

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

**Gas IMP Field Verification Inspection
49 CFR Subparts 192.911, 192.921, 192.933, & 192.935**

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: *Cascade Natural Gas Corporation – Whatcom County*
Op ID: 2128

Perform Activity (denoted by mark)	Activity Number	Activity Description
	1A	In-Line Inspection
	1B	Hydrostatic Pressure Testing
x	1C	Direct Assessment Technologies
x	1D	Other Assessment Technologies
x	2A	Remedial Actions
x	2B	Remediation – Implementation
	3A	Preventive & Mitigative – additional measures evaluated for HCAs
	3B	Preventive & Mitigative – automatic shut-off valves
x	4A	Field Inspection for Verification of HCA Locations
x	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
x	attachment	Anomaly Evaluation Report
	attachment	Anomaly Repair Report

Gas IMP Field Verification Inspection Form

Name of Operator: Cascade Natural Gas Corporation

Headquarters Address: 8113 W Grandridge Blvd, Kennewick, WA 99336

Company Official: Tim Clark – VP Operations

Phone Number: 509.734.4585

Fax Number: 509.737.9803

Operator ID: 2128

Persons Interviewed	Title	Phone No.	E-Mail
Tina Beach	Manager Stds & Compliance Primary Contact	509.734.4576	Tina.beach@cngc.com
Ryan Lindblom	Engineer II	509.734.4551	Ryan.lindblom@cngc.com
Kevin Raschkow	Manager, Engineering Services	509.734.4552	Kevin.raschkow@cngc.com
Mike Eutsey	Pipeline Safety Specialist	509.734.4681	Mike.eutsey@cngc.com

OPS/State Representative(s): Stephanie Zuehlke/UTC Date(s) of Inspection: April 26, 2011

Inspector Signature: Stephanie Zuehlke Date: April 26, 2011

Pipeline Segment Descriptions: *[note: Description of the Pipeline Segment Inspected as part of this field verification. (If information is available, include the pipe size, wall thickness, grade, seam type, coating type, length, normal operating pressure, MAOP, %SMYS, HCA locations, class locations, and Pipeline Segment boundaries.)]*

20" Ferndale Line #18: WT=.375"; Grade=X52; Seam type ERW; Coating=extruded PE; L=27,904ft.; normal operating psi=533psig; MAOP=600psig; %SMYS=30.77%; HCA locations = 1 (Sta. 0+00 @tap #10 - Grandview Rd. & Burlington Northern Sante Fe RRxing) : Class Locations=No study identifying class locations Completed PIR method. (However – all engineering completed to Class 4 location requirements but O&M not completed to Class 4):

20" Sumas Line #19: WT=.375"; Grade=X52; Seam type ERW; Coating=extruded PE; L=17,121ft.; normal operating psi=613psig; MAOP=780psig; %SMYS=40%; HCA locations = 0 Class Locations=No study identifying class locations (However – all engineering completed to Class 4 location requirements but O&M not completed to Class 4):

16" N Whatcom Line – WT=.240 Grade=X52; Seam Type ERW; Coating=extruded PE; L=43,907ft.; normal operating psi=520psig; MAOP=600psig; %SMYS=34%; HCA locations = 0: Class Locations=No study identifying class locations Completed PIR method.

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.]*

Summary:

Lack of engineering/IM oversight – leaks found in transmission lines determined to be on long seam with no cause attributed and not included in IM analysis/review process.

Findings:

No procedures to follow for certain repairs made, no engineering notification, no engineering review. No anomaly calculations completed since engineering not notified. Test lead coupons (material has not been reviewed/approved by engineering for attachment to transmission lines) attached to transmission lines w/o notification/approval of engineering – no procedure for attachment of material to transmission lines. Unable to complete anomaly report from records provided. Lack of engineering/IM oversight – leaks found in transmission lines determined to be on long seam with no cause attributed and not included in IM analysis/review process.

Key Documents Reviewed:

Document Title	Document No.	Rev. No	Date
