National Energy Board

Office national de l'énergie

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30 October 2015

Mr. Russell K. Girling
President and Chief Executive Officer
TransCanada PipeLines Limited
450– 1st Street SW
Calgary, AB T2P 5H1
Facsimile 403-920-2200

Dear Mr. Girling:

TransCanada PipeLines Limited (TransCanada)
National Energy Board Report Examining Allegations of TransCanada Non-Compliance with Regulations

The National Energy Board (Board) has completed its Investigation Report in response to allegations of regulatory non-compliance raised by a complainant against construction and maintenance practices at TransCanada.

A draft report documenting the Board's evaluation of the 16 allegations and TransCanada's response to the allegations was provided to TransCanada on 18 September 2015 for review and comment. On 28 September 2015 TransCanada submitted its response.

The Board has considered TransCanada's comments and has made changes to the Investigation Report as it determined to be appropriate.

The Board has enclosed the Investigation Report with this letter. The Board will make the Investigation Report public on the Board's website under "Compliance and Enforcement."

Yours truly,

Original signed by L. George for

Sheri Young
Secretary of the Board

Attachment

National Energy Board | Office national de l'énergie

Investigation under Section 12

of the

National Energy Board Act

In the Matter of:

Allegations raised against TransCanada PipeLines Limited

Report Date: October 2015

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List of Abbreviations and Definitions

APEGA	*Association of Professional Engineers and Geoscientists of Alberta*
CSA	*Canadian Standards Association, Oil and Gas Pipeline Systems, CSA Z662-11*
NDE	*Non-Destructive Examination*
NEB Act	*National Energy Board Act*
OPR	*Onshore Pipeline Regulations*
TSB	*Transportation Safety Board of Canada*
NDE	*Non-Destructive Examination*
Whistleblower	*One who reveals possible wrongdoing within an organization to the public or to those in positions of authority*

Executive Summary

The National Energy Board (Board) has concluded its investigation into 16 third party allegations of regulatory non-compliance made against TransCanada PipeLines Limited (TransCanada). The Board treats all allegations of regulatory non-compliance seriously and responds immediately to allegations of risk to workers, the public or the environment.
Over the course of 2014 and into early 2015, the Board received and responded to 16 allegations made by the third party against TransCanada by way of Whistleblower Reporting http://www.neb-one.gc.ca/cntcts/cntctwhstlblwr-eng.html. In each allegation, the company was accused of failing to abide by regulatory requirements whose failure could have an impact on worker and public safety or environmental protection.

Based on initial information received from the third party and responses from TransCanada, the Board determined that the allegations did not pose immediate risks and a thorough investigation into each allegation began.

During the investigation, the Board considered the evidence presented by the third party and by TransCanada relating to each allegation.

Investigation Objectives

1. Determine the validity of allegations against TransCanada.

2. Evaluate TransCanada's compliance with regulatory requirements where allegations were substantiated.

3. Confirm that the company has taken appropriate measures to ensure worker and public safety and environmental protection related to each allegation.

Investigation Conclusions

Of the 16 allegations made against TransCanada, none were assessed to be an immediate threat to the safety of workers, the public, or the environment. Six of the 16 allegations were partially substantiated. The remaining allegations were not substantiated.

The Board finds that TransCanada has addressed all partially substantiated allegations made by the third party and has taken appropriate corrective actions to ensure worker and public safety and environmental protection.

The Board also finds that there is no reason to issue any enforcement action, such as a safety order, against TransCanada as a result of the six partially substantiated allegations.

Chapter 1

Scope and Objectives of the Investigation under the *National Energy Board Act*

1.1 Scope of the Investigation

The scope of the National Energy Board (Board) investigation into the allegations in this report was determined in accordance with the Board's mandate as set out in the *National Energy Board Act* (NEB Act), subsection 12(1):

> ***12.*** *(1) The Board has full and exclusive jurisdiction to inquire into, hear and determine any matter*
>
> *(*a*) where it appears to the Board that any person has failed to do any act, matter or thing required to be done by this Act or by any regulation, certificate, license or permit, or any order or direction made by the Board, or that any person has done or is doing any act, matter or thing contrary to or in contravention of this Act, or any such regulation, certificate, license, permit, order or direction; or*
>
> *(*b*) where it appears to the Board that the circumstances may require the Board, in the public interest, to make any order or give any direction, leave, sanction or approval that by law it is authorized to make or give, or with respect to any matter, act or thing that by this Act or any such regulation, certificate, license, permit, order or direction is prohibited, sanctioned or required to be done.*

1.2 National Energy Board's Whistleblowing Reporting

This investigative report is a result of complaints brought to the Board's attention through Whistleblower reporting. A whistleblower is a person who reveals possible wrongdoing within an organization to the public or to those in positions of authority.

As stated on the Board's website, the Board takes all reports of non-compliance seriously, and will take enforcement action if it is discovered that regulations are not being followed. To facilitate the reporting of non-compliances the Board accepts comments by mail, phone, and email or through an online comment form at Whistleblower Reporting.

The National Energy Board's top priority is to ensure the safety of workers, the public and the environment and it is imperative that companies follow requirements set out in regulations.

As a federal regulatory agency, the National Energy Board:

a) Assesses the threat level to safety and the environment of all whistleblowing reports;
b) Communicates the Board whistleblowing response procedure to the whistleblower and explains the extent of Board authority to maintain confidentiality;
c) Develops a resolution plan for investigating all whistleblowing reports to verify whether companies are in compliance with Board requirements; and
d) Investigates all whistleblowing reports. Investigation may include some or all of the following actions:
    i) Request and review company Whistleblowing Policy;
    ii) Request and review company internal response to allegations;
    iii) Conduct inspections and additional compliance verification activities;
    iv) Hold meetings with the company;
    v) Evaluate management systems through audit; and
    vi) Other compliance and enforcement actions.

This investigation was conducted to verify the allegations against TransCanada. The investigation included reviews of the company's policy and evidence submitted relating to the specific allegations raised; meetings with TransCanada and, where the allegation was substantiated, requiring TransCanada to take the appropriate corrective actions and/or preventive actions to address the allegation.

1.3 Objectives of the Investigation

In light of the authority of the Board set out under subsection 12(1) of the NEB Act, the objectives of the Board investigation were to:

- Gather evidence related to the allegations;
- Conduct an analysis of the relevant evidence from the complainant and the company;
- Make findings as to the validity of the allegations;
- Determine if corrective action(s) on the part of TransCanada were, or are, required to be undertaken;
- Determine if any preventive action(s) were, or are, required to be taken by TransCanada;
- Determine if future regulatory oversight may be required by the Board; and
- Determine the requirements for any decision(s) or order(s) that the Board could make, as appropriate, to prevent similar situations from occurring.

1.4 Reportable Incidents

1.4.1 Onshore Pipeline Regulations

In describing the circumstances of the allegations in Chapter 2 of this report, the word "incident" is used generically. The generic use of "incident" does not necessarily mean that

the occurrence was reportable to the Board. Section 52 (1) of the *National Energy Board Onshore Pipeline Regulations* (OPR)[1] states,

> 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 is practicable". OPR defines an incident as "an occurrence that results in:
>
> (a) The death of or serious injury to a person;
> (b) A significant adverse effect on the environment;
> (c) An unintended fire or explosion;
> (d) An unintended or uncontained release of LVP hydrocarbons in excess of 1.5m^3;
> (e) An unintended or uncontrolled release of gas or HVP hydrocarbons;
> (f) The operation of a pipeline beyond its design limits as determined under CSA Z662 or CSA Z276 or any operating limits imposed by the Board.

1.4.2 Transportation Safety Board

The Transportation Safety Board (TSB) requires pipeline occurrences to be reported. Subsection 4(1) of the *Transportation Safety Board Regulations*[2] identifies pipeline occurrences. It states:

> **4**(1) The operator of a pipeline must report the following pipeline occurrences to the Board if they result directly from the operation of the pipeline:
>
> (a) a person is killed or sustains a serious injury;
>
> (b) the safe operation of the pipeline is affected by
>
> (i) damage sustained when another object came into contact with it, or
>
> (ii) a fire or explosion or an ignition that is not associated with normal pipeline operations;
>
> (c) an event or an operational malfunction results in
>
> (i) an unintended or uncontrolled release of gas,
>
> (ii) an unintended or uncontrolled release of HVP hydrocarbons,
>
> (iii) an unintended or uncontained release of LVP hydrocarbons in excess of 1.5 m^3, or

[1] *National Energy Board Onshore Pipeline Regulations*, SOR/99-294.
[2] *Transportation Safety Board Regulations*, SOR/2014-37.

(iv) an unintended or uncontrolled release of a commodity other than gas, HVP hydrocarbons or LVP hydrocarbons;

(d) there is a release of a commodity from the line pipe body;

(e) the pipeline is operated beyond design limits or any operating restrictions imposed by the National Energy Board;

(f) the pipeline restricts the safe operation of any mode of transportation;

(g) an unauthorized third party activity within the safety zone poses a threat to the safe operation of the pipeline;

(h) a geotechnical, hydraulic or environmental activity poses a threat to the safe operation of the pipeline;

(i) the operation of a portion of the pipeline is interrupted as a result of a situation or condition that poses a threat to any person, property or the environment; or

(j) an unintended fire or explosion has occurred that poses a threat to any person, property or the environment.

The results listed in Chapter 2 will indicate whether TransCanada was required to report the incident to the National Energy Board and/or the Transportation Safety Board.

1.5 Requirements for Internal Company Reporting[3]

The OPR was revised in 2013. Among the revisions, was clarification regarding the requirements for the internal reporting of hazards. Section 6.3(1)(a) reads:

> The company shall establish documented policies and goals for meeting its obligations under section 6, including (a) a policy for the internal reporting of hazards, potential hazards, incidents and near-misses that includes the conditions under which a person who makes a report will be granted immunity from disciplinary action.

In 2013, the Board conducted an audit of TransCanada's Safety Management[4], Environmental Protection Program[5], Emergency Management[6], Third Party Crossings[7] and Public Awareness Programs[8]. These audits were the first audits conducted pursuant to the 2013 revised OPR. The audits concluded that TransCanada needed to take some corrective actions.

[3] *National Energy Board Onshore Pipeline Regulations*, as amended on 21-3-2013.
[4] Final Audit Report OF-Surv-OpAud-T211-2013-2014 01 of the TransCanada Safety Management Program.
[5] Final Audit Report OF-Surv-OpAud-T211-2013-2014 01 of the TransCanada Environmental Protection Program.
[6] Final Audit Report OF-Surv-OpAud-T211-2013-2014 01 of the TransCanada Emergency Management Program.
[7] Final Audit Report OF-Surv-OpAud-T211-2013-2014 01 of the TransCanada Third Party Crossings Program.
[8] Final Audit Report OF-Surv-OpAud-T211-2013-2014 01 of the TransCanada Public Awareness Program.

This report is prepared outside of the OPR audit process and does not comment on TransCanada's corrective action. The Board also makes no comment on whether any of the allegations investigated in this report should be covered by TransCanada's internal company reporting. All allegations brought to the NEB are given a full investigation by the NEB.

1.6 Whistleblower & Reportable Incidents

The National Energy Board receives and reviews all whistleblower complaints, whether or not they are considered to be reportable to a regulatory agency and whether or not they fall within the strict definitions of the regulations. Whistleblower reports may be broader than those types of events reportable as incidents according to each Act and/or Regulation and may include: non-compliances with a Board order, condition or certificate or releases or spills below thresholds noted above, for example.

1.7 Process used for this investigation

Each investigation is customized according to the circumstances surrounding the complaint. However there are certain activities which occur with each complaint. These are:

- complaint or report is made;
- complainant formalizes allegation or complaint and provides evidence to support complaint (at this point the Board takes ownership of the complaint and process);
- a risk/threat assessment is completed which will drive the actions to be taken and the urgency of investigation;
- investigation activity occurs;
- results are documented; and
- complaint process is completed (can include publication of results of investigation).

The investigation process followed leading up to this report included each of these steps. There were a number of meetings and conversations between the complainant and Board staff over several months before the allegations were finalized and the supporting evidence was submitted. Throughout, the risk/threat assessment indicated that urgent action was not required. The Board met with TransCanada to discuss the allegations and requested specific evidence from TransCanada with which to conduct its investigation in late February 2015. The evidence from TransCanada was received in late March 2015. Over the next few months, the Board was in contact with TransCanada several times to clarify evidence submitted or to request additional evidence. The Board then prepared a draft report and provided it to TransCanada for comment in accordance with the tenets of procedural fairness and natural justice. TransCanada's comments are reflected in this report.

Chapter 2

Results of the Investigation under the NEB Act

This Chapter presents the results of the investigation under the NEB Act by:

1. Stating the allegations;
2. Assessing the evidence submitted by the complainant and the company;
3. Making conclusive findings as to the validity of the allegation;
4. Determining if corrective action(s) on the part of TransCanada were, or are, required to be undertaken;
5. Determining if any preventive action(s) on the part of TransCanada were, or are, required to be taken;
6. Stating the Conclusions of the Board, with respect to:
   - Additional regulatory oversight required;
   - Decision(s) or order(s) to prevent similar situations from occurring; and
   - Conclusions on the resolution and status of the allegation.

   Changes to the National Energy Board regulatory program as a result of this investigation can be found in chapter 3.

For each of the allegations, this investigation has taken into account its potential threat. That is, a substantiated, serious allegation that may have an immediate impact on the workers, the public or the environment is considered to be the highest level of threat. If the allegation was assessed to be at this high level, the Board would take immediate action to reduce or eliminate the threat. This action could include an Inspection Officer Order, Board Order or other regulatory action. None of the allegations investigated were determined to have an immediate impact on the workers, the public or the environment.

Some of the allegations were partially substantiated, but were determined to have no immediate impact to the workers, the public or the environment. While considering each of these allegations and their levels of threat, the Board considered whether TransCanada had taken the appropriate corrective actions and/or preventive actions to adequately address each of them.

There are three combinations of allegations and corrective and/or preventive actions that are represented by the following color coded tables:

Case 1. Serious Allegation Substantiated.

This case represents the highest level of substantiated allegation and the three possible levels of corrective and/or preventive actions by TransCanada.

Serious Allegation Substantiated	Serious Allegation Substantiated	Serious Allegation Substantiated
No corrective actions and/or preventive actions by TransCanada	Some corrective actions and/or preventive actions by TransCanada	Adequate corrective actions and/or preventive actions by TransCanada

Case 2. No Immediate Threat; Allegation Partially Substantiated.

A second case is when the allegation does not pose an immediate threat to workers, the public or the environment, or when the allegation is only partially substantiated, but with the same potential impact. This case is represented by the following color coded table:

No Immediate Threat Allegation Partially Substantiated	No Immediate Threat Allegation Partially Substantiated	No Immediate Threat Allegation Partially Substantiated
No corrective and/or preventive actions by TransCanada	Some corrective actions and/or preventive actions by TransCanada	Adequate corrective actions and/or preventive actions by TransCanada

Case 3. Allegation Unsubstantiated.

The third case is where the allegation is unsubstantiated and therefore poses no threat to workers, the public or the environment. In this case, corrective actions and/or Preventive actions would not be required. This case is represented by the following color coded table:

Allegation Unsubstantiated
No corrective actions and/or preventive actions Required

The objective of this investigation is to confirm that no immediate threat exists to workers, the public or the environment related to the allegation, and also to confirm that TransCanada has taken the appropriate corrective and preventive actions to address the issues related to the allegation. The Board can then conclude that the allegation has been “Resolved and Closed.” This means that for Case 1, Case 2 and Case 3, all of the corrective actions and/or preventive action sections in the color coded tables are “green” and no further actions are required.

2.1 Allegation #1: Mechanical Damage to the Pipeline

2.1.1 Statement of the allegation

The allegation was that mechanical damage to a pipeline was caused by a back-hoe hitting a pipeline. Although TransCanada's internal safety procedures following a pipe strike were adhered to, the allegation was that the pipeline was not examined completely to determine if there was mechanical damage because it had already been partially backfilled. Although the damaged area was recoated, it was alleged that it was improperly repaired with a coating type that was not compatible with the existing coating. Additionally, it was alleged that there was secondary damage to the pipeline, coincident with this excavation, which was not properly examined.

2.1.2 Assessment of the evidence

The incident is alleged to have occurred on the TransCanada NPS 42 Edson Mainline Loop pipeline on 18 May 2013 at 13:30. TransCanada stated that the pipeline was depressured at the time of the repair to ensure the safety of the workers.

TransCanada was not required to report[9] this to the Board for two reasons:

1. The incident did not constitute the operation of a pipeline beyond its design limits as determined under CSA Z662 or CSA Z276 or any operating limits imposed by the Board; and
2. No leak had occurred because the integrity of the pipeline had not been compromised.

In its response to this allegation, TransCanada provided evidence that:

- TransCanada was aware of the back-hoe contact with the pipeline referred to in the allegation.
- At the time of the incident, TransCanada investigated it, assessed both the pipeline and coating damage and repaired the coating.
- TransCanada recorded the incident in its Incident and Issue Tracking (IIT) system (#256887) on 19 May 2013.
- Pipe damage was assessed by a third-party non-destructive examination (NDE) contractor (6 June 2013) using magnetic particle inspection (MPI) over the area of the pipeline that was potentially affected by the pipeline strike.
- The NDE contractor concluded from the MPI that there were no indications of mechanical damage to the pipe.

[9] Refer to section 1.4, Reportable Incidents

- The pipeline coating repairs were performed in accordance with TransCanada's Engineering Procedure TEP-COAT-TRANS (Item ID 007720708).
- TransCanada used Kema 250 moldable sealant to complete the repair. This is a common coating repair practice in industry.
- On 17 June 2013 TransCanada issued the final Incident Investigation Report for the NPS 42 Edson Mainline Loop HydroTest Project (IIT #256887).
- On 9 July 2013, the incident, root causes and planned corrective actions were reviewed by TransCanada's Operations and Engineering senior leadership team.
- On 17 July 2013, TransCanada's Corporate Health, Safety and Environment Committee reviewed and approved the same incident information.

In addition, TransCanada said that the back-hoe operator, who was a TransCanada employee, advised it in March 2014, approximately 10 months after the initial pipeline strike in May 2013, that there were was a second potential pipeline strike at that time which had not been investigated. The back-hoe operator did not enter the second strike in TransCanada's IIT system. TransCanada has an Incident Management Policy that requires its personnel to report all incidents regardless of severity into its incident tracking system. In addition, TransCanada's Excavation Procedure (Section 5.0 - Documentation/Reporting Requirements) states that "Damage to pipelines or coating resulting from excavation must be reported in Incident and Issue Tracking as per the Incident Management Classification guide."

TransCanada conducted an internal review of the original incident and re-excavated the pipeline in May 2014. It also conducted MPI and shearwave ultrasonic testing on the girth welds and associated long seam welds. The investigative dig confirmed that there was a 3" by 3" (76 mm by 76 mm) area of unrepaired coating damage as indicated in the photo provided by the complainant.

TransCanada could not conclusively determine the cause of the coating damage, but believed that it may have been caused by the hydro-vacing activity during the original excavation conducted on 1 June 2013. Based on the location and morphology of the coating damage and the fact that there was no mechanical damage to the pipeline, TransCanada concluded that the damage was not caused by the back-hoe bucket during the pipeline strike incident. As part of the second investigation, all coating that was removed was recoated with liquid epoxy due to the larger area to be recoated. TransCanada stated that this is a common and industry acceptable coating repair practice.

2.1.3 Findings as to the allegation

The Board finds that this allegation was partially substantiated in that a pipeline strike occurred. Only the external coating was damaged, not the pipeline itself. The evidence confirmed that the pipeline was adequately inspected for mechanical damage and that the coating was repaired in accordance with TransCanada's internal procedures, using a methodology that is an industry acceptable practice.

The pipeline strike is attributed to the area of the excavation being one of congested underground piping. The pipeline that was struck was not located during the search for all underground facilities prior to the excavation. While the company appeared to be following its standard daylighting procedures with respect to the excavation, failure to accurately locate the crossover pipeline contributed to the back-hoe excavator strike.

TransCanada's Incident Investigation Report (Doc ID #003787167) was reviewed to determine if the pipeline strike incident was thoroughly investigated. The report detailed the chronological series of events; relevant observations; conclusions on contributing cause(s); recommendations for action(s) and sign off for completion of the recommended corrective and preventive actions.

This allegation was partially substantiated and corresponds to a Case 2 scenario.

2.1.4 Corrective actions taken, or required to be taken

TransCanada had taken appropriate corrective actions for the original pipeline strike by recording the incident in its internal IIT system; investigating the incident; determining that there was damage to the coating only and not to the pipeline; and repairing the coating damage.

With respect to the subsequent allegation that there had been a secondary pipeline strike, the coating damage that was found in May 2014 did not appear in TransCanada's daily status report of the project as it was only brought to the attention of senior management approximately a year later. However, when the back-hoe operator informed TransCanada that there had been a secondary pipeline strike, TransCanada took appropriate corrective actions by re-excavating the original pipeline; determining that there was no mechanical damage to the pipeline; and assessing the original coating repair.

The corrective actions taken by TransCanada were appropriate and no further corrective actions are required.

2.1.5 Preventive actions taken, or required to be taken

TransCanada has addressed the incident as described in section 2.1.4 and TransCanada has documented the incident in its internal IIT system. It is apparent that in this instance a crossover connection belonging to TransCanada was not properly identified and located. TransCanada has existing procedures for locating and excavating pipeline sites (i.e. ground disturbance) which include verification of surface and underground facilities. This includes all utilities, all TransCanada and foreign pipelines that may or may not be located by surveys, drawings (alignment sheets or isometrics) or previous ground disturbances in the current excavation site. TransCanada provided evidence (Incident Investigation Report 17 June 2013 (Document ID# 003787167) that a root cause analysis was performed following the incident, which documented the causal factors contributing to the event as well as having identified corrective and preventive actions to be taken. The results of its investigation were reviewed and approved by TransCanada senior leadership and the Corporate Health, Safety and Environment Committee. At the time of this report, the majority of the Preventive Actions have been completed and signed off by the accountable TransCanada staff.

The Preventive Actions taken by TransCanada are appropriate and no further Preventive Actions are required by TransCanada.

2.1.6 Conclusions of the Board

The Board conducts inspections as part of its annual compliance verification program. Companies notify the Board of upcoming pipeline excavations and these are considered in the planning of the compliance verification program. As a result, Board Inspection Officers may be present at these pipeline excavations. Board inspectors may perform additional checks for potential mechanical damage to a pipeline from 1st, 2nd and 3rd party personnel conducting excavations as well as ensuring that companies strictly follow their pipeline locating and daylighting procedures.

The Board concludes that there are no further Board actions required.

The Board concludes that this allegation has been resolved and closed.

2.2 Allegation #2: Unsuccessful and/or Altered Hydrotest

2.2.1 Statement of the allegation

This allegation is that a flanged connection that was leaking during a hydrotest was not repaired, nor was the hydrotest stopped; therefore, according to the allegation, a successful hydrotest could not have been achieved. It was also alleged that that the records may have been manipulated to show a successful hydrotest.

2.2.2 Assessment of the evidence

There was a minor water leak from a 36" auxiliary flanged connection during a hydrotest of TransCanada's NPS 42 Edson Mainline loop on 16 July 2013. The hydrotest started at 09:30. At 13:30, TransCanada field personnel estimated it to be one drop of hydrotest water every five seconds. TransCanada's engineering team assessed the leak as negligible and approved proceeding provided that if a successful hydrotest could not be completed, the flange would be repaired and that the hydrotest restarted. TransCanada's Project Manager, Construction Manager and a management representative were notified of the decision.

TransCanada submitted evidence that a successful hydrotest had been completed in the form of a mainline pressure test report; recorder calibration certificate; yield plot summary; and the hydrotest pressure recording. Additionally, TransCanada submitted its internal procedure, TES-HYDRO-HT4, *Hydrostatic Test Specification for Integrity Testing of Existing Pipelines (CDN)* that refers to the requirements of the OPR and CSA Z662-11 in its regulations, codes and standards.

The allegation appears to be premised on the assumption that any leak during a hydrotest invalidates the test. This is not the case.

The requirements of CSA Z662-11, Clause 8, Pressure Testing include:

- a company must conduct a strength test followed by a leak test (Clause 8.7.1.1);
- pressures are dependent on the service fluid and class location and are specified in Clause 8.7.6.1 and Table 8.1 of the standard;
- if a rupture occurs during a pressure test, then the rupture must be repaired and the pressure test repeated (Clause 8.9):
- the repair action taken and the results rupture investigation must be recorded; and
- if leaks occur during strength tests and the required strength test pressure cannot be maintained, the leak must be repaired and the strength test repeated (Clause 8.9).

The key concept for Clause 8.9 is “pressure cannot be maintained.” This means that if a minor leak occurs during either a strength test or a leak test, but the required test pressure can be maintained for the required duration of the test, then the pressure test is acceptable.

2.2.3 Findings as to the allegation

The Board finds that the relevant sections of the *Onshore Pipeline Regulation*, sections 23 and 25, had been adhered to, based on the evidence submitted by TransCanada. CSA Z662-11, clause 8.7.1, Strength and Leak Tests, and Table 8.1 specify the test pressures and the duration of the tests as well as the measurement and record requirements. Clause 8.7.7.5 states that for each test section, records shall be prepared to give the location, pressure details, and cause of any leak, rupture, or other failure in the test section. The description of any repair action taken and the results and recommendations of the investigation must be recorded. TransCanada submitted evidence that the requirements of CSA Z662-11, clause 8.7.7.5 were met.

Additional evidence submitted by TransCanada confirms that a successful hydrotest had been accomplished for the pipeline segment referred to in the allegation. After receiving the allegation through the Board, TransCanada had a second professional engineer review the original hydrotest results. In a document submitted by TransCanada, this engineer concluded that the original hydrotest was successful and had been conducted in accordance with the regulations and with TransCanada’s internal specifications and procedures. The Board finds that TransCanada complied with the requirements and achieved a successful hydrotest on the segment in question. In addition, the leaking 36” auxiliary flanged connection, which was not an integral part of the NPS 42 Edson Mainline Loop, was repaired prior to putting the Edson Mainline Loop back into service after the hydrotest.

The complainant did not provide evidence that the hydrotest records were altered to show a successful hydrotest. This appears to be speculation to explain the test being accepted despite the leak. In any event, the pressure test reports, the pressure chart and the hydrotest procedure were all signed and dated by a professional engineer registered with the Association of Professional Engineers and Geoscientists of Alberta (APEGA). The Board finds that TransCanada did not alter or falsify the hydrotest results.

The allegation was not substantiated and corresponds to a Case 3 scenario.

2.2.4 Corrective actions taken, or required to be taken

No corrective actions are required by TransCanada.

2.2.5 Preventive actions taken, or required to be taken

No preventive actions are required by TransCanada.

2.2.6 Conclusions of the Board

The Board concludes that there are no requirements for additional oversight by the Board.

The Board concludes that there are no further Board actions required.

The Board concludes that this allegation has been resolved and closed.

2.3 Allegation #3: Exposed, Cracked Pipe

2.3.1 Statement of the allegation

This allegation was that a section of TransCanada pipe had uplifted and buckled and had been exposed in this state for approximately one year. Photographs provided to the Board showed the buckle and what appeared to be an axially orientated crack along the toe of the long seam. In one photograph, the crack appeared to be large, but it could not be determined if the crack was leaking.

It was alleged that TransCanada was aware of the exposed pipe, but left it exposed for approximately one year before conducting a repair. Additionally, it was alleged that there was no fencing surrounding the exposed pipe area to protect the public in case of a leak or rupture.

2.3.2 Assessment of the evidence

This allegation pertains to exposed pipe identified on TransCanada's NPS 30 Paul Lake Crossover pipeline at N 55^{o} 17' 52.1400" and W 113^{o} 41' 41.9400".

Key events included:

- A TransCanada aerial pipeline patrol report for a patrol conducted 2 July 2012 indicated that the exposed pipe was identified and photographed, showing the extent of exposure and that there was no buckle.
- TransCanada completed an entry into its Issue and Incident Tracking (IIT) System (#237300).
- On 12 July 2012, a representative of TransCanada's Regulatory Compliance team reviewed the information and completed the Regulatory Checklist, which indicated that the event was not reportable.
- On 14 November 2012, a routine TransCanada aerial pipeline patrol again observed the exposed pipe. The length of exposed pipe did not appear to have changed since the initial aerial patrol report in July 2012 and no buckle was observed.
- On 8 July 2013 at 14:00 hours, a TransCanada technician at the site observed the exposed and now buckled pipe. After consulting the TransCanada Pipeline Integrity group, it was decided to isolate the pipeline section and blow it down (depressurize) immediately.
- On 8 July 2013 at approximately 16:00 hours, the Transportation Safety Board was notified of the incident.

Other information:

- The patrol aircraft was equipped with gas detection capabilities.
- Reports stated that there were no indications of leaks on the pipeline.
- The exposed pipe was not an incident nor a pipeline occurrence that was reportable to the Board or the Transportation Safety Board.
- There was no release to the environment, no self-imposed pressure restriction or an emergency shut down due to integrity concerns.
- An assessment of the pipe exposure was completed and documented within the IIT system.
- There was no observation of a buckle in the pipe until the July 2013 check.
- The exposure was assessed to have been caused by a combination of muskeg soil and wet seasonal conditions.
- TransCanada determined that no further integrity assessment was required in 2012. The information gathered by TransCanada regional personnel was reviewed by its technical support team and the geotechnical engineering team.
- TransCanada provided the Board with a copy of a Preliminary Incident Report (PIR) dated 11 July 2013 that it submitted to the TSB.
- The PIR stated that TransCanada took corrective actions of isolating the affected section of the pipeline, blowing it down (depressurize) the section, repairing the pipeline by replacing the exposed, buckled section of pipe.
- TransCanada also had initiated an investigation into the cause of the incident.
- In December 2013, a third-party independent engineering firm completed a metallurgical examination of the buckled pipe. The report stated that cracking of the thermally-cured external epoxy coating had occurred. Shallow-depth ductile fissures were observed on the wrinkle crest of the weld toes; however, cross-sectioning of the pipe wall confirmed that no leak had occurred.

Fencing the site:

TransCanada's Pipeline Right of Way Procedure Section 4.2 discusses pipeline depth of cover (i.e. low depth of cover or pipe exposure). In the Minimum Cover requirements sub-section, when deficiencies are detected, "The region shall install temporary protection such as warning signs, fencing, flagging, etc. as required."

Temporary protection was not installed because TransCanada regional personnel determined that the risk of mechanical damage to the pipe was low because the exposed site was located in a remote, unpopulated area, and vegetative growth limited the potential for vehicular traffic. The site is fly-in access only and when the repair was conducted in 2013, equipment had to be flown in due to the muskeg conditions in the area.

2.3.3 Findings as to the allegation

The Board finds:

- TransCanada was compliant with OPR section 52(1) and TSB 4(1);
- TransCanada was compliant with CSA Z662-11, Clause 3.3;
- TransCanada was compliant with OPR Section 6.5(1); and
- The allegation was partially substantiated because of an occurrence of exposed pipe.

This allegation was partially substantiated and corresponds to a Case 2 scenario.

2.3.4 Corrective actions taken, or required to be taken

TransCanada had taken the appropriate corrective actions for the exposed pipe and that no further corrective actions are required by TransCanada.

2.3.5 Preventive actions taken, or required to be taken

No preventive actions are required by TransCanada.

2.3.6 Conclusions of the Board

The Board concludes that there are no requirements for additional oversight by the Board.

The Board concludes that there are no further Board actions required.

The Board concludes that this allegation has been resolved and closed.

2.4 Allegation #4: Inadequate Pipeline Depth of Cover

2.4.1 Statement of the allegation

This allegation is that there was a pipeline location that had a very low depth of cover. It was further alleged that TransCanada may have simply placed soil over the low cover area rather than lowering the pipe.

2.4.2 Assessment of the evidence

This allegation pertains to the NPS 8 Medicine Hat Lateral Loop pipeline located in the Medicine Hat South Meter Station. The low depth of cover was discovered during a hydro-vac pipeline exposure procedure that was conducted 7 September 2013.

In response to this allegation, TransCanada submitted documents, records and a timeline of events relevant to the allegation. The events are:

- 20 June 2013, site survey and stake-out report completed by a third-party contractor at the Medicine Hat South Meter Station.
- 7 September 2013, hydro-vac verification of all buried pipelines in the area. Low depth of cover was discovered for the NPS 8 Medicine Hat Lateral Loop pipeline. Fencing was installed around the site.
- 8 September 2013, TransCanada personnel entered the incident into its Incident and Issue Tracking System (#266016). Low pipeline depth of cover is considered to be an incident (within TransCanada's IIT definitions).
- 2 December 2013, backfill material was brought to the site as part of the post-project activities.
- 10 March 2015, TransCanada is made aware of this allegation. TransCanada personnel returned to the Medicine Hat South Meter Station and measured the depth of cover of all pipelines in the safe work area where the hydro-vac work was conducted. The depth of cover of the NPS 8 Medicine Hat Lateral Loop pipeline was measured to be between 0.45m and 0.50m over a length of 20m to 25m in an unused, fenced pasture area.
- TransCanada stated that it will continue to monitor the depth of cover at the Medicine Hat South Meter Station.

The requirements for depth of cover are specified for the design phase (CSA Z662-11, clause 4, Design) of a pipeline. In CSA Z662-11, clause 4.11, Cover and Clearance, the NPS 8 Medicine Hat Lateral Loop pipeline would have required a depth of cover of 0.6m. CSA Z662-11, clause 6.2.6.2 states that during installation of the pipeline, ditch depths shall be sufficient to ensure that the applicable depth of cover specified in Clause 4.11 can be achieved. Other than during the design and initial installation of the pipeline, CSA does not address requirements for maintaining the depth of cover during the life of the pipeline.

In a general sense, OPR section 6.5 (1) (e) requires companies to: identify the hazards and potential hazards; assess the risk associated with those hazards; and implement controls to prevent, manage and mitigate those hazards. TransCanada has recognized the low depth of cover as a hazard, has assessed the consequence of the hazard to be low because the site was in an unused, fenced in pasture area and has mitigated the risk by installing fencing to secure the site.

2.4.3 Findings as to the allegation

The Board finds that TransCanada is compliant with the codes and standards relevant to pipeline depth of cover.

CSA Z662-11, Clause 4.11 Cover and Clearance, does not specifically address the requirements to maintain the depth of cover during the life of the pipeline. However, OPR paragraphs 6.5 (1)(c) and (f) require companies to identify all hazards, such as low depth of cover during operation, and to manage and mitigate those hazards.

TransCanada performs depth of cover surveys and risk assessments, where appropriate, to identify and mitigate the hazards associated with low depth of cover.

The Board finds that adding additional cover versus lowering the pipeline, especially in cases where the pipeline is located in a low risk environment with respect to potential 3rd party damage, is an acceptable industry practice.

This allegation was not substantiated and corresponds to a Case 3 scenario.

2.4.4 Corrective actions taken, or required to be taken

The corrective actions taken by TransCanada have addressed the issue of depth of cover and no further corrective actions are required to be taken by TransCanada.

2.4.5 Preventive actions taken, or required to be taken

No preventive actions, other than continue to monitor the depth of cover at this site, are required by TransCanada.

2.4.6 Conclusions of the Board

The Board concludes that there are no requirements for additional oversight by the Board.

The Board concludes that there are no further Board actions required.

The Board concludes that this allegation has been resolved and closed.

2.5 Allegation #5: Uncontrolled and Uncontained Blowdown of Liquids during a Pigging Operation

2.5.1 Statement of the allegation

This allegation is that during a pigging activity, liquids that were associated with the activity were not controlled and contained and instead were "blown" on and off of the right of way. It was alleged that the landowner at the pigging site became aware of this contamination and spoke with the Company who subsequently cleaned up the contaminated soil.

2.5.2 Assessment of the evidence

This allegation pertains to a job site for the NPS 42 Edson Mainline Loop on the north side of the Red Deer River that occurred in July 2013. In its response to this allegation, TransCanada stated that a small amount of hydrotest water, estimated to be approximately 20 litres (0.02 m^3), was released onto the right of way during the course of the James River hydrotest.

During the final dewatering of the pipeline after a hydrotest, a low density polyethylene cleaning pig was pushed through the pipeline with air from a low pressure air compressor. The low pressure air exited the pipeline at vents located near the test head.

The alleged contaminated soil was located directly below the test head and occurred when the test head was cut off to allow for the removal of the pig. When the pig was removed, hydrotest water trapped behind it leaked onto the ground. The TransCanada operations crew noted the hydrotest water release but did not record it in the IIT because it was not a reportable incident. Approximately one month later, a landowner brought the release to TransCanada's attention.

TransCanada stated:

- that clean up and reclamation of the site was conducted in accordance with TransCanada's Release and Spill Response Procedure (Doc ID 003671958), which references the NEB Remediation Process Guide;
- it collected and had a third-party, independent laboratory analyze three soil samples to show that none of the environmentally relevant parameters were present in concentrations above the Canadian Council of Ministers of the Environment (CCME) Canada-Wide Standards for Petroleum Hydrocarbons (PHC) in soil;
- on 05 September 2013, TransCanada sent a written notification to the National Energy Board pursuant to the Remediation Process Guide communicating the details of the release, the remediation completed and assurance of compliance with the CCME PHC environmental guidelines; and

- on 20 September 2013 TransCanada responded to a follow up Information Request from an Board Environmental Officer to close the file.

As described in the Introduction of this report, a reportable liquids release must contain hydrocarbons and must be greater than 1.5 m^3 (1,500 litres). This release was hydrotest water with a volume of 20 litres, and therefore not reportable.

The National Energy Board's Remediation Process Guide, Section 5.7 Contamination Scenarios and Expected Outcomes, states that:

> a company whose liquid release that is not reportable, that is not likely to adversely affect the environment or that is contained within its property must … record details of the release as a performance indicator and clean up any contaminants. If the contaminant is within a facility and there is no risk of migration off site then ongoing monitoring may be a long term strategy.

This release meets the criteria for the remediation scenario quoted above.

2.5.3 Findings as to the allegation

The Board finds that the release of liquids from the pigging operation on the NPS 42 Edson Mainline Loop that occurred in July 2013 was not a reportable incident. While not being reportable, the National Energy Board has expectations of remediation as per its Remediation Process Guide, Section 5.7. TransCanada adhered to the Guide and to its internal Release and Spill Response Procedure. TransCanada submitted evidence that it met the requirements of the Canadian Council of Ministers of the Environment (CCME) Canada-Wide Standards for Petroleum Hydrocarbons (PHC) in soil.

With respect to the allegation that release was blown off the right of way, the documents and records submitted by TransCanada confirmed that the release did not result from a "blow-off" and was contained within the right of way. The release consisted of approximately 20 liters of hydrotest water. Remediation of the right of way met the requirements of TransCanada's Environmental Protection Plan for the Pipeline Maintenance Program.

This allegation was not substantiated and corresponds to a Case 3 scenario.

2.5.4 Corrective actions taken, or required to be taken

The corrective actions taken by TransCanada have addressed the issues of the liquid release and no further corrective actions are required.

2.5.5 Preventive actions taken, or required to be taken

No preventive actions are required by TransCanada.

2.5.6 Conclusions of the Board

The Board concludes that there are no requirements for additional oversight by the Board.

The Board concludes that there are no further Board actions required.

The Board concludes that this allegation has been resolved and closed.

2.6 Allegation #6: Inappropriate Use of Mitre Bends and Pipe Supports

2.6.1 Statement of the allegation

This allegation is that TransCanada used pipe supports (mitre bends and sandbags) where piles or concrete sleepers were needed and that this practice may have damaged the pipeline coating.

2.6.2 Assessment of the evidence

This allegation pertains to pipeline repair work on the North Central Corridor Loop in October and November 2013. In its response to the allegation, TransCanada stated that it used skids and sandbags to temporarily support the pipe during construction and that this is a common industry practice, which is in compliance with its internal specification and pipe design standards.

TransCanada submitted that:

- its specification TES-PROJ-COM (EDMS #005974567) provides the minimum requirements for temporary pipe support spacing, material selection and compaction of backfill; and
- section 7.2, of TransCanada's specification allows sandbags, skids, soil plugs and continuous soil support.

CSA Z662-11 interpretation on the requirements:

- CSA Z662-11 is silent about the use of these practices.
- CSA Z662-11, clause 4.9.2, Supports and Braces, states that supports shall be designed to support the pipe without causing excessive local stresses in the pipe and without imposing excessive axial or lateral friction forces that can preclude the desired freedom of movement; and
- while clause 4.9.2 is referring to permanent pipe supports, the concept of minimizing excessive forces still applies directionally to temporary pipe supports.

The requirements and limitations for field welds to create bends and elbows in steel piping are stated in CSA Z662-15 clause 6.2.3.

If the welds are greater than 3 degrees, they are referred to as mitred bends. CSA does not allow mitred bends to be used and requires that deflections and bends in excess of 3 degrees have pipe specifically manufactured for that purpose.

CSA does not define a term for deflections of up to 3 degrees in the welded joints. For the purposes of this report these are referred to as "deflection welds".

CSA requirements and company practices regarding the use of mitre bends, are addressed in the discussion of Allegation #7. In this allegation, TransCanada submitted evidence that individual mitre bends in excess of 3 degrees were not used. In a photograph submitted by TransCanada, two deflection welds less than 3 degrees were used to achieve alignment in the repair section, and were not in close proximity to each other.

The Board notes that the deliberate use of multiple deflection welds in close proximity, each less than 3 degrees, in lieu of using a manufactured pipe bend is not considered to be a recommended industry practice because it defeats the intent of the CSA standard. The effect of the CSA standard is to prevent structural discontinuities that may be adversely affected by thermal stresses and/or cyclic service stresses.

With respect to the allegation that damage to the pipeline coating may have been caused by the temporary pipe supports, TransCanada submitted two coating inspection reports for the west and east side river repairs. The inspection reports show that:

- In accordance with TransCanada's construction procedures, the integrity of the external pipeline coating was verified following the installation with an electronic coating verification meter, the use of which is known as jeeping;
- the inspections were conducted by qualified third-party contractors; and
- TransCanada repaired any minor coating holidays before the pipeline was backfilled.

2.6.3 Findings as to the allegation

The Board finds that:

- TransCanada's procedures for using skids and sandbags for temporary pipe support were in accordance with its internal procedures and industry accepted practices; and
- TransCanada did not use individual mitre bends in excess of 3 degrees.

The Board notes that TransCanada did use two deflection welds less than 3 degrees to achieve pipe alignment. The two deflection welds were not in close proximity to each other. While the practice of using deflection welds is not specifically addressed in TransCanada's internal procedures, welding inspectors would consult with Engineering on a project-by-project basis for the acceptability if deflection welds were considered for a repair.

The Board finds that in this instance, TransCanada is compliant with CSA Z662-11, clause 6.2.3(g). The Board also notes that TransCanada inspected the pipeline external coating for damage after installation and before backfilling. Minor coating holidays that were detected, were repaired.

This allegation was not substantiated and corresponds to a Case 3 scenario.

2.6.4 Corrective actions taken, or required to be taken

No corrective actions are required by TransCanada.

2.6.5 Preventive actions taken, or required to be taken

TransCanada has taken preventive actions to ensure that, for future repair projects, field personnel are aware of TransCanada's accepted repair practices. TransCanada has drafted an Engineering Procedure that provides guidance on how to measure and perform welds when a deflection is necessary for field fit up. It also provides guidance on the quantity and minimum spacing requirements of consecutive deflections and includes the provision for determining when engineering consultation is required. The document clearly forbids utilizing deflections over three degrees (i.e. mitre bends). It also forbids the use of deflection welds as a replacement for proper use of fittings or field bends. The document states that a series of deflection welds cannot be used to circumvent the three degree maximum field bend requirement so that the pipeline repairs meet both the letter and intent of CSA Z662-11, clause 6.2.3(g). There are no further preventive actions required by TransCanada.

2.6.6 Conclusions of the Board

The National Energy Board conducts inspections as part of its annual compliance verification program. Companies notify the Board of upcoming pipeline excavations and/or repairs and these are considered in the planning of the compliance verification program. As a result, Board Inspection Officers may be present at these pipeline excavations and/or repairs. Board inspectors may perform additional checks for the use of deflection welds to correct for misalignment. Such cases should be signed off by a Professional Engineer. The Board Inspector may also ensure that mitre bends are not being used as a substitute for pre-

fabricated bends or field bends in future inspections of TransCanada’s pipeline repairs and/or replacements.

The Board concludes that there are no further Board actions required.

The Board concludes that this allegation has been resolved and closed.

2.7 Allegation #7: Inappropriate Use of Mitre Bends

2.7.1 Statement of the allegation

The allegation is that mitre bends were used in a series of sequential pipe bends in lieu of insertion of a properly designed fabricated bend or cold-bending the pipe on site. It was further alleged that up to five deflections on each side of a watercourse crossing were required to align the pipes and make them fit.

2.7.2 Assessment of the evidence

This allegation is related to repair activities that occurred 17 October 2013 on TransCanada's North Central Corridor Loop pipeline. In its response to the allegation, TransCanada submitted its welding specification (TES-WELD-PL) for welding of pipelines and tie-ins. This specification includes section 8.7 a), Alignment and Fit-up, which states that mitre bends shall not be used, and that deflections up to 3 degrees caused by misalignment are not considered to be mitre bends. TransCanada's specification is in accordance with CSA Z-662-11, clause 6.2.3 (g).

CSA Z662-11, clause 6.2.3 (g) states that mitre bends shall not be used, but the note in the standard pertaining to this clause states that deflections up to 3 degrees caused by misalignment are not considered to be mitre bends.

On 25 February 2015, TransCanada performed an assessment of the pipeline repairs that had been made to the North Central Corridor Loop in 2013 (the subject of this allegation). The assessment included review of 16 tie-in repair welds. The results of the assessment indicated that on this repair project mitre bends were not used at any of the repair locations. Further, the results stated that the largest deflection reported by construction records, welding records and in line inspection results was 1 degree. The assessment was signed and stamped by a professional engineer registered with APEGA.

2.7.3 Findings as to the allegation

The Board finds that TransCanada's pipeline repair of the North Central Corridor Loop in 2013 complied with its internal specification and met the requirements of CSA Z-662-11, clause 6.2.3 (g). Mitre bends, as defined by CSA, were not used by TransCanada in this pipeline repair project.

This allegation was not substantiated and corresponds to a Case 3 scenario.

2.7.4 Corrective actions taken, or required to be taken

No corrective actions are required by TransCanada.

2.7.5 Preventive actions taken, or required to be taken

No preventive actions are required by TransCanada.

2.7.6 Conclusions of the Board

The Board concludes that there are no requirements for additional oversight by the Board.

The Board concludes that there are no further Board actions required.

The Board concludes that this allegation has been resolved and closed.

2.8 Allegation #8: Incompetent Welding Contractor and Welding Inspector's Competency.

2.8.1 Statement of the allegation.

This allegation is that an incompetent welder was on site. The allegation is that two welders (for subsequent reference, Welders #1 and #2) were welding a tie-in. Welder #1 was having difficulty welding; therefore, Welder #2 was helping Welder #1 to weld by completing the welds. The allegation is questioning how Welder #1 had passed the company's qualification test to be able to weld on the project. Subsequent to this complaint, the welders were removed from the project.

The allegation also indicates that it was observed that the welding inspector was taking welding parameters on the wrong welding cables. This was alleged to have been pointed out to the welding inspector. The allegation is that concerns were also raised about the welding inspector's competency with the job supervisor.

2.8.2 Assessment of the evidence

This allegation pertains to a job site for the NPS 42 Edson Mainline at the James River hydrotest final tie-ins at the block valve on the south side of the Red Deer River that occurred in August 2013.

In its response to the allegations, TransCanada:

- stated that Welder #1 was fully qualified and possessed ASME Section IX certification #18019 with an expiration date of 8 August 2014;
- submitted the welder qualification records for both welders;
- recorded the welding qualifications on TransCanada's CSA Z662 Welder Qualification Form TEF-WELD-QUA-CSA and submitted copies of both welders' qualification certificates;
- submitted records (Welding Inspector's Daily Reports, Reports #1 to #61 for Project Number 2208704 from 14 May 2013 to 31 August 2013) to show that all welds on the project that were completed by Welder #1 were qualified; and
- stated that the Daily Reports also indicated that all welds were completed in accordance with TransCanada's specifications. (TES-WELD-PL/TES-WELD-AS).

With respect to the allegations that the welders were removed from the project, TransCanada stated that:

- Welder #1's productivity (i.e. speed of welding) was less than optimal, so a business decision was made to discontinue use of the welder's services solely on those grounds;
- when Welder #1 was observed requiring assistance from Welder #2, the situation was raised with TransCanada's Materials Engineering team who contacted the contractor's manager;
- a decision was made not to allow Welder #1 to weld at TransCanada's facilities; and
- Welder #1 was informed of this decision and both Welder #1 and Welder #2 decided to leave together.

With respect to a welding inspector allegedly taking welding parameters on the wrong welding cables, TransCanada stated that in this instance, the welding inspector made an honest mistake. The inspector had the correct equipment for taking weld parameters and was applying the correct process for taking the parameters, but accidentally plugged the equipment into a different welding machine. There were two welding trucks on site with separate welding machines that were parked next to each other. The cables from the two machines were strung out into the ditch and mixed together.

The inspector accidentally plugged into a welding machine that was not operational at the time. TransCanada further stated that weld parameters were taken correctly before and after this case, and the values obtained confirmed that welding on site was within the heat input ranges required by the welding procedures. In addition, TransCanada submitted evidence of the welding inspector's qualifications.

2.8.3 Findings as to the allegation

The Board finds that both welders on the job site for the NPS 42 Edson Mainline at the James River hydrotest final tie-ins occurring in August 2013 were fully qualified to conduct the welding work and were not required to leave the site for that reason. The welders left the site for reasons not relevant to their qualifications.

The welding inspector's taking welding parameters on the wrong welding cables was because of an isolated mistake due to the close proximity of two welding machine cables. The incident was corrected and weld parameters were taken before and after this case. The welding inspector was confirmed to be fully qualified to perform his duties.

This allegation was partially substantiated and corresponds to a Case 2 scenario.

2.8.4 Corrective actions taken, or required to be taken

The corrective actions taken by TransCanada at the time of the allegation addressed the issues and no further corrective actions are required.

2.8.5 Preventive actions taken, or required to be taken

No preventive actions are required by TransCanada.

2.8.6 Conclusions of the Board

The Board concludes that there are no requirements for additional oversight by the Board.

The Board concludes that there are no further Board actions required.

The Board concludes that this allegation has been resolved and closed.

2.9 Allegation #9: Inappropriate Welding of Appurtenances

2.9.1 Statement of the allegation

The allegation is that welders were being asked by TransCanada to weld appurtenances, such as weldolets, onto fittings, contrary to TransCanada's company procedures.

2.9.2 Assessment of the evidence

This allegation pertains to installation of a weldolet installed on a fitting on a pig launcher barrel for Line 5, Station 30 that occurred in July 2014. In response to this allegation, TransCanada stated that it has been installing weldolets on pig launching barrels since the mid-1990s to allow for the use of the latest in-line inspection (ILI) tools. The newer generation ILI tools are typically much longer than the older generation tools that were used when the pigging barrels were constructed in 1960s to 1980s and therefore require additional fittings in the pig barrels.

TransCanada submitted that:

- its Engineering Standard (ES-8375) covering the installation of weldolet type branch connections which describes the welding and alignment procedures and refers to Engineering Standard ES-8475 for welding procedures and Engineering Standard ES-4780 for location criteria for the welded branch connections on fittings;
- CSA Z662-11, allows companies to weld fittings onto pipe if they use an appropriate welding procedure and appropriate branch connections;
- CSA Z245.11, Steel Fittings, requires companies to comply with the requirements related to welding, post weld heat treatment and Non-Destructive Examination (NDE) inspection requirements;
- the *Onshore Pipeline Regulations*, section 16 Joining Program, states that a company shall develop a joining program with respect of the joining of pipe and the components to be used in the pipeline and shall submit it to the Board when required to do so;
- the *Onshore Pipeline Regulations*, section 17 Non-Destructive Examination, addresses the NDE requirements for circumferential welds joining the pipeline segments versus welding appurtenances;
- an NDE report performed by a qualified third-party contractor who conducted magnetic particle inspections (MPI) and ultrasonic scans (UT) of the two 50.8 mm weldolets installed on the MLV 30-5 Station in Rapid City, Manitoba, the site of the allegation indicated no concerns;
- both weldolet welds were visually inspected for a proper weld profile and were found to be acceptable; and

- an Engineering Memo dated 24 September 2014 that provided internal clarity and understanding of the practices and procedures for future weldolet installations.

2.9.3 Findings as to the allegation

The Board finds that TransCanada's procedures for installing welded appurtenances, and specifically weldolets, are in accordance with its procedures and which are consistent with CSA standards and *Onshore Pipeline Regulations*.

This allegation was not substantiated and corresponds to a Case 3 scenario.

2.9.4 Corrective actions taken, or required to be taken

No corrective actions are required by TransCanada.

2.9.5 Preventive actions taken, or required to be taken

No preventive actions are required by TransCanada.

2.9.6 Conclusions of the Board

The Board concludes that there are no requirements for additional oversight by the Board.

The Board concludes that there are no further Board actions required.

The Board concludes that this allegation has been resolved and closed.

2.10 Allegation #10: Inappropriate Use of Multiple Mitre Bends

2.10.1 Statement of the allegation

This allegation is that when work was done on the Cutbank project (between Grande Prairie and Grand Cache, Alberta) in the summer of 2014, that TransCanada used a series of deflections to complete the installation of a launcher and receiver. The allegation is that use of these deflections – cutting small pieces of pipe to fit into a curve instead of using a large piece of bended pipe – would put extra stress levels on the line, which puts the pipe at risk. The allegation is that the mitre bend shown in a photograph supplied to the Board was 5 degrees whereas the guidance given in the note attached to CSA Z662-11 specifies a limit of 3 degrees.

2.10.2 Assessment of the evidence

This allegation pertains to planned construction activities conducted in June 2014 on the NPS 16 Cutbank River Lateral pipeline, between Grande Prairie and Grand Cache, Alberta. The project involved installing new pig launcher and receiver assemblies for in-line inspection tools.

In response to this allegation, TransCanada stated that no mitred bends were installed during construction of the pigging assemblies and all welds were made in compliance with CSA Z662-11.

TransCanada's welding specification, TES-WELD-PL, Welding of Pipelines and Tie-Ins (ID 003670960) states, in Section 5:

> Welding shall be performed in accordance with the:
>
> a) Applicable requirements of CSA Z662 and any amendment, supplement, or errata (subsequent changes) issued by CSA;
> b) Additional requirements of this Specification;
> c) Company and jurisdictional regulatory requirements for Environment, Occupational Health and Safety; and
> d) Project-specific requirements.

In preparing its response to this allegation, TransCanada reviewed several internal sources of information, which were submitted to the National Energy Board as evidence of compliance with CSA Z662-11. The information submitted and TransCanada statements are as follows:

- TransCanada submitted detailed as-built drawings of the launcher and receiver sites, including the results of a third-party survey (submitted record);

- A pre-fabricated, three-degree over bend (i.e. a bend made in the pipe that is convex - low at the ends and high in the middle) was installed between welds #CR-19 and #CR-20;
- Deflections on the launcher assembly exist at four welds (three on the downstream and one on the upstream piping) made between June 5 and June 8, 2014;
- These were field welds to connect the new launcher system to the existing Cutbank River Lateral pipeline: Weld #CR-19 connecting one side of the pre-fabricated overbend had a deflection of 3.0 degrees;
- Existence of the deflection is documented in the Daily Project Status Report Summary (submitted record) of June 6, 2014;
- The 3.0 degree deflection is confirmed by the Welding Inspector's Daily Report of June 6, 2014 (submitted record, identified by report date);
- The 3.0 degree deflection was also confirmed by post-construction in-line inspection results (submitted record identified as GWD ID 190);
- Weld #CR-20 had a deflection of 1.8 degrees;
- Existence of the deflection is documented in the Daily Project Status Report Summary (submitted record) of June 7, 2014 and is characterized as a "minor deflection" in the Welding Inspector's Daily Report of June 7, 2014 (submitted record, identified by report date);
- The 1.8 degree deflection was confirmed by post-construction in-line inspection (submitted record, identified as GWD ID 180);
- Weld #CR-21 is a deflection of 1.2 degrees;
- Existence of the deflection is documented in the Daily Project Status Report Summary (submitted record) of June 8, 2014;
- The 1.2 degree deflection is confirmed by the Welding Inspector's Daily Report of June 8, 2014 (submitted record), identified by report date;
- Based on correlation of the weld to in-line inspection results, the deflection actually exists at #CR-21 and not #CR-22);
- The 1.2 degree deflection was also confirmed by post-construction in-line inspection results (submitted record, identified as GWD ID 170);
- TransCanada was aware of another deflection installed upstream of the launcher assembly;
- Records indicate a deflection was installed on June 5, 2014;
- On that date two welds were completed (Weld #CR-12 CO and Weld #CR-17);
- Since these welds are upstream of the launcher system, the deflection cannot be confirmed by in-line inspection;
- High-resolution photographs were taken of the welds during construction;
- No detectable deflection can be visually observed;
- Photographs of these welds were shown in a submitted record;

- All welds were inspected and accepted by non-destructive examination in accordance with the requirements of CSA Z662-11 and TransCanada's requirements (submitted document);
- The procedure used to prepare the deflections was shown in a submitted document; and
- A review of the receiver assembly's construction records confirmed that mitre bends or deflections were not installed.

The Board examined the submitted documents and records to corroborate TransCanada's statements and found that the evidence verified the statements.

2.10.3 Findings as to the allegation

The Board finds that the allegation of improper use of mitre bends on the NPS 16 Cutbank River Lateral pipeline project was not substantiated. TransCanada submitted evidence verifying it had installed deflection welds that were in compliance with CSA Z662-11, Clause 6.2.3 (g), which allows deflections up to 3 degrees before they are considered to be miter bends.

The Board notes, as stated in the allegation, that the practice of using deflection welds in close proximity may put the pipeline at risk. Since this practice was not employed by TransCanada in the NPS 16 Cutbank River Lateral pipeline project, it is immaterial to this allegation.

This allegation was not substantiated and corresponds to a Case 3 scenario.

2.10.4 Corrective actions taken, or required to be taken

No corrective actions are required by TransCanada.

2.10.5 Preventive actions taken, or required to be taken

No preventive actions are required by TransCanada.

2.10.6 Conclusions of the Board

The Board concludes that there are no requirements for additional oversight by the Board.

The Board concludes that there are no further Board actions required.

The Board concludes that this allegation has been resolved and closed.

2.11 Allegation #11: Inappropriate Use of a Mitre Bend >3 Degrees

2.11.1 Statement of the allegation

This allegation is that the mitre bend tie-in weld (deflection) on the Grande Prairie Mainline as shown in a photograph submitted, has a five degree mitre bend deflection (whereas the guidance given in the note attached to CSA Z662-11 specifies a limit of three degrees).

2.11.2 Assessment of the evidence

This allegation pertains to planned maintenance activities on the NPS 30 Grande Prairie Mainline Loop in June 2014. In response to this allegation, TransCanada stated that during the maintenance activities, a two-degree deflection weld was installed at the location shown in the photograph. The weld was made in accordance with CSA Z662-11 and TransCanada's welding specifications, was fully inspected, and passed inspection.

In its detailed response, TransCanada provided the following statements, which explain the maintenance activities and refer to documents and/or records submitted as evidence:

- TransCanada submitted a photograph of the NPS 30 Grande Prairie Mainline Loop pipeline in Alberta taken in early June 2014;
- The site was identified as GWD 15700 in TransCanada's project documentation;
- The maintenance activities at site involved cutting out a 50 m section of pipe and welding in new, pre-tested pipe as part of TransCanada's corrosion management program;
- The photograph was taken following completion of tie-in welding of the new pipe and prior to weld coating;
- A weld in the pipeline located directly under the canopy structure was observed in the photograph;
- This weld contains a two-degree deflection;
- In addition, the section of pipe downstream of the weld (i.e. towards the observer) contains a four-degree overbend that was planned and pre-fabricated specifically for the project;
- TransCanada also located additional photographs of the pipe from different angles;
- These photographs were submitted with weld numbers annotated to help compare to details in the as-built diagram submitted;
- The weld containing the two-degree deflection is FW-2;
- TransCanada stated it had determined the two-degree angle of deflection by the following:

1. TransCanada's Daily Construction Report of May 30, 2014 (submitted record) documents the need for a “2 to 3 degree deflection at this area" to properly align the new section of pipe; and
2. At the time of pipe fit-up in May 2014, a welder measured the deflection angle at FW-2 to ensure it did not exceed the amount allowable prior to welding. The angle measured by the welder was 2 degrees. The welder has provided a statement confirming his measurement (submitted record).

- The four degree overbend was fabricated in advance for the project and was required to replace an existing overbend in the pipe that was being cut out;
- The vendor-supplied drawing shows details of the bend that was supplied to TransCanada (submitted record);
- Photographs of the existing overbend in the pipe prior to cut out were submitted;
- The two-degree deflection at FW-2 was made to properly align the adjoining sections of pipe for welding; and
- All welds on the Grande Prairie Mainline Loop at GWD 15700 were inspected and accepted by non-destructive examination in accordance with the requirements of CSA Z662-11 and TransCanada's requirements (submitted document).

2.11.3 Findings as to the allegation

The Board finds that the allegation of improper use of mitre bends (>3 degrees) on the NPS 30 Grande Prairie Mainline Loop pipeline project was not substantiated. TransCanada submitted documented evidence verifying it had installed deflection welds that were in compliance with CSA Z662-11, Clause 6.2.3 (g), which allows deflections to 3 degrees before they are considered to be mitre bends.

By way of explanation of the fabricated overbend of 4 degrees, which was not the subject of the allegation, CSA Z662-11, Clause 6.2.3 allows for steel piping, changes in direction may be made by the use of bends or elbows, or both, subject to limitations. Since this overbend is not a mitre bend, it can be greater than 3 degrees.

This allegation was not substantiated and corresponds to a Case 3 scenario.

2.11.4 Corrective actions taken, or required to be taken

No corrective actions are required by TransCanada.

2.11.5 Preventive actions taken, or required to be taken

No preventive actions are required by TransCanada.

2.11.6 Conclusions of the Board

The Board concludes that there are no requirements for additional oversight by the Board.

The Board concludes that no further Board actions are required.

The Board concludes that this allegation has been resolved and closed.

2.12 Allegation #12: Improper Exposing of In-Service Pipelines

2.12.1 Statement of the allegation

This allegation is that TransCanada did not properly expose an in-service pipeline prior to excavation. Specifically, while TransCanada has a procedure to expose the pipeline using either a hydro-vac or manual digging with shovels before power equipment is allowed to excavate, there was an instance where a backhoe was improperly used.

2.12.2 Assessment of the evidence

This allegation pertains to the work that was performed between January and March, 2014 on the North Central Corridor Loop pipeline. In its response to this allegation, TransCanada stated that it had used mechanically assisted hand excavation throughout this project and that this method is specified in its Excavation Procedure (Doc ID 003672343) and Figure 6 contained within this procedure, that was submitted as evidence.

In accordance with the Excavation Procedure, Excavation Checklists were completed. Two checklists were submitted as evidence: Dig #2 at 5-87-25-W4 on 2014/01/23 and Dig Site #8 on 2014/02/05. Both of these checklists included questions pertaining to the excavation procedure:

- "Has the buried facility being excavated been located and hand excavated (or hydro-vac) at sufficient intervals to confirm its location and alignment?" Both dig site checklists had a "Yes" checked off.
- "Is it understood that at all times during the mechanical excavation the top and side of the facility being excavated must be kept visible?" Both dig site checklists had a "Yes" checked off.

Evidence that hydro-vacs were used for the project was submitted via vendor invoice records. A third-party vendor submitted two invoices: the first dated February 24, 2014 for Work Order #107402 and the second dated February 25, 2014 for Work Order #107402. The second invoice indicated that TransCanada was invoiced for 10 hours of hydro-vac services at the site in question.

As part of the excavation project scope, TransCanada performed a non-destructive examination of each pipeline elbow following excavation. The NDE reports for the North Central Corridor Loop (NPS 36) Buffalo Creek East Station Elbows Investigation that were submitted by TransCanada confirmed that no damage had occurred during the excavation.

2.12.3 Findings as to the allegation

The Board finds that TransCanada is compliant with its internal excavation procedures for using mechanically assisted hand excavation methods. Evidence submitted by TransCanada verified that the site had used hydro-vacs prior to mechanical excavation. Non-destructive examination reports confirmed that no damage had occurred at the excavation sites due to mechanical damage.

This allegation was not substantiated and corresponds to a Case 3 scenario.

2.12.4 Corrective actions taken, or required to be taken

No corrective actions are required by TransCanada.

2.12.5 Preventive actions taken, or required to be taken

No preventive actions are required by TransCanada.

2.12.6 Conclusions of the Board

The Board concludes that there are no requirements for additional oversight by the Board.

The Board concludes that there are no further Board actions required.

The Board concludes that this allegation has been resolved and closed.

2.13 Allegation #13: Improper Torqueing of Flange Bolts

2.13.1 Statement of the allegation

This allegation is that bolts on flanges were not torqued correctly, and in some cases, it was identified that the torque was seven times over the torque specification. It is further alleged that a contract worker had a finger pinched between the flanges when he was working on the bolted connections.

2.13.2 Assessment of the evidence

This allegation pertains to TransCanada's NPS 42 Edson Mainline Loop hydrotest project conducted in 2013. In response to this allegation, TransCanada submitted documents and records and a timeline of events relevant to the allegation. The events are summarized as follows:

- 27 June 2013, a contractor tightened the flange bolts using a hydraulic wrench. While performing this work, the contractor pinched a finger. Following this incident, operations at the site were immediately shut down and a safety investigation was started. TransCanada personnel entered this incident into its Incident and Issue Tracking System (#259566) to internally report the incident. As explained earlier in section 1.4.1 of this report, this minor injury to a worker does not constitute a reportable incident under OPR section 52 (1).
- 28 June 2013, following the incident, the contractor completed an Accident / Incident Report for Job #6486 containing the details of the incident, which was shared with TransCanada representatives after completion. The immediate cause(s) of the incident were determined to be miscommunication and loss of direct line of sight of worker's hands. The corrective action(s) were to review the findings of the investigation corporately; create and distribute additional procedures specific to tool use; and develop and distribute a Safety Alert.
- The contractor's incident report confirmed that the workers had a TransCanada Work Permit for the task, had completed a TransCanada Project Emergency Response Plan (ERP) and Job Safety Analysis (JSA) for the task, as well as having reviewed the TransCanada Operating Procedure (TOP) for Flange Bold Tightening and the ENERPAC Air-Hydraulic Torque Wrench Instruction Sheet. Further evidence from the contractor's incident report indicates that the contractor had mistakenly set a value of 6,000 ft-lbs for the initial torque run, which is approximately 1.5 times the torque value as specified in the TransCanada Flange Bolt Tightening Procedure.
- 30 June 2013, during the incident investigation it was alleged that the temporary blind flanges (being installed for the hydrotest) were not installed correctly. The contractor proceeded to remove the flanges and it was discovered that they had been over-tightened.

It is estimated that the contractor had over-tightened the flange bolts by 1.5 times the required torque value.

- TransCanada submitted its Flange Bolt and Tightening Procedure (Doc ID 003863194). Appendix C of the standard specifies torque values of between 2,615 and 3,930 ft-lbs for an NPS 30 ANSI 600# flange. Appendix C torque values are based on ASME PCC-1-2010 (Guidelines for Pressure Boundary Bolted Flange Joint Assembly), Appendix K.
- Section 4.7 Hydraulic or Pneumatic Torque Wrench, details the torqueing sequence to be:

> initially set the torque wrench to 25% of the final required torque value; increase torque wrench to 50% of the final required torque value and repeat the torque pattern; and increase the torque wrench setting to 100% of the final required torque value and repeat torque pattern

- A daily progress report submitted by TransCanada (ED40-ED10 Hydrotest) for 1 July 2013indicated that new gaskets, nuts and bolts were installed at the sites in question to correct the original installation of blind flanges.

2.13.3 Findings as to the allegation

The Board finds that there was an incident of over-torqueing of flange bolts that resulted in bolts being torqued by approximately 1.5 times the specified value. Further, it is apparent from the contractor's incident report that by setting the initial torque value incorrectly to 6,000 ft-lbs, the TransCanada Flange Bolt and Tightening procedure was not followed.

The allegation that the flange bolts were over-torqued seven times over the torque specification was not substantiated.

The Board also finds that there was an incident of a worker injury resulting from work performed on the bolted connections. This was not an incident reportable to the National Energy Board however it was documented in TransCanada's IIT system and in a formal contractor incident report.

This allegation was partially substantiated and corresponds to a Case 2 scenario.

2.13.4 Corrective actions taken, or required to be taken

The corrective actions taken by TransCanada at the time of the allegation have addressed the issue of over-torqueing flange bolts and no further corrective actions are required.

2.13.5 Preventive actions taken, or required to be taken

The preventive actions taken by TransCanada (reviewing the findings of the investigation corporately; creating and distributing additional procedures specific to tool use; and developing and distributing a Safety Alert) should be augmented by TransCanada increasing its oversight of workers who use powerful hydraulic or pneumatic tools. This oversight is intended to ensure that the workers fully understand and comply with the written procedures of both TransCanada and the tool manufacturer. Since torqueing of flange bolts is a common practice in the pipeline industry, TransCanada should be alert to the potential for this type of injury to occur while workers are completing this task.

2.13.6 Conclusions of the Board

The National Energy Board conducts inspections as part of its annual compliance verification program. Companies notify the Board of upcoming pipeline excavations and/or repairs and these are considered in the planning of the compliance verification program. As a result, Board Inspection Officers may be present at these pipeline excavations and/or repairs. Board inspectors may perform additional verifications of the training and competency of workers using power equipment in its future inspections of TransCanada.

The Board concludes that there are no further Board actions required.

The Board concludes that this allegation has been resolved and closed.

2.14 Allegation #14: Contamination of Trees with Fluids from a Block Valve Blow-Down

2.14.1 Statement of the allegation

This allegation is that after the North Central Corridor rupture, the crew blew out water from the pipeline block valve with gas. This configuration of the piping was such that the water and gas mixture were directed into the trees. Depending on the cleanliness of the line, this fluid mixture may have potentially contaminated the surrounding soil and trees. This activity was performed under the direct supervision of TransCanada project supervisors.

2.14.2 Assessment of the evidence

This allegation pertains to remediation activities conducted on the NPS 36 North Central Corridor Loop (NCCL) pipeline near the Wabasca River in October – November, 2013. In response to this allegation, TransCanada stated that the location of the block valves on the NPS 36 NCCL line are approximately 2.3 km upstream (NCC 30 BV) and 26.1 km downstream (NCC 20 BV) of the failure site (i.e. allegation site).

TransCanada field technicians who performed the isolation of the pipeline and lock-out of the valves confirmed that there were no liquids that came from the valve body vents when they were blown down during the isolation and lock-out / tag-out of the valves. In accordance with the lock-out / tag-out removal, the body vents were closed prior to cycling the valves. As a result, no gas would have been released from the body vents.

During the remediation project, water was expelled from the piping under the Wabasca River on 24 October 2013. This water had entered the pipe at the horizontal directional drilling (HDD) end of the pipeline. Water collected at the low point of the piping and created a water plug. In order to work on the downstream side of the river crossing, TransCanada needed to evacuate the line prior to cutting the piping to ensure the safety of workers in the area.

To remove the water plug, a decision was made to use low pressure natural gas (60 psi) to expel the water from the piping into the open ditch at the failure site on the west side of the Wabasca River. From there, water was pumped out through an absorbent filter. The purge procedure submitted by TransCanada required that the purge be conducted in a controlled manner rather than by a blow-down. The direction of the pipe allowed the expelled water to be directed into the ditch, which formed a collection point. TransCanada submitted a water sample from the ditch to a third-party independent laboratory for analysis. The laboratory results confirmed that the ditch water was non-toxic.

Based on the date specified in the information provided by the complainant, the de-watering activity would have occurred on 18 November 2013, because the pipeline was placed back

into service on 19 November 2013. Since any water in the pipeline had already been removed prior to placing it back into service, water could not have entered the block valves as stated in the allegation.

2.14.3 Findings as to the allegation

Due to the location of the block valves near the Wabasca River, there are no block valves on either both side of the river at the rupture site that water could be blown out as alleged.

The Board finds that there was no contamination of trees by fluids from the block valve de-watering activity. TransCanada submitted evidence to refute the allegation in terms of the project procedures and facility schematics that indicated that there were no block valves in the immediate vicinity of the NCCL repair site.

While there was a release of water from the pipeline due to accumulation within the HDD site, it was a controlled release into a ditch and not a blow-down. Results of a third party independent laboratory confirmed that the ditch water was non-toxic.

This allegation was not substantiated and corresponds to a Case 3 scenario.

2.14.4 Corrective actions taken, or required to be taken

No corrective actions are required by TransCanada.

2.14.5 Preventive actions taken, or required to be taken

No preventive actions are required by TransCanada.

2.14.6 Conclusions of the Board

The Board concludes that there are no requirements for additional oversight by the Board.

The Board concludes that there are no further Board actions required.

The Board concludes that this allegation has been resolved and closed.

2.15 Allegation #15: Inadequate PPE by Contractors on Site.

2.15.1 Statement of the allegation

This allegation is that a non-destructive examination crew member was on the job site wearing shorts and did not have the proper Personal Protective Equipment (PPE) such as fire retardant coveralls and steel toed boots. The alleged incident occurred while a TransCanada welding inspector was on site supervising the work. The allegation is that the job site supervisor was advised, and that he then asked the NDE crew member to leave the site.

2.15.2 Assessment of the evidence

This allegation pertains to a job site for the NPS 42 Edson Mainline hydrotest in July 2013. While work was being conducted on this site, a contractor was noted on the site who was not wearing the required PPE. In its response to the allegation, TransCanada stated that immediate action was taken and the contractor was instructed to leave the site until proper PPE was acquired.

On 28 July 2013 TransCanada entered this incident into its Incident and Issue Tracking System (#262132) to document the details. The incident report stated that the contractor's management was contacted to inform them of the inadequate assessment of PPE requirements as a cause of the incident.

TransCanada submitted its Safety Handbook (EDMS #003798354) that contains the PPE requirements for all personnel, including TransCanada employees and contract workers. Section 12.0 Personal Protective Equipment, specifies the PPE requirements, including work wear at field sites.

2.15.3 Findings as to the allegation

The Board finds that, in this instance, TransCanada's PPE requirements were not met. In addition to company procedures, the Canada Labour Code[10] specifies the duties of an employer to include (z.13) "when necessary, develop, implement and monitor a program for the provision of personal protective equipment, clothing, devices or materials." While TransCanada had developed and implemented its personal protective equipment program, there was evidence that a gap in the oversight of the program occurred. This gap may be attributed to communication of the requirements and/or ensuring the training and competency of its employees and contract workers.

[10] *Canada Labour Code*, R.S.C., 1985, c. L-2

This allegation was partially substantiated and corresponds to a Case 2 scenario.

2.15.4 Corrective actions taken, or required to be taken

The corrective actions taken by TransCanada at the time of the allegation have addressed the issue of inadequate PPE and no further corrective actions are required.

2.15.5 Preventive actions taken, or required to be taken

TransCanada should take additional preventive actions to ensure that all employees and contract workers are aware of, and adhere to, the requirements for PPE. TransCanada should also bolster its procedures for pre-job and tailgate meetings to identify potential non-compliances before workers are allowed on site without the appropriate PPE.

2.15.6 Conclusions of the Board

The National Energy Board conducts inspections as part of its annual compliance verification program. Companies notify the Board of upcoming pipeline excavations and/or repairs and these are considered in the planning of the compliance verification program. As a result, Board Inspection Officers may be present at these pipeline excavations and/or repairs. Board inspectors will continue to be mindful of the need to check for appropriate and adequate PPE is being worn by both employees and contractors in its future inspections of TransCanada.

The Board concludes that there are no further Board actions required.

The Board concludes that this allegation has been resolved and closed.

2.16 Allegation #16: Inappropriate and Unsafe Use of Extension Ladders during an Excavation

2.16.1 Statement of the allegation

This allegation is that extension ladders used for excavation ingress and egress were placed upside down. Placing the ladder in this configuration means that the ladder latch that prevents the extension part from closing is inoperable and if the ladder was utilized the ladder extension would collapse to a shorter length and the ladder would not serve its purpose. This could have caused an injury or prevented escape from the excavation.

2.16.2 Assessment of the evidence

This allegation pertains to a job site for the work being conducted on the Grand Prairie Mainline Pig Launcher / Receiver on June 27, 2014. A photograph was submitted by the complainant that showed two ladders in a trench that were actually placed back to front versus top to bottom (common perception of upside-down). Placement of both ladders in the photograph submitted is not in accordance with common industry usage of extension ladders as stated in the allegation.

In its response to this allegation, TransCanada submitted its Operating Procedure Work Platforms Scaffolds Barricades and Portable Ladders (Doc ID 003837617). Of the 21 requirements for the safe use of ladders from Section 4.2, the most relevant to the allegation are:

- Ladders must be secured at the top to prevent movement;
- When practicable, secure the feet of the ladder to stakes or to vertical wall being ascended;
- Extend portable extension ladders in compliance with manufacturer's specifications to ensure adequate overlap; and
- Ensure locks are in place to securely hold the sections of the ladder in the extended position.

TransCanada submitted its Excavation Procedure (Doc ID 003672343) that addresses the excavation ingress and egress requirements in Section 4.4. This section includes a reference to the requirements for ladder use in the Work Platforms Scaffolds Barricades and Portable Ladders Operating Procedure. Photos submitted that were taken the same week as the date indicated in the allegation show correct placement of the egress ladders.

TransCanada stated that its Environment, Health and Safety Management system was searched for a record of any incident or near miss related to this allegation having occurred at this site around the date of the allegation. No record was found. TransCanada's Incident

Management Program states that all TransCanada personnel have an obligation to report all incidents or near misses in a timely manner.

2.16.3 Findings as to the allegation

The Board finds that the allegation was correct in that there was an instance where egress ladders to an excavation had been improperly installed. Although TransCanada submitted evidence that the installations had been corrected, it appears that an isolated incident had occurred. However, there was no record of an incident or near miss in TransCanada's Incident Management Program of this incident.

This allegation was partially substantiated and corresponds to a Case 2 scenario.

2.16.4 Corrective actions taken, or required to be taken

No corrective actions are required by TransCanada.

2.16.5 Preventive actions taken, or required to be taken

TransCanada should ensure that all personnel on an excavation site are trained and competent in the installation procedures for egress ladders.

2.16.6 Conclusions of the Board

The National Energy Board conducts inspections as part of its annual compliance verification program. Companies notify the Board of upcoming pipeline excavations and these are considered in the planning of the compliance verification program. As a result, Board Inspection Officers may be present at these pipeline excavations. Board inspectors will be extra vigilant on placement of extension ladders in excavations in its future inspections of TransCanada.

The Board concludes that there are no further Board actions required.

The Board concludes that this allegation has been resolved and closed.

Chapter 3

Conclusions

This report concludes an investigation that was conducted under the *National Energy Board Act*, subsection 12(1), into 16 allegations of non-compliance brought against TransCanada. The investigation compared evidence to Onshore Pipeline Regulations (OPR) and to industry standards such as CSA Z662-11.

The Board evaluated TransCanada's response, through corrective and/or preventive actions, to the six allegations that were partially substantiated through the course of the investigation.

The Board concludes that TransCanada has implemented appropriate corrective and/or prevention actions to mitigate all 16 allegations and all 16 are considered resolved and closed.

The Board determined that the scope of Board inspections, conducted by its designated Inspection Officers, include the activities identified in the six partially substantiated allegations, if not already part of the annual verification plan for inspection of TransCanada facilities.

As a result of this investigation and in line with the Board's continual improvement process, the Board will review whether or not its inspector training program and tools can be enhanced to assist its inspectors in looking for particular non-compliances when they are inspecting the operations of any Board-regulated company.

The Board determined that there was no cause for any decision(s) or order(s) relating to these matters.

In conclusion, a summary table of the 16 allegations, the Board's findings and status, has been included to provide an overview of the results of this investigation and final resolution to this investigative report.

Allegation Finding and Status Summary

Allegation #	Allegation Summary	Finding Status	Resolution Status
#1	Mechanical Damage to a Pipeline and Inappropriate Coating Repairs.	Allegation partially substantiated.	Resolved & Closed
#2	Unsuccessful and/or Altered Hydrotest	Allegation unsubstantiated.	Resolved & Closed
#3	Exposed, Cracked Pipe	Allegation partially substantiated.	Resolved & Closed
#4	Inadequate Pipeline Depth of Cover.	Allegation unsubstantiated.	Resolved & Closed
#5	Blow-off of liquids on and off of the right of way.	Allegation unsubstantiated.	Resolved & Closed
#6	Inappropriate Use of Mitre Bends and Pipe Supports.	Allegation unsubstantiated.	Resolved & Closed
#7	Inappropriate Use of Mitre Bends.	Allegation unsubstantiated.	Resolved & Closed
#8	Incompetent Welding Contractor and Welding Inspector's Competency.	Allegation partially substantiated.	Resolved & Closed
#9	Inappropriate Welding of Appurtenances.	Allegation unsubstantiated.	Resolved & Closed
#10	Inappropriate Use of Multiple Mitre Joints.	Allegation unsubstantiated.	Resolved & Closed
#11	Inappropriate Use of a Mitre Joint greater than 3 degrees.	Allegation unsubstantiated.	Resolved & Closed
#12	Improper Exposing of In-Service Pipelines.	Allegation unsubstantiated.	Resolved & Closed
#13	Improper Torqueing of Flange Bolts and a Worker Injury Related to Torqueing.	Allegation partially substantiated.	Resolved & Closed
#14	Contamination of Trees with Fluids from a Block Valve Blow-Down.	Allegation unsubstantiated.	Resolved & Closed
#15	Inadequate PPE by Contractors on Site.	Allegation partially substantiated.	Resolved & Closed
#16	Inappropriate and Unsafe Use of Extension Ladders.	Allegation partially substantiated.	Resolved & Closed