

**US Department of Transportation
Pipeline and Hazardous Materials Safety Administration
Office of Pipeline Safety**

**Hazardous Liquid IMP Field Verification Inspection
49 CFR Parts 195.450 and 195.452**

General Notes:

1. This Field Verification Inspection is performed on field activities being performed by an Operator in support of their Integrity Management Program (IMP).
2. This is a two part inspection form:
 - i. A review of applicable Operations and Maintenance (O&M) and IMP processes and procedures applicable to the field activity being inspected to ensure the operator is implementing their O&M and IMP Manuals in a consistent manner.
 - ii. A Field Verification Inspection to determine that activities on the pipeline and facilities are being performed in accordance with written procedures or guidance.
3. Not all parts of this form may be applicable to a specific Field Verification Inspection, and only those applicable portions of this form need to be completed. The applicable portions are identified in the Table below by a check mark. Only those sections of the form marked immediately below need to be documented as either "Satisfactory"; "Unsatisfactory"; or Not Checked ("N/C"). Those sections not marked below may be left blank.

Operator Inspected: Trans Mountain Pipeline (Puget Sound) LLC
Op ID: 19585

Perform Activity (denoted by mark)	Activity Number	Activity Description
	1A	In-Line Inspection
	1B	Hydrostatic Pressure Testing
	1C	Other Assessment Technologies
	2A	Remedial Actions
X	2B	Remediation – Implementation
	3A	Installed Leak Detection System Information
	3B	Installed Emergency Flow Restrictive Device
X	4A	Field Inspection for Verification of HCA Locations
	4B	Field Inspection for Verification of Anomaly Digs
	4C	Field Inspection to Verify adequacy of the Cathodic Protection System
	4D	Field inspection for general system characteristics

Hazardous Liquid IMP Field Verification Inspection Form

Name of Operator: **Kinder Morgan Canada, Inc**

Headquarters Address:	Suite 2700, Stock Exchange Building 300 5 th Ave. SW Calgary, Alberta T2P5J2 Canada
Company Official:	Patrick Davis
Phone Number:	360-398-1541
Fax Number:	360-398-7432
Operator ID:	19585

Persons Interviewed	Title	Phone No.	E-Mail
Patrick Davis	Supervisor Primary Contact	360-398-1541	Patrick_davis@kin dermorgan.com
Terry DeLong	Manager, Integrity Programs & Risk Engineering	403-514-6517	Terry_delong@kin dermorgan.com
Todd Pleadwell	Pipeline Protection/CP	360-398-1541	Todd_pleadwell@k indermorgan.com
Bill Swan Aaron Swan Enterprises	Pipeline Reg Welder (Dontractor)	250-478-8412	

OPS/State Representative(s): Al Jones / UTC

Dates of Inspection: September 19 – 22, 2011

Inspector Signature: Al Jones

Pipeline Segment Descriptions: *[note: Description of the Pipeline Segment Inspected. (Include the pipe size, wall thickness, grade, seam type, coating type, length, pressure, commodities, HCA locations, and Pipeline Segment boundaries.)]*

The Puget Sound System provides crude oil to the following locations:

- ✓ 15.3 miles of 20-inch (0.25" wt, X-52, DSAW) pipeline from the Canada / U.S. border to Laurel Pump Station in Bellingham, WA.,
- ✓ 11.6 miles of 16-inch (0.25" wt, X-52, SSAW) pipeline from the Laurel Station west to the Ferndale Station,
- ✓ 27.6 miles of 20-inch (0.25" wt, X-52, DSAW) pipeline from the Laurel Station south to Burlington Station, and
- ✓ 9.0 miles of 16-inch (0.25" wt, X-52, DSAW) pipeline from Burlington Station west to Anacortes Meter Station.

Site Location of field activities: *[note: Describe the portion of the pipeline segment reviewed during the field verification, i.e. milepost/stations/valves/pipe-to-soil readings/river crossings/etc. In addition, a brief description and case number of the follow up items in any PHMSA compliance action or consent agreement that required field verification. Note: Complete pages 8 & 9 as appropriate.]*

The Integrity Management Inspection included record review at the Laurel Station, field inspection of the Laurel Pump Station, Anacortes Meter Station including an exposed pipe section for removal of an existing casing before the placement of a new ductile iron water main below the existing KMC's oil line, and field inspection of the right-of-way where the line was lowered in several locations because of farming activities and two locations where above ground pipe creek crossings near Lake Samish.

Summary:

Find activity related to the IMP inspection included the removal of casing at the KMC Anacortes Meter Station. See Item 2B (below).

Findings:

None

Key Documents Reviewed:

Document Title	Document No.	Rev. No	Date
Operation Policy #30 Life of Facility Integrity Records Operation Policy #31 DOT & Environmental Routine Inspection, Testing & Maintenance.	Records Retention		

Part 1 - Performance of Integrity Assessments

IA. In-Line Inspection (Protocol 3.04 & 3.05)	Satisfactory	Unsatisfactory	N/C	Notes:
Verify that Operator's O&M and IMP procedural requirements (e.g. launching/receiving tools) for performance of ILI were followed.				
Verify Operator's ILI procedural requirements were followed (e.g. operation of trap for launching and receiving of pig, operational control of flow), as appropriate.				
Verify ILI tool systems and calibration checks before run were performed to ensure tool was operating correctly prior to assessment being performed, as appropriate.				
Verify ILI complied with Operator's procedural requirements for performance of a successful assessment (e.g. speed of travel within limits, adequate transducer coverage), as appropriate.				
Document ILI Tool Vendor and Tool type (e.g. MFL, Deformation). Document other pertinent information about Vendor and Tool, as appropriate				
Verify that Operator's personnel have access to applicable procedures				
Other:				
<i>[Note: Add location specific information, as appropriate.]</i>				
IB. Hydrostatic Pressure Testing (Protocol 3.06)	Satisfactory	Unsatisfactory	N/C	Notes:
Verify that hydrostatic pressure tests complied with Part 195 Subpart E requirements.				
Review documentation of Hydrostatic Pressure Test parameters and results. Verify test was performed without leakage and in compliance with Part 195 Subpart E requirements.				
Review test procedures and records and verify test acceptability and validity.				
Review determination of the cause of hydrostatic test failures, as appropriate.				
Document Hydrostatic Pressure Test Vendor and equipment used, as appropriate.				
Other:				
IC. Other Assessment Technologies (Protocol 3.07)	Satisfactory	Unsatisfactory	N/C	Notes:
Verify that application of "Other Assessment Technology" complied with Operator's requirements, that appropriate notifications had been submitted to OPS, and that appropriate data was collected.				
Review documentation of notification to OPS of Operator's application of "Other Assessment Technology", if available. Verify compliance with Operator's procedural requirements. If documentation of notification to OPS of Operator's application of "Other Assessment Technology" is available, verify performance of assessment within parameters originally submitted to OPS.				
Verify that appropriate tests are being performed and appropriate data is being collected, as appropriate.				
Other.				

Part 2 - Remediation of Anomalies

2A. Remedial Actions – Process (Protocol 4.1)	Satisfactory	Unsatisfactory	N/C	Notes:
Verify that remedial actions complied with the Operator’s procedural requirements.				
Witness anomaly remediation and verify documentation of remediation (e.g. Exposed Pipe Reports, Maintenance Report, any Data Acquisition Forms). Verify compliance with Operator’s O&M Manual and Part 195 requirements.				
Verify that Operator’s procedures were followed in locating and exposing the anomaly (e.g. any required pressure reductions, line location, identifying approximate location of anomaly for excavation, excavation, coating removal).				
Verify that procedures were followed in measuring the anomaly, determining the severity of the anomaly, and determining remaining strength of the pipe.				
Verify that Operator’s personnel have access to applicable procedures.				
Other:				
2B. Remediation - Implementation (Protocol 4.02)	Satisfactory	Unsatisfactory	N/C	Notes:
Verify that the operator has adequately implemented its remediation process and procedures to effectively remediate conditions identified through integrity assessments or information analysis.	X			Casing removal at Texas Road crossing in Anacortes. KMC pipeline (16-inch) is the delivery line to Shell Refinery from Kinder Morgan meter station.
If documentation is available, verify that repairs were completed in accordance with the operator’s prioritized schedule and within the time frames allowed in §195.452(h).				
Review any documentation for this inspection site for an immediate repair condition (§195.452(h)(4)(i) where operating pressure was reduced or the pipeline was shutdown. Verify for an immediate repair condition that temporary operating pressure was determined in accordance with the formula in Section 451.7 of ASME/ANSI B31.4 or, if not applicable, the operator should provide an engineering basis justifying the amount of pressure reduction.				
Verify that repairs were performed in accordance with §195.422 and the Operator’s O&M Manual, as appropriate.				
Review CP readings at anomaly dig site, if possible. (See Part 4 of this form – “Field Inspection to Verify adequacy of the Cathodic Protection System”, as appropriate.				Cathodic Protection readings of pipe to soil at dig site (if available): On Potential: -2030 mV Off Potential: -1140 mV
Other:				<i>[Note: Add location specific information, as appropriate.]</i>

Part 3 - Preventive and Mitigative Actions

3A. Installed Leak Detection System Information (Protocol 6.05)	Satisfactory	Unsatisfactory	N/C	Notes:	
Identify installed leak detection systems on pipelines and facilities that can affect an HCA.					
Document leak detection system components installed on system to enhance capabilities, as appropriate.					
Document the frequency of monitoring of installed leak detection systems and verify connection of installed components to leak detection monitoring system, as appropriate,					
Other:				<i>[Note: Add location specific information, as appropriate.]</i>	
3B. Installed Emergency Flow Restrictive Device (Protocol 6.06)	Satisfactory	Unsatisfactory	N/C	Notes:	
Verify additional preventive and mitigative actions implemented by Operator.					
Document Emergency Flow Restrictive Device (EFRD) component(s) installed on system.					
Note that EFRD per §195.450 means a check valve or remote control valve as follows:					
(1) Check valve means a valve that permits fluid to flow freely in one direction and contains a mechanism to automatically prevent flow in the other direction.					
(2) Remote control valve or RCV means any valve that is operated from a location remote from where the valve is installed. The RCV is usually operated by the supervisory control and data acquisition (SCADA) system. The linkage between the pipeline control center and the RCV may be by fiber optics, microwave, telephone lines, or satellite.					
Document the frequency of monitoring of installed EFRDs and verify connection of installed components to monitoring/operating system, as appropriate.					
Verify operation of remote control valve by having operator send remote command to partially open or close the valve, as appropriate.					
Comment on the perceived effectiveness of the EFRD in mitigating the consequences of a release on the HCA that it is designed to protect.					
Other:				<i>[Note: Add location specific information, as appropriate.]</i>	

Part 4 - Field Investigations (Additional Activities as appropriate)

4A. Field Inspection for Verification of HCA Locations				Satisfactory	Unsatisfactory	N/C	Notes: Field inspected two pipe spans, each about 80 feet in length at stream crossings that drain into Lake Samish. Each pipe section is supported by steel I-beams. The ends of the spans are secured at concrete abutments and enclosed by fencing. The pipe is protected from the atmosphere corrosion and the paint is in good condition. <i>[Note: Add location specific information, as appropriate.]</i>
Review HCAs locations as identified by the Operator. Utilize NPMS, as appropriate.				X			
Verify population derived HCAs in the field are as they appear on Operator's maps and NPMS, as appropriate. Document newly constructed (within last 2-3 years) population and/or commercial areas that could be affected by a pipeline release, as appropriate. Note that population derived HCAs are defined in §195.450							
Verify drinking water and ecological HCAs in the field are as they appear on Operator's maps and NPMS, as appropriate. Document newly established drinking water sources and/or ecological resources areas (within last 2-3 years) that could be affected by a pipeline release, as appropriate. Note that unusually sensitive areas (USAs) are defined in §195.6							
Verify commercially navigable waterway HCAs in the field are as they appear on Operator's maps and NPMS, as appropriate. Document any activity (commercial in nature) that could affect the waterways status as a commercially navigable waterway, as appropriate. Note that commercially navigable waterway HCAs are defined in §195.450							
4B. Field Inspection for Verification of Anomaly Digs				Satisfactory	Unsatisfactory	N/C	Notes: <i>[Note: Add location specific information, as appropriate.]</i>
Verify repair areas, ILI verification sites, etc.							
Document the anomaly dig sites reviewed as part of this field activity and actions taken by the operator.							
4C. Field Inspection to Verify adequacy of the Cathodic Protection System				Satisfactory	Unsatisfactory	N/C	Notes: Cathodic Protection readings of pipe to soil at dig site (if available): On Potential: _____ mV Off Potential: _____ mV <i>[Note: Add location specific information, as appropriate.]</i>
In case of hydrostatic pressure testing, Cathodic Protection (CP) systems must be evaluated for general adequacy.							
The operator should review the CP system performance in conjunction with a hydrostatic pressure test to ensure the integrity assessment addressed applicable threats to the integrity of the pipeline. Has the operator reviewed the CP system performance in conjunction with the hydrostatic pressure test?							
Review records of CP readings from CIS and/or annual survey to ensure minimum code requirements are being met, if available.							
Review results of random field CP readings performed during this activity to ensure minimum code requirements are being met, if possible. Perform random rectifier checks during this activity and ensure rectifiers are operating correctly, if possible.							
4D. Field inspection for general system characteristics				Satisfactory	Unsatisfactory	N/C	Notes:
Through field inspection determine overall condition of pipeline and associated facilities for a general estimation of the effectiveness of the operator's IMP implementation.							
Evaluate condition of the ROW of inspection site to ensure minimum code requirements are being met, as appropriate.							
Comment on Operator's apparent commitment to the integrity and safe operation of their system, as appropriate.							
Other							

