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: Kinder Morgan Canada, Inc.
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
	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
x	4C	Field Inspection to Verify adequacy of the Cathodic Protection System
x	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 5th Ave. SW
Calgary, Alberta T2P5J2
Canada

Company Official: Hugh Harden, VP Operations & Engineering & EHS

Phone Number: (403) 514-6400/(800) 535-7219

Fax Number: (403) 514-6441

Operator ID: 19585

Persons Interviewed	Title	Phone No.	E-Mail
Patrick Davis	**Primary Contact** Supervisor, Corporation	(360) 398-1541	Patrick_davis@kindermorgan.com
Adam Lind	Operations Engineer	(404) 514-6429	Adam_Lind@kindermorgan.com

OPS/State Representative(s): Kuang Chu/UTC **Dates of Inspection:** 8/22 – 26/2011

Inspector Signature: Kuang Chu, September 12, 2011

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 pipeline system from the Canada-United States border supplies crude oil to the Conoco-Phillips refinery at Ferndale was constructed in 1954. The pumping capacity is provided by Sumas Pump Station in Canada and by the two new pumps built at the Laurel Station in 2008. In 1955 the pipeline was extended to Anacortes to supply crude oil to Shell and Tesoro refineries. In 1971 the pipeline system was extended to Cherry Point to supply crude oil to BP Cherry Point refinery. In total, 63.2 miles of pipeline was constructed in the State of Washington. The pipeline system can be broken down as follows:

- 15.3 miles of 20" (0.250" wall thickness with X-52 material, DSAW) pipeline between the Canada – US border to Laurel.
- 11.6 miles of 16" (0.250" wall thickness, X-52, SSAW) pipeline between Laurel Station and Ferndale Scraper Trap Station.
- 27.6 miles of 20" (0.250" wall thickness, X-52, DSAW) pipeline between Laurel Station and Burlington Scraper Trap Station.
- 9.0 miles of 16" (0.250" wall thickness, X-52, seamless) pipeline between Burlington Scraper Trap Station and Anacortes Meter Station.

The external coating is coal tar enamel.

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 pipeline segments from mainline valve MU-14 north of Nooksak River to Laurel Pump Station, from Laurel Pump Station to Ferndale Station, from Laurel Pump Station to Burlington scraper trap, and from Burlington scraper trap to Anacortes Meter Station were inspected. The field inspections included mainline valves (some were partially operated), rectifiers, road crossing casings, cathodic protection test stations and right-of-way.

Summary:

There were no field activities related to IMP during this inspection.

Findings:

The casing for the 16" Ferndale line under I-5 freeway was most likely partially filled with water. The operator was considering the options of injecting gel or wax into the annulus to displace the water out of the casing. The 20" line at the mainline valve station MU-43 was shorted following the modification of this valve from a manual valve to a MOV. After the inspection and on September 8, 2011, the operator's technicians identified a ½" temperature probe as the source of the short. An insulating union has been ordered and will be installed within a week. The right-of-way condition was generally good. The mainline vales are in good working condition and are well protected against unauthorized operation and vandalism.

Key Documents Reviewed:

Document Title	Document No.	Rev. No	Date
Cathodic protection annual surveys			2009/2010
Mainline valve inspection reports			2010/2011
Overpressure safety devices inspection reports			2010/2011
Right-of-way inspection reports			2010/2011
Records of liaison with public officials			2010/2011

Part 1 - Performance of Integrity Assessments

1A. 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.	x			
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:				*[Note: Add location specific information, as appropriate.]*

1B. Hydrostatic Pressure Testing (Protocol 3.06)	Satisfactory	Unsatisfactory	N/C	Notes:
Verify that hydrostatic pressure tests complied with Part 195 Subpart E requirements.	x			
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:				

1C. 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.	x			
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.	x			
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			
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: _____ mV Off Potential: _____ mV
Other:				*[Note: Add location specific information, as appropriate.]*

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.	x			
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:				*[Note: Add location specific information, as appropriate.]*

3B. Installed Emergency Flow Restrictive Device (Protocol 6.06)	Satisfactory	Unsatisfactory	N/C	Notes:
Verify additional preventive and mitigative actions implemented by Operator.	x			
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:				*[Note: Add location specific information, as appropriate.]*

Part 4 - Field Investigations (Additional Activities as appropriate)

4A. Field Inspection for Verification of HCA Locations	Satisfactory	Unsatisfactory	N/C	Notes:
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				*[Note: Add location specific information, as appropriate.]*

4B. Field Inspection for Verification of Anomaly Digs	Satisfactory	Unsatisfactory	N/C	Notes:
Verify repair areas, ILI verification sites, etc.	x			
Document the anomaly dig sites reviewed as part of this field activity and actions taken by the operator.				*[Note: Add location specific information, as appropriate.]*

4C. Field Inspection to Verify adequacy of the Cathodic Protection System	Satisfactory	Unsatisfactory	N/C	Notes:
In case of hydrostatic pressure testing, Cathodic Protection (CP) systems must be evaluated for general adequacy.	x			
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.				Cathodic Protection readings of pipe to soil at dig site (if available): On Potential: _____ mV Off Potential: _____ mV
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.				*[Note: Add location specific information, as appropriate.]*

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.	x			
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)*: