Northern demonstrated that it is tracking and listing legal requirements in concordance tables. These tables included the requirements listed in CSA Standards and were linked to the company's written policies, and procedures with respect to patrols. In addition, Trans-Northern demonstrated that it has access to a comprehensive protocol which was applied to its operations during its 2013 internal audit to identify non-compliances. As the compliance monitoring process was out of scope for this audit, the Board did not evaluate its adequacy. However, the Board notes that the protocol originates from a related entity and has been applied to Trans-Northern's operations for its 2013 audit. Therefore, the Board is of the view that if updated and maintained, this protocol would provide Trans-Northern with the basis of a legal list that would meet requirements for monitoring the compliance of patrol activities.

Therefore, 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 2.2 Legal Requirements.

2.3 Goals, Objectives and Targets (GOTs)

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 Z662-15 clause 3.1.2 (h)**

NEB Assessment:

The Board requires the company to document its policies and goals for ensuring its activities are conducted in a manner that ensures the safety and security of the public, workers and pipeline, and the protection of property and the environment.

Trans-Northern's corporate Goals, Objectives and Targets (GOTs) are set annually by the president and then communicated to staff through the performance review. These goals are then cascaded down to the department, leadership and staff levels and include the targets and measures that correspond to their level and duties. During the audit, Trans-Northern demonstrated that its performance management reports illustrate the line of site from corporate to team to each individual's goals and that its goals were linked to the reduction of incidents.

For staff conducting patrols, this line of sight was established from the corporate goal to "Ensure safe and reliable operations" directly to their tasks related to right of way maintenance and monitoring. These goals were reviewed throughout the year as a measure of performance. Although there were no corporate goals specifically related to patrol activities, Trans-Northern was reporting on unauthorized activities.

Conclusion

The audit verified that Trans-Northern has established GOTs in accordance with 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 2.3 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 sections 6. 3, 6.4, 6.5 (c), (j), (k), (l)
CSA Z662-15 3.1.2 (b), (c)

NEB Assessment:

At Trans-Northern, patrol activities for its NEB regulated facilities are the responsibility of the Operations Department, Field Services – East & Product Management. The Manager Field Services East reports to the Senior Manager Operations who reports to the President and CEO. Within the Field Services-East division, the Supervisors are accountable for the patrol activities ROW surveillance related activities in their respective areas. The patrol activities in each area are conducted by selected pipeline technicians. Trans-Northern provided position descriptions for the Supervisor and Pipeline Technician 4. The Board notes that ROW maintenance and patrol duties were documented responsibilities for these positions. Interviews confirmed that staff understood their roles and responsibilities and were aware of the reporting structure.

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. At Trans-Northern, the Senior Manager, Operations is responsible for ensuring that the patrol and ROW maintenance are adequately resourced. Through documentation and interviews, Trans-Northern demonstrated that it includes requirements for its current patrol schedule and related activities into its documented assessment of resources. Trans-Northern provided its assessment of ROW maintenance activity levels relating to its “ask” for another pipeline technician. In addition, Trans-Northern has standing agreements with contractors for its aerial patrols, select

ground patrols as well as supplemental contractors who are brought on during high volumes in order to meet demand and service standards.

Conclusion

The audit verified that Trans-Northern has an Organizational Structure that meets 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 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 sections 39, 6.5(1)(e), (f), (q)
CSA Z662-15 clauses 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, the Board is of the view that Trans-Northern conducts patrol activities as part of its suite of controls for hazards on the ROW.

According to its “Pipeline Integrity Management Standard (PIMS)”, ROW monitoring and surveillance is considered as one of its proactive controls for the threat of third party mechanical damage. Also, in its procedures, Trans-Northern has identified 17 elevated consequence areas throughout its system. According to the PIMS, there are 9 “action categories” that have been applied to pipeline sections situated in Elevated Consequence Area's. Right of Way inspection is listed among the controls that have been implemented for these areas.

As a control measure, Trans-Northern has implemented patrol activities to monitor several types of hazards. During the audit, Trans-Northern was able to demonstrate that it has established and implemented various types of patrol activities. These activities were assessed in Appendix I of this report.

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.

Conclusion

Given the scope of this audit, the Board is of the view that non-compliances identified in other sub-elements and the resulting CAPs will impact the execution of patrol activities. As a result, based on the information reviewed, 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 sections 6.5(1)(c), (d), (f), (t)
CSA Z662-15 clauses 3.1.2 (f)iii, h)vi

NEB Assessment:

Trans-Northern demonstrated through interviews and training records reviewed that its field staff and contractors who conduct surveillance activities are trained and aware of their roles and responsibilities if they encounter an unauthorized activity or other imminent hazards along the ROW during patrols. They are also trained to identify and report upset conditions and intervene if they observe any unsafe work practices occurring around Trans-Northern facilities in order to prevent an upset condition. Trans-Northern has indicated that it has also conducted a full scale emergency exercise and Table Top using scenarios based on the impact of third party damage on the pipeline.

Trans-Northern has indicated that it has established contingency plans in place with respect to patrols due to the types and frequency of patrols implemented.

During the audit, the Board noted procedural deficiencies with respect to the procedures for reporting of “imminent hazards” for its aerial patrols. As this issue was related to the continual improvement of existing procedures, and in order to promote its timely resolution, it was

addressed through the NEB inspection process.

Conclusion

The Board is of the view that the procedural deficiencies relating to the reporting of imminent hazards were addressed prior to the completion of this audit. As a result, 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 s. 6.5(1)(i)

CSA Z662-15 clause 3.1.2 (g)

NEB Assessment

At the time of the audit, Trans-Northern demonstrated through its OEMS Element 7 – Management of Change procedure revision 6 dated July 2016 that it had a fully developed and implemented Management of Change Program that would identify changes that could affect the management of its surveillance activities, including the introduction of new risks, hazards or legal requirements and documenting these changes.

Changes to current procedures are addressed through a change request process. Once updated, the administrator posts the most current version in Intelix with all of the other procedures manuals for each discipline for access and these changes are communicated via email to the affected parties.

In June 2016 the NEB Damage Prevention Regulations (DPR) came into effect. These regulations included provisions directly impacts company's surveillance and monitoring programs. Trans-Northern provided evidence to demonstrate that the corporate MOC process was being triggered for the changes resulting from the DPRs.

Conclusion

The audit verified that Trans-Northern 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 sections 6.5(1)(j), (k), (l), (p), 46
CSA Z662-15 clause 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 the scope of this audit is the patrol activities, the Board focused its assessment of the training program and competency evaluations on the expectations for staff and contractors who conduct patrols.

The Board notes that Trans-Northern employees who conduct patrols are required to participate in selected training and mentoring. During interviews with Trans-Northern employees and contractors, Trans-Northern demonstrated that the practices described in Trans-Northern's documentation were known and understood across the system. Training records for employees who conduct patrol indicate that Trans-Northern has implemented training that relates directly to the ROW Maintenance Procedure. The "Training Guide for Maintain Right of Way" outlines the objectives, learning action, evaluation methods used to train staff for patrol activities.

According to the template provided for ROW maintenance, the evaluation consists largely of mentoring and self-study. Staff competence is reviewed and signed off by a mentor once demonstrated. Records indicate that the ROW maintenance training is taken only once. Trans-Northern did not demonstrate that changes to the hazards, operations procedures or legal requirements do not trigger the requirement for additional training.

With respect to the management of the training and competency requirements of its contract personnel who conduct patrols, Trans-Northern did not demonstrate that it has included these contractors within a contractor management program that includes a process for the evaluation of the contractors' competency nor did Trans-Northern provide evidence of the training, licenses and requirements for contractors. Also, Trans-Northern did not provide records to demonstrate that contract ROW pilots were evaluated as required by Trans-Northern ROW Maintenance and Surveillance Procedure section 3.5.5.1. In addition, at the time of the audit, new aerial patrol spotters were being trained using outdated procedures and were not aware of the current legislation.

The Board also requires companies to have 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 Board included these requirements in its assessment as they pertain to patrols.

During its review of the training for patrols, the Board noted that Trans-Northern has accounted for some hazards in its training program. For example, staff who conduct patrols have the potential to encounter hostile third parties during the performance of patrols. Trans-Northern has provided evidence that it has a Violence in the Workplace Policy in place as required by the Canada Occupational Health and Safety Regulations Part XX. Trans-Northern also provided records demonstrating that its staff who conduct patrols have received Workplace Violence and Harassment training. Trans-Northern provided records demonstrating that contractors receive the Health and Safety Orientation Certificate of training which includes aspect of expected behavior and standards for Trans-Northern health and safety. The audit identified that there was no procedures or awareness provided to the contractors that outlined Trans-Northern's expectations in the event that they encounter hostility during potential interactions with the public or third parties.

During its review of the ROW Maintenance and Surveillance procedures, the Board noted that Trans-Northern identified several potential conditions on and adjacent to the ROW that staff and contractors (including pilots) were expected to report on during patrols. Interviews confirmed that staff and contractors were aware of how to identify construction related or third party excavation activity on or near the ROW and how to report this information.

The Board also noted that the training provided to staff who conduct patrols did not account for all of the responsibilities and expectations outlined in the ROW Surveillance procedures.

Along with third party activity, the procedures include the requirement for staff and contractors to monitor and report on conditions such as “erosion, washout, subsidence, scour, loss of cover, and soil conditions which would endanger the pipeline” as the environmental or integrity related issues. Trans-Northern could not demonstrate that it has developed or provided staff and contractors with the training or awareness that would enable them to identify these issues while on patrol.

Conclusion

While Trans-Northern demonstrated that it has developed and implemented a process for identifying, tracking and managing training, the Board determined that its suite of training is incomplete for staff and contractors involved in patrols. The Board also found that Trans-Northern has not established and implemented a process for identifying and verifying competencies with respect to its patrol activities. As a result, the Board finds Trans-Northern in non-compliance with NEB OPR s. 6.5(1)(k). The Board requires Trans-Northern 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 sections 6.5(l), (m), (q)
CSA Z662-15 clauses 3.1.2d), g)(v)

NEB Assessment:

During the audit, Trans-Northern 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.

Trans-Northern indicated that its primary communication tool for external stakeholders was its website. The website page “Our Commitment” provides external parties with information related to types of patrols it conducts. Trans-Northern advised that it does an annual letter mailout to its landowners with information specific to ROW patrols. In addition, Trans-Northern stated that it contacts directly affected landowners when there is to be brush clearing or maintenance activities on their properties.

At the time of the audit Trans-Northern had identified a formal documented communication plan as an action item for 2016. While it has no formal internal communication plan, Trans-Northern indicated that it communicates legislative changes, information relating to safety, security and protection of environment to its employees and tracks its communication requirements through a

“Stakeholder Map” tracking system. The Board was provided with the following methods and frequency of communication initiatives:

- Emails;
- Unauthorized activities are communicated with field staff and discussed at scheduled management meetings;
- Bi-annual Town Halls;
- Bi-annual Newsletters; and
- Integrity Meetings held 6 times per year.

Trans-Northern 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, with the exception of damage prevention issues, Trans-Northern could not demonstrate that it was communicating the issues noted on patrol to the appropriate protection program to manage and resolve. For example, there were instances of exposed pipe and areas that required brushing identified by the annual line walk. Trans-Northern could not provide records to demonstrate that these issues had been communicated to the Operations group or captured in the IFS system which generate work orders.

