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February 7, 2012

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Mr. Patrick Fahn
North Dakota Public Service Commission
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VIA ELECTRONIC DELIVERY AND COURIER

Mr. Fahn,

As discussed during our meeting with the North Dakota PSC on October 26, 2011, TC Oil Pipeline Operations, Inc. submits the enclosed information which summarizes our December 2011 and January 2012 monthly reports submitted to the U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA) as required under the Amended Corrective Action Order (CAO) issued on June 23, 2011. As Ms. Sacco requested in her May 17th, 2011 email, we are providing documents that do not require FOIA protection.

If you have any questions regarding the enclosed documents, please contact me.

Sincerely,

Ken Crowl

Ken Crowl
Manager, US Pipeline Compliance – U.S. Pipeline Operations
TransCanada Corporation
717 Texas Street
Houston, TX
77002

Executive Summary

In accordance with the Corrective Action Order (CAO) issued by PHMSA on June 3, 2011 and amended on June 23, 2011, TC Oil Pipeline Operations, Inc. (Keystone) submits the following information in a report format with attachments.

The bracing program described in the Work Plan submitted to PHMSA on September 1, 2011 and approved on October 21, 2011 has been substantially completed at all Fixed Speed and Delivery Sites. Ten of eleven Variable Speed Sites are complete with the final site scheduled for completion prior to year's end, three months ahead of the Remedial Work Plan commitment.

The fabrication of a newly designed Pressure Safety Valve (PSV) assembly for Pigging Barrels has been delayed resulting in the installation of the assemblies occurring in the New Year. An outside technical consultant has been engaged to assess vibration levels at high energy dissipation values across the Pressure Control Valve at all sites in order to provide additional validation of the work performed to date.

An update to the Interim Station Modification Vibration report has been provided which includes results of the detailed testing and assessment of the PSV assemblies at fixed speed sites.

As communicated within the Mechanical/Technical section of the Remedial Work Plan submitted to PHMSA on September 1, 2011 and approved on October 21, 2011, the following work plan item has been completed.

- Develop an Operating Procedure to be executed when greater levels of energy dissipation by the PCV are expected as part of future operations. This procedure will provide for testing to be conducted in order to verify the integrity of the pipeline. *Completion no later than December 31, 2011.*

As communicated within the Continuing Operations section of the Remedial Work Plan submitted to PHMSA on September 1, 2011 and approved on October 21, 2011, the following work plan items have been completed.

- Review and modify TC Oil Pipeline Operations, Inc. Facility Integrity Inspection TOP to ensure that periodic inspection and measurement of vibrations are made. *Completion no later than December 31, 2011.*

- Develop a formalized Vibration Escalation Process to be utilized in conjunction with Operator Integrity Inspections for the Field. *Completion no later than December 31, 2011.*

- Review and modify existing maintenance and inspection programs to ensure periodic inspection of tubing, flexible hoses, clamps, braces and any other supporting devices are effective in their installation and intended purpose(s). *Completion no later than March 31, 2012.*

Introduction

Keystone oil pipeline system operates from Hardisty, Alberta to delivery terminals in Wood River and Patoka, Illinois and Cushing, Oklahoma. On May 7, 2011, the system experienced a reportable oil release of approximately 400 barrels at the Ludden, ND pump station. On May 29, 2011, a second reportable oil release of approximately 10 barrels occurred at the Severance, KS pump station.

A Corrective Action Order (June 3, 2011) and subsequent Amended Corrective Action Order (June 28, 2011) were issued to TC Oil Pipeline Operations, Inc. A series of Monthly Reports have been submitted beginning in July of 2011 to document TC Oil Pipeline Operations, Inc.'s progress regarding the work undertaken to ensure the reliable operation of the Keystone Pipeline.

The following Monthly Report is submitted per Item 11 of the CAO.

Small Bore Piping Bracing

In accordance with the Scope of Work communicated in the September Monthly Report, a program of bracing was undertaken on Oct 3rd. For reference the scope is listed below.

FIXED SPEED STATIONS

- Refine Permanent PSV bracing at Fixed Speed sites as necessary
- Install bracing on 2" Unit MOV suction valve relief bypass line
- Implement modification(s) to all Unit Pressure and Temperature transmitter attachments
- Install new design PSV piping and supports on Pigging Traps
- Implement modifications to Sump Injection Pump discharge piping supports.

VARIABLE SPEED STATIONS

- Off-mount VFD Station Unit Pressure Transmitters
- Off- mount all Temperature Transmitters from Station Piping
- Install bracing on 2" Unit MOV suction valve relief bypass line
- Install Permanent PSV bracing at VFD sites
- Implement modification(s) to all Unit Pressure and Temperature transmitter attachments
- Implement modification(s) to all VFD site Station Pressure and Temperature transmitter attachments
- Install new design PSV piping and supports on Pigging Traps
- Implement modifications to Sump Injection Pump discharge piping supports.

Product Receipt and Delivery Sites

- Install new design PSV piping and supports on Pigging Traps
- Implement modifications to Pressure Transmitter attachments in proximity of Delivery Site Pressure Control Valves

To date, the following Stations have the full scope of work outlined above completed and post outage testing has been performed at each Fixed Speed Station and Delivery Site.

Asset	Type	Status	Required Completion Date
Edinburg	VFD	Complete	31-Mar-12
Niagara	VFD	Complete	31-Mar-12
Luverne	VFD	Complete	31-Mar-12
Ludden	Fixed	Complete	31-Dec-11
Ferney	Fixed	Complete	31-Dec-11
Carpenter	VFD	Complete	31-Mar-12
Roswell	Fixed	Complete	31-Dec-11
Hartington	VFD	Complete	31-Mar-12
Stanton	VFD	Complete	31-Mar-12
David City	VFD	Complete	31-Mar-12
Wilber	VFD	Complete	31-Mar-12
Seneca	Fixed	Complete	31-Dec-11
Severance	Fixed	Complete	31-Dec-11
Turney	Fixed	Complete	31-Dec-11
Tina	VFD	Complete	31-Mar-12
Fort Ransom	Fixed	Complete	31-Dec-11
Freeman	Fixed	Complete	31-Dec-11
Patoka	Delivery	Complete	31-Dec-11

The following Stations have the scope of work above completed with the exception of the Pigging Barrel Pressure Safety Valve spool pieces. Delays have been encountered completing the fabrication of the spool pieces. The spool piece installation and testing is no longer expected to be complete at all affected sites by December 31, 2011.

Fabrication and installation of the Pigging Barrel Pressure Safety Valves will be completed at all Fixed Speed Stations and the Patoka Delivery Terminal prior to December 31, 2011. The Cushing Delivery Terminal will be completed in the New Year in conjunction with the Salisbury and Steele City Variable Frequency Drive sites.

Asset	Type	Pigging Barrel PSV Status	Required Completion Date
Salisbury	VFD	In Progress	31-Mar-12
Cushing	Delivery	In Progress	31-Dec-11
Steele City	Delivery	In Progress	31-Mar-12

Status of Vibration Modifications

The Pressure Safety Valve assembly, while much improved from the original design, required additional adjustments to the support design. The additional bracing modifications were made and detailed strain and vibration testing was performed.

Additional bracing of the test ports has been completed at all fixed speed sites. Vibration testing of the modified assemblies and bracing adjustments continues with the roll out of the broader bracing program defined in the Work Plan submitted to PHMSA..

Procedures

The Remedial Work Plan submitted August 31, 2011 outlined the development and/or modification of the following Procedures or existing Documents.

1. Develop an Operating Procedure to be executed when greater levels of energy dissipation by the PCV are expected as part of future operations. This procedure will provide for testing to be conducted in order to verify the integrity of the pipeline. Completion no later than December 31, 2011.
    a. Status – Complete.

2. Review and modify TC Oil Pipeline Operations, Inc. Facility Integrity Inspection TOP to ensure that periodic inspection and measurement of vibrations are made. Completion no later than December 31, 2011.
    a. Status – Complete.

3. Develop a formalized Vibration Escalation Process to be utilized in conjunction with Operator Integrity Inspections for the Field. Completion no later than December 31, 2011.
    a. Status – Complete.

4. Review and modify existing maintenance and inspection programs to ensure periodic inspection of tubing, flexible hoses, clamps, braces and any other supporting devices are effective in their installation and intended purpose(s). Completion no later than March 31, 2012.
    a. Status – Complete.

The above listed documents have been developed as committed within the Remedial Work Plan and are currently being processed for approval within the TransCanada TransCanada Operating Procedure Management System. The process provides vetting of new and amended procedures for cross-functional input and management of change. Approval for all documents is expected to be complete by December 31, 2011.

Flexible Hose and Tubing Inspection

As communicated within the Mechanical/Technical section of the Remedial Work Plan submitted to PHMSA on September 1, 2011 and approved on October 21, 2011, the following work plan item is scheduled to be completed by December 31, 2011. Final communication of the completion of this work item will be submitted with the January 2012 Monthly Report.

- At all Fixed Speed and VFD sites, inspect for proper support of installed tubing and flexible hoses to ensure ongoing effectiveness of recent modifications and rectify any deficiencies. *Completion no later than December 31, 2011.*

Next Steps and Timelines

Large Bore Piping

Worley Parsons has been engaged to assist Keystone with the assessment of Large Bore Piping supports. Keystone will carry out piping stress analysis to identify potential additional support requirements, with Worley Parsons providing piping and structural design / drafting support. Keystone has focussed on reducing the unsupported length of pipe within the Station and providing additional static and dynamic support in the Station Discharge piping.

The pile construction for Severance and Freeman Stations has begun. Severance piling is expected to be completed by December 31, 2011 with support construction and vibration testing

to occur in the New Year. Freeman is scheduled for completion by January 31, 2012 with Station vibration testing to follow.

Post Modification Vibration Testing – Unit Outage

As part of the integrity validation process, comprehensive strain and vibration testing of small bore components was conducted at various sites in October and November 2011. The tests gathered data on both modified and unmodified components to ensure long term integrity of piping attachments at the highest levels of future energy dissipation.

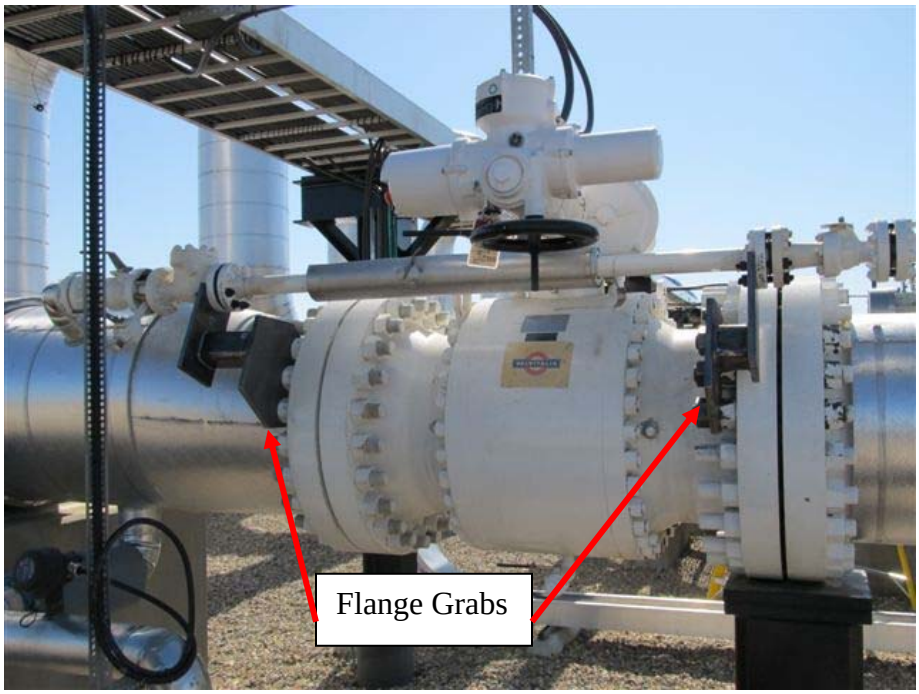
As reported in the October monthly report, the testing protocol used was intended to create conditions that would mimic the energy dissipation across the Pressure Control Valve during current and future operations. Energy dissipation up to 3000 kW was determined to be sufficient to create conditions assumed to be the worst case present at future operational pressures and flows.

As communicated in the November 2011 Monthly Report, further evaluation was required regarding a few of the tested components. The status of additional testing and evaluation is given below.

Unit MOV Thermal Bypass Line

Post Unit Outage vibration testing at high levels of energy dissipation across the PCV reveals a minimal number of Unit MOV thermal bypass lines that exceed the vibration screening criteria.

Further evaluation of the bypass lines is being performed to ascertain the need for further modification(s).



Unit MOV Thermal Bypass Line Bracing

TV-0052 - drain line adjacent to Pressure Control Valve

The drain valve adjacent to the PCV is of a vertical, single plane design. Strain testing at high levels of energy dissipation (>3000 kW) resulted in strain values exceeded overall vibration screening levels and dynamic strain (pk-pk) criteria as recommended by SwRI. The drain line was excavated in order to allow the drain line additional flexibility during high energy dissipation conditions with an expectation that strain values would decrease. Subsequent testing produced reduced strain levels as expected, but the tested value was still of a magnitude requiring additional analysis and potential drain line modification to resolve.

Further FEA analysis of strain gage location relative to component stress concentration revealed the dynamic stress was less than the fatigue limit, but of sufficient magnitude to warrant modifications. Consequently, a brace will be applied to a drain and the component tested to determine the effectiveness of the bracing.

Bracing, testing and evaluation of results for TV-0052 are expected to be complete by end of January 2012.

TV-0052

Unit suction line vent

Ft. Ransom Unit 4 suction line vent valve was strain tested at high energy dissipation values to understand component response. Resulting strain values exceeded overall vibration screening levels and dynamic strain (pk-pk) criteria as recommended by SwRI. A bracing strategy was applied and subsequent testing revealed values within overall vibration screening levels and dynamic strain (pk-pk) criteria as recommended by SwRI.

As a result of the testing, a scope change was issued for all unit suction vents to have bracing completed. This work scope has been performed at all Fixed Speed Stations and is in progress at VFD sites.

This work scope is expected to be complete by December 31, 2011.

Index of Attachments

Attachments omitted due to confidential, privileged, proprietary and/or security sensitive information contained within the documents.

Executive Summary

In accordance with the Corrective Action Order (CAO) issued by PHMSA on June 3, 2011 and amended on June 23, 2011, TC Oil Pipeline Operations, Inc. (Keystone) submits the following information in a report format with attachments.

The bracing program described in the Work Plan submitted to PHMSA on September 1, 2011 and approved on October 21, 2011 has been completed at all Fixed Speed, Variable Speed and Delivery Sites with the exception of three Pigging Barrel Pressure Safety Valve (PSV) assemblies which are currently in progress.

A Testing Plan was developed to address additional component evaluation on the Unit MOV Thermal Bypass Line and the TV-0052 drain line adjacent to Pressure Control Valve as reported in the December 2011 Monthly Report. Testing was performed at the Freeman and Hartington stations the week of January 23, 2012. The results are currently being evaluated in order to finalize the Q1 2012 Station Vibration Remediation work scope.

As communicated within the Mechanical/Technical section of the Remedial Work Plan submitted to PHMSA on September 1, 2011 and approved on October 21, 2011, the following work plan item has been completed.

- *At all Fixed Speed and VFD sites, inspect for proper support of installed tubing and flexible hoses to ensure ongoing effectiveness of recent modifications and rectify any deficiencies. Completion no later than December 31, 2011.*

Large Bore Piping support modifications are in progress at the Severance Fixed Speed Station. Testing of the piping support modification's effect on Station and Unit component vibrations is scheduled to begin the week of February 6, 2012.

Introduction

Keystone oil pipeline system operates from Hardisty, Alberta to delivery terminals in Wood River and Patoka, Illinois and Cushing, Oklahoma. On May 7, 2011, the system experienced a reportable oil release of approximately 400 barrels at the Ludden, ND pump station. On May 29, 2011, a second reportable oil release of approximately 10 barrels occurred at the Severance, KS pump station.

A Corrective Action Order (June 3, 2011) and subsequent Amended Corrective Action Order (June 28, 2011) were issued to TC Oil Pipeline Operations, Inc. A series of Monthly Reports have been submitted beginning in July of 2011 to document TC Oil Pipeline Operations, Inc.'s progress regarding the work undertaken to ensure the reliable operation of the Keystone Pipeline.

The following Monthly Report is submitted per Item 11 of the CAO.

Small Bore Piping Bracing

Fabrication and installation of the Pigging Barrel Pressure Safety Valves are in progress for the Cushing Delivery Terminal, Salisbury and Steele City Variable Frequency Drive sites. The expected completion date is March 31, 2012.

A scope of work is under development to finalize additional work scope items revealed by the Unit Outage post modification testing that was completed in 2011 and incorporate the results of component testing occurring at the Freeman and Hartington Stations.

Final Station Outage Vibration Report

The work completed to date on the Station Outage components has resulted in all modified components having induced vibration within screening limits and/or strain values below the endurance limit of the material.

Final Vibration Report

Continued testing and modifications related to the Unit Outage work scope and other detailed subsequent testing has been an iterative process as expected. Keystone will continue to report on the progress of component testing and evaluation within the Monthly Report format until such time as all modifications and evaluations have been completed in a satisfactory manner. The conclusion of this process is expected to be completed by March 31, 2012.

Next Steps and Timelines

Large Bore Piping

The Severance Station Large Bore Piping support modifications are substantially complete. Station support testing that is scheduled for the week of February 6, 2012.

Post Modification Vibration Testing – Unit Outage

As part of the integrity validation process, comprehensive strain and vibration testing of small bore components was conducted at various sites in October and November 2011. The tests gathered data on both modified and unmodified components to ensure long term integrity of piping attachments at the highest levels of future energy dissipation.

As reported in the October monthly report, the testing protocol used was intended to create conditions that would mimic the energy dissipation across the Pressure Control Valve during current and future operations. Energy dissipation up to 3000 kW was determined to be sufficient to create conditions assumed to be the worst case present at future operational pressures and flows.

As communicated in the November 2011 Monthly Report, further evaluation was required regarding a few of the tested components. The status of additional testing and evaluation is given below.

Test Scope – Engineered Solutions

The following components require additional testing in order to validate engineered solutions. This initial testing was performed at the Freeman Fixed Speed station and the neighboring Hartington VFD station.

PSV Test Port

The Pressure Safety Valve assembly at fixed speed sites, while much improved from the original design, required additional adjustments to the support design. The additional bracing modifications were made and detailed strain and vibration testing was performed.

The modifications resulted in an acceptable response within the endurance limit of the material. Looking forward, Keystone desires to determine if an even greater factor of safety can be achieved. Therefore the PSV Test Port has been evaluated for purpose and consequently redesigned. The new design is being tested to determine the feasibility of implementing the engineered solution within the system.

New PSV Test Port

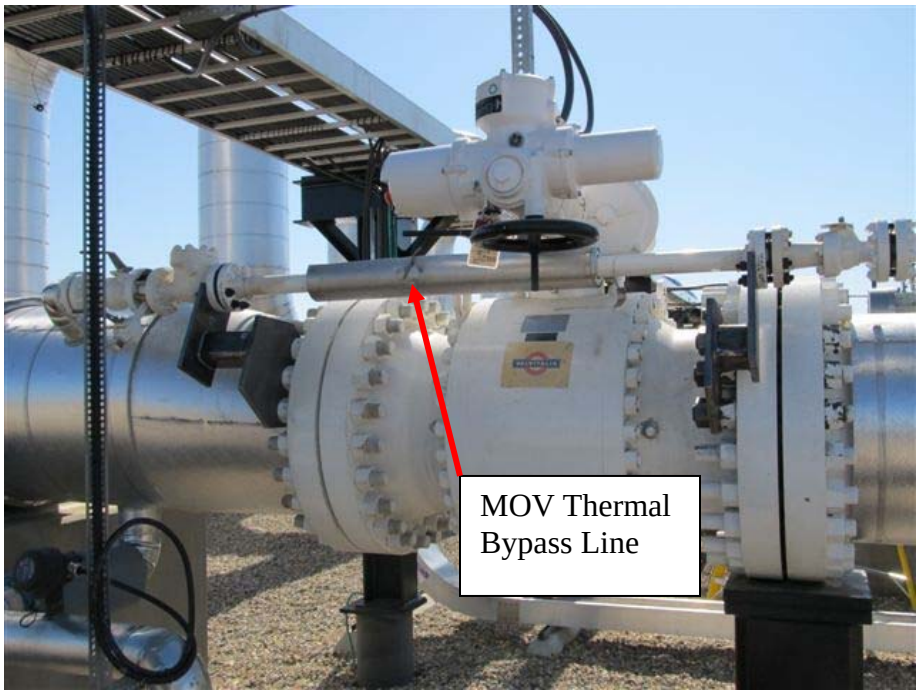
TV-0052 - drain line adjacent to Pressure Control Valve

The drain valve adjacent to the PCV is of a vertical, single plane design. Strain testing at high levels of energy dissipation (>3000 kW) resulted in strain values exceeded overall vibration screening levels and dynamic strain (peak-peak) criteria as recommended by SwRI. The drain line was excavated in order to allow the drain line additional flexibility during high energy dissipation conditions with an expectation that strain values would decrease. Subsequent testing produced reduced strain levels as expected, but the tested value was still of a magnitude requiring additional analysis and potential drain line modification to resolve.

Further FEA analysis of strain gage location relative to the component stress concentration revealed the dynamic stress was less than the fatigue limit, but of sufficient magnitude to warrant modifications. Consequently, a brace was applied to a single plane drain and the component tested to determine the effectiveness of the bracing (Freeman) and additional testing performed with the brace in place. Testing was also performed on a drain that is configured in two planes (Hartington) to determine the same. The test data is currently being evaluated and the results will be communicated in a future report.

Unit MOV Thermal Bypass Line

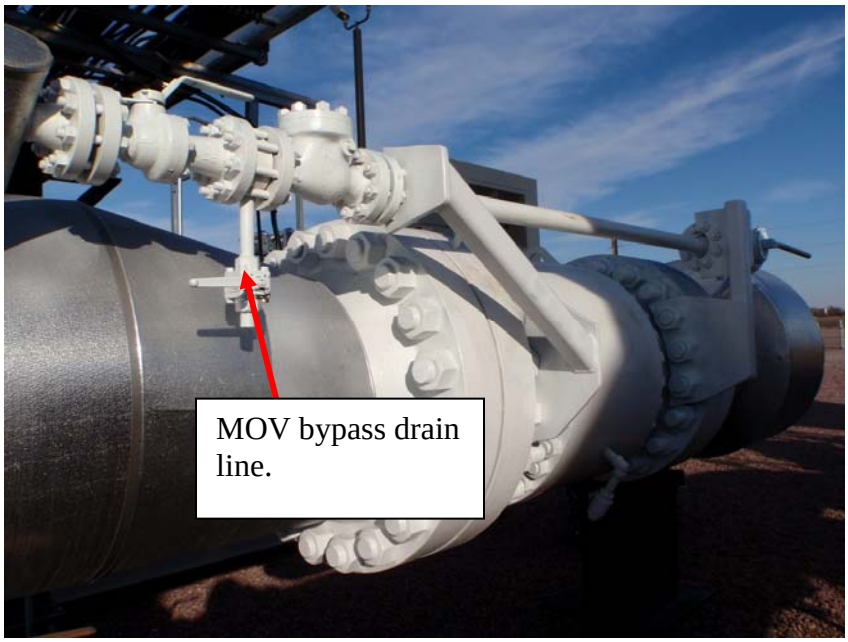
Bracing of the Unit MOV Thermal Bypass Line resulted in a greatly improved response. Subsequent Fixed Speed site testing at >3000 kW energy dissipation revealed that the piping vibration between the supports exceeds 1.0 ips peak under certain conditions. Strain testing was performed to determine if the results are within the endurance limit of the material. The test data is currently being evaluated and the results will be communicated in a future report.



MOV Thermal Bypass Line

Unit MOV Thermal Bypass Line Drain

Fixed Speed site testing at >3000 kW energy dissipation revealed that the MOV bypass piping drain exceeds 1.0 ips peak under the proper station conditions. Strain testing is being performed to determine if levels are within acceptable limits. The test data will be evaluated and the results will be communicated in a future report.



Unit MOV Thermal Bypass Line Drain

Index of Attachments

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