Anomaly Evaluation Report *(to be completed as appropriate)*

Pipeline System and Line Pipe Information		
Operator (OpID and System Name):		
Unit ID (Pipeline Name)		
Pipe Manufacturer and Year:	Seam Type and Orientation:	
Pipe Nominal OD (inch):	Seam Orientation:	
Pipe Nominal Wall thickness (inch):	Coating Type:	
Grade of Pipe:	MOP:	
ILI Reported Information		
ILI Technology (e.g., Vendor, Tools):		
Anomaly Type (e.g., Mechanical, Metal Loss):		
Is anomaly in a segment that can affect an HCA? (Yes / No)		
Date of Tool Run (MM/DD/YY):	Date of Inspection Report (MM/DD/YY):	
Date of "Discovery of Anomaly" (MM/DD/YY):		
Type of "Condition" (e.g.; Immediate; 60-day; 180-day):		
Anomaly Feature (Int/Ext):	Orientation:	
Anomaly Details: Length (in):	Width (in):	Depth (in):
Anomaly Log Distance (ft):	Distance from Upstream weld (ft):	
Length of joint of pipe in which anomaly is identified (ft):		
Anomaly Dig Site Information Summary		
Date of Anomaly Dig (MM/DD/YY):		
Location Information:		
Mile Post Number:	Distance from A/G Reference (ft):	
Distance from Upstream weld (ft):		
GPS Readings (if available) Longitude:	Latitude:	
Anomaly Feature (Int/Ext):	Orientation:	
Length of joint of pipe in which anomaly is found (ft):		
For Mechanical Damage Anomaly		
Damage Type (e.g., original construction, plain dent, gouge):		
Length (in):	Width (in):	Depth (in):
Near a weld? (Yes / No):		
Gouge or metal loss associated with dent? (Yes / No):		
Did operator perform additional NDE to evaluate presence of cracks in dent? (Yes / No):		
Cracks associated with dent? (Yes / No):		
For Corrosion Metal Loss Anomaly		
Anomaly Type (e.g., pitting, general):		
Length (in):	Width (in):	Max. Depth (in):
Remaining minimum wall thickness (in):	Maximum % Wall Loss measurement(%):	
Safe pressure calculation (psi), as appropriate:		
For "Other Types" of Anomalies		
Describe anomaly (e.g., dent with metal loss, crack, seam defect, SCC):		
Length (in):	Width (in):	Max. Depth (in):
Other Information, as appropriate:		
Did operator perform additional NDE to evaluate presence of cracks? (Yes / No):		
Cracks present? (Yes / No):		

Anomaly Repair Report (to be completed as appropriate)

Repair Information		
Was a repair of the anomaly made? (Yes / No):		
Was defect ground out to eliminate need for repair? (Yes / No):		
If grinding used, complete the following for affected area:		
Length (in):	Width (in):	Depth (in):
If NO repair of an anomaly for which RSTRENG is applicable, were the Operator's RSTRENG calculations reviewed? (Yes / No):		
If Repair made, complete the following:		
Repair Type (e.g., Type B-sleeve, composite wrap)		
Length of Repair:		
Comments on Repair material, as appropriate (e.g., grade of steel):		
Pipe re-coating material used following excavation:		
General Observations and Comments		
Was a diagram (e.g., corrosion map) of the anomaly made? (Yes / No):		(Include in report if available)
Were pipe-to-soil cathodic protection readings taken? (Yes / No):		
If readings taken, Record: On Potential:		mV; Off Potential: mV
Describe method used to Operator to locate anomaly (as appropriate):		
Comments regarding procedures followed during excavation, repair of anomaly, and backfill (as appropriate):		
General Observations and Comments (Note: attach photographs, sketches, etc., as appropriate):		