Also, Trans-Northern was not able to demonstrate that concerns or issues identified by the protection programs are being communicated to patrols for monitoring. For instance, there was no link between its patrols and its environmental protection program established for the monitoring of any post-construction mitigation or potential encounter with invasive species.

Conclusion

Based on the Board’s evaluation of Trans-Northern’s communication practices against the requirements and the scope of this audit, the Board has determined that Trans-Northern is non-compliant with NEB OPR s. 6.5(1)(m). Trans-Northern 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 sections 6.5(1)(i), (n), (o), 6.5(3)

CSA Z662-15 clause 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. Trans-Northern's document management general requirements are outlined in Section 4.1 of its Operational Excellence Management System (OEMS). Given the scope of this audit, the overall document management process is out of scope for this audit and therefore was not reviewed for its adequacy and effectiveness. During the audit, Trans-Northern provided a demonstration of its document management system, Intalex. This system is used to manage its management systems documentation including its procedures, legal requirements and management of change.

While Trans-Northern's document management process does include requirements for procedure reviews and updates, the Board noted several deficiencies with the implementation of this process Trans-Northern's document control process related to its patrol activities and procedures. During the site inspections, the Board noted that not all documents related to patrols reviewed and updated with current legal requirements. For example, the Board noted that the Right of Way Maintenance and Surveillance Procedures were not updated contained outdated CSA references and had not been revised to reflect the June 2016 requirements from the DPRs.

During interviews and inspections, the Board discovered that the provision of current procedures to contractors was inconsistent. This inconsistency resulted in long time contractors not having the latest versions of the procedures. In addition, the public awareness materials that staff and contractors were providing to stakeholders during patrols were found to be out of date. The Board also noted that every employee and contractor who conducts patrols appears to use a different reporting template which may result in inconsistent reporting from region to region.

Conclusion

Based on the Board's evaluation of Trans-Northern's patrol activities against the requirements, the Board has determined that Trans-Northern is non-compliant with NEB OPR s. 6.5(1)(o). Trans-Northern will have to develop corrective actions to address the described deficiencies.

4.0 CHECKING AND CORRECTIVE ACTION

4.1 Inspection, Measurement and Monitoring

**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 sections 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 Trans-Northern had implemented a procedure for reporting and tracking third party unauthorized activities. Trans-Northern demonstrated that, once notified, field personnel conduct a follow-up investigation on each reported unauthorized activities, to determine if damage to the facilities or environment had occurred.

Trans-Northern demonstrated its Intellex database which was designed to manage events reported based on the Trans-Northern Event Reporting and Investigation Procedure. The Board noted that unauthorized activities were documented in the database.

During the review of this database, the Board noted that Trans-Northern did not demonstrate that it was consistently documenting and investigating issues besides unauthorized activities that were identified during patrol activities, most notably those issues noted during the annual line walk. As discussed in sub-element 3.5 of this report, Trans-Northern did not demonstrate that it has a process to ensure that environmental or integrity issues noted in patrol reports were being documented or communicated to the appropriate group for tracking to resolution.

Trans-Northern discussed the role of its IFS system that it uses to initiate, track and manage work orders including those triggered by issues noted on patrol. Based on its review, the Board found the system was not fully implemented as evidenced by the following observations:

- signage issues noted on patrols that were not entered into IFS and no follow-up was demonstrated;
- issues entered into IFS as a work order that were not tracked or actioned;
- the process for identifying issues from patrols and entering them into IFS varied between the regions;
- lack of consistency regarding which issues get actioned and why; and
- lack of documented procedures describing how accountability for the work order is determined.

Also, Trans-Northern could not demonstrate that it conducts a review of the IFS system and the work orders to ensure that all of the issues, including those issues identified by patrols are properly resolved and closed out in the system.

Trending and Analysis

Given that the scope of this audit is limited to patrols, the Board verified that Trans-Northern was conducting trending and analysis regarding unauthorized activities, including those activities identified by patrol. Trans-Northern provided documentation related to its reporting of unauthorized activities, as well as how they are managed to resolution. It also demonstrated that unauthorized activities are being tracked and incorporated into an annual report.

Conclusion

The Board finds that, aside from the reporting of potential unauthorized activities as described in Appendix I of this report, Trans-Northern did not demonstrate that it has implemented a consistent process for reporting hazards and potential hazards that are identified by patrol activities and tracking them to verify that they have been resolved. As a result, the Board has determined that Trans-Northern is non-compliant with NEB OPR s. 6.5(1)(r). Trans-Northern will have to develop corrective actions to address the described deficiencies.

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:

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

CSA Z662-15 clauses 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.

Internal Audit

The Board reviewed Trans-Northern's 2013 internal audit of its management system and compliance. This audit was conducted using a comprehensive list of legal requirements, including those that directly apply to the expectations and execution of the patrol activities. Upon a review of the findings relating to ROW maintenance, the Board also noted that corrective actions related to patrol activities from the 2013 audit CAP remained outstanding. For example, contractor evaluation of competence and oversight remains an issue in regards to the patrol activities. Also, the 2013 audit identified deficiencies with the implementation of corrective action and follow-up specifically related to issues noted by ROW inspections.

Inspections

Although patrol activities can be considered inspection activities, these activities should also be reviewed as part of a quality assurance program to verify that they are meeting established objectives and to verify that the procedures continue to be fit for purpose. Trans-Northern could not demonstrate that it has conducted any reviews related to evaluating the effectiveness of the patrol activities in meeting its objectives.

Conclusion

Considering the scope of this audit, the Board determined that Trans-Northern has an internal audit scope and schedule that meets Board expectations with regards to patrol activities. However, Trans-Northern did not demonstrate that the corrective actions recommended for the operational areas were applied to the patrol activities. Also, Trans-Northern could not demonstrate that it has conducted any reviews to determine whether its patrol activities are adequate or effective. As a result, the Board has determined that Trans-Northern is non-compliant with NEB OPR Section 6.5(1)(w). The Board requires Trans-Northern to develop a corrective action plan to address the described deficiencies.

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 sections 6.1, 6.5(1)(p), 40, 47, 48
CSA Z662-15 clauses 3.1.2 (e) , 10.4.4.1

NEB Assessment:

Trans-Northern's requirements for records management are outlined in Section 4.1 of its Operational Excellence Management System (OEMS) dated 30 November 2015. The overall document management process is out of scope for this audit and therefore was not reviewed for its adequacy and effectiveness. Also, the TNPI PIMS includes a table that outlines basic records retention criteria.

At the time of the audit, the Board observed that Trans-Northern maintained several databases to manage its documents, records and information that relate to and result from its patrol activities. These records management systems include:

- IFS – This database manages and tracks work orders including those triggered by issues noted on patrols (e.g. sign replacement).
- ESRI – This database is linked to the IFS work orders. It includes the GPS mapping tool capabilities that Trans-Northern is implementing to map activities and issues along its ROW.
- Intalex- This database is used to support its management system in areas such as the management of legal requirements, document control, corrective action tracking and hazard and near miss reporting including the reporting of unauthorized activities.

Trans-Northern demonstrated that its various types of patrol activities are documented in patrol reports. During the audit, the Board noted that each location was managing the reports differently. For example, some of the aerial and ground patrol reports are scanned and kept on a shared drive. In other locations, the aerial patrols were kept at the office in hard copy only. The Board notes that Trans-Northern is in the process of improving its records management and access with the implementation of the ESRI database and its GIS components for tracking and trending issues.

Also, Trans-Northern has not conducted an assessment or review of its records management for patrol records to determine the adequacy and effectiveness of its current practices in meeting the requirements.

Conclusion

Considering the scope of this audit, the Board determined that Trans-Northern has been documenting its patrol activities. However, the Board has determined that Trans-Northern did not demonstrate that it is managing its patrol records in accordance with the requirements. As a result, the Board has determined that Trans-Northern is non-compliant with NEB OPR 6.5 1(p). The Board requires Trans-Northern to develop a corrective action plan to address the described deficiencies.

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 Z662-15 clause 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. Trans-Northern provided its Operations Excellence Management System (OEMS) for review as part of this audit. Given that the scope of this audit is focused solely on patrol activities and its links to the management system, the OEMS was not reviewed or evaluated as part of the current audit.

During this audit, the Board identified several sub-elements of the management system where established links can be demonstrated between the management system and the patrol activities including:

- an HSE policy that reflects the Board's requirements;
- goals, objectives and targets that align with from the President's level to the technician
- an annual report as required by the OPR;
- a compliance audit conducted which included an assessment of aspects of patrol activities; and
- demonstration of reporting regarding unauthorized activities.

Given the variety and frequency of its patrol activities, Trans-Northern appears to rely heavily on patrol activities to identify hazards and potential hazards to its pipelines. Despite this emphasis on ROW monitoring, the Board noted that Trans-Northern Senior Management has failed to demonstrate adequate oversight of these activities to determine their effectiveness. In the Board's view, this lack of oversight has contributed to several issues noted during the audit.

For example:

- corrective actions related to the communication and resolution of issues noted on patrol are only partially implemented, despite having been identified in 2013 by an internal audit;
- signage and ROW maintenance issues were noted during the audit related inspections of areas that are patrolled daily;
- environmental and integrity issues identified by patrol, are not being consistently included in the reporting and monitoring; and
- despite frequency of patrols and the expectations outlined in the procedures, there is no process in place to evaluate patrol activities to ensure their adequacy and effectiveness in meeting the intent of the regulations or Trans-Northern's procedures.

The Board holds Senior Management accountable 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. Accordingly, Senior Management is accountable to provide the direction for the programs and activities and establish the focus for continual improvement and the prioritizing corrective actions from internal audit or compliance activities.

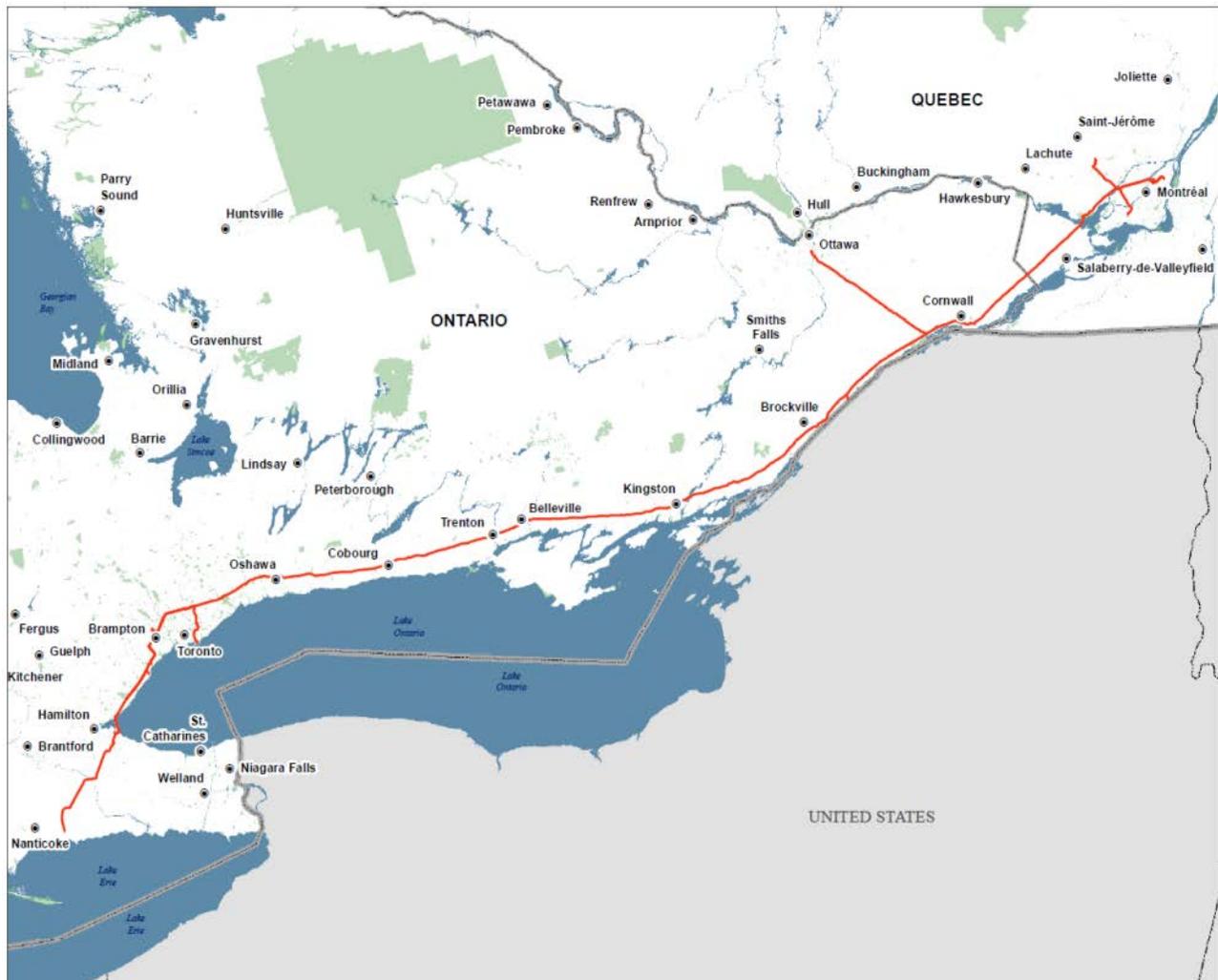
Conclusion

Trans-Northern did not demonstrate that its management review process is adequately ensuring the continual improvement of its patrol activities by failing to require the evaluation of these activities and failing to ensure the resolution of deficiencies related to these activities. As a result, the Board has determined that Trans-Northern is non-compliant with NEB OPR s. 6.5 (1)(x). The Board requires Trans-Northern to develop a corrective action plan to address the described deficiencies.

APPENDIX III
TRANS-NORTHERN PIPELINES INC.
MAP AND SYSTEM DESCRIPTION

Figure 1: Trans-Northern Pipelines Inc.

MAP OF THE NEB REGULATED TRANS NORTHERN SYSTEM



Founded in 1949, Trans-Northern Pipelines Inc. (Trans-Northern) is owned equally by Suncor Energy Inc., Shell Canada Limited and Imperial Oil Limited. It operates an approximately 850 kilometre pipeline system that supplies refined products (gasoline, jet fuel and fuel oil) from refineries in Ontario and Quebec to the Montreal, and Toronto airports as well as major fuel outlets in the Ottawa area.

APPENDIX IV
TRANS-NORTHERN PIPELINES INC.
COMPANY REPRESENTATIVES INTERVIEWED – Pipeline Patrol Audit

Company Representative Interviewed	Job Title
██████████	Manager, Field Services East & Product Movement
██████████	Manager, Regulatory & External Affairs
██████████	Supervisor, Maintenance
████████████████████	Supervisor
██████████	Supervisor, Technical & Maintenance Services
██████████	Pipeline Technician
██████████	Technician
██████████	Pipeline Technician
██████████	Pipeline Technician
██████████	Pipeline Technician
Contractors	Company Name
██████████	Utility Energy Services (Canada) INC
██████████	Utility Energy Services (Canada) INC
██████████	Les Entreprises M. Goudreau

APPENDIX V
TRANS-NORTHERN PIPELINES INC.
DOCUMENTS REVIEWED*

Maintain the Right of Way Training Guide
Final Evaluation for Maintain the Right of Way
Training Guide for perform flight patrol (staff example)
TNPI Pipeline Integrity Management Standard (excerpt p.49-53)
TNPI Pipeline Integrity Management Standard (excerpt p. 71-82)
Trans-Northern Pipelines Inc. Policy on Environment, Health, Safety, Security, Emergency Response and Operational Integrity (April 2015)
Environmental Field Guide (January, 2016)
Trans-Northern Pipelines Inc Risk Assessment Worksheet (August 2015)
TNPI Construction Safety & Environmental Manual (p.30)
2015 Year End Report (Excerpt)
Performance Review example – Leader
2015 Annual Report Summary of the OEMS
2013 Trans-Northern Inc. Compliance and Management System Audit : Compliance with Pipeline Regulatory Requirements and Industry Standards and Conformance to Trans-Northern Integrity Management System (TIMS) Requirements (2013-06-23)
Right of Way Maintenance and Surveillance Procedures (June 2016)
TNPI PLMTM Section 3.6 (January 2007)
Trans-Northern Event Reporting and Investigation (rev. August 2016)
Trans-Northern Management of Change Procedure (rev. July 2016)
Trans-Northern Emergency Response Plan (Appendix K – Overpressure Response) (March 2016)
Trans-Northern Emergency Response Plan – 4.1 General Response Activation (June 2015)
Trans-Northern Emergency Response Plan – 8.3 Reporting to the Regulator (June 2015)
Trans-Northern Operational Excellence Management System (OEMS) (November 2015)
Trans-Northern Contractor Performance Evaluation Report (April 2016)
Requested Headcount (excerpt 2015)
Trans-Northern Elevated Consequence Area Schematic
Intelix, IFS, ESRI summary
Trans-Northern Legal List Damage Prevention Regulations – Obligations of Pipeline Companies (Draft)(undated)
Trans-Northern Legal List Damage Prevention Regulations – Authorizations

* Document titles are shown as presented in the electronic portal from Trans-Northern

Trans-Northern Onshore Pipeline Regulations Concordance (rev. June 2016)
Trans-Northern Organizational Chart (excerpt- patrol related) (printed July 2016)
Trans-Northern Pipelines Inc. Position Description – Supervisor, Maintenance Services (April 2015)
Trans-Northern Pipelines Inc. Position Description – Pipeline Technician 4 (July2015)
Vehicle Patrol PM Action Screen Shot (undated)
Vehicle Patrol Standard Screen Shot (undated)
Violence in the Workplace (Section 6- presentation- undated)
Records
Training Guide for Perform Flight Patrol (Pipeline Technicians) (May2015)
Trans-Northern Goals- Performance Management Supervisor (2016)
Trans-Northern Performance Management – Management Level (2016)
Crossing permit tracking report analysis KPI (August 2016)
Hazard IDs report from IFS (location on Right of Way) (printed Aug 2016)
HS Orientation certificate (ground patrol contractors 2016)
Line walk extract 2015
Line walk extract 2016
Trans-Northern Pipelines – Management of Changes report printed September 2016
Record for Pipeline Tech 2 -Mainline Maintenance – Perform flight patrol
Record for Pipeline Tech 2 – Mainline Maintenance – Part2 (May 2005)
Training Course History - CCOH Violence in the Workplace & Violence and Harassment Policy and Procedure (printed August 2016)
UX Reported list 2015-2016.xlsx
Scour Assessment – 2015
TNPI Test Post and Station Survey – Toronto (2015)
Montreal System Flight Report Aug 2015
Sample of Flight patrol reports Toronto System (2015 and 2016)
Sample Unauthorized Activity reporting and follow-up records
Daily Joint Vehicle Patrol System (sample of reports 2016)
Brampton Flying Club Purchase Order (redacted)
Rectifier Readings (sample reports 2016)
Pipeline Safety in Your Community (brochure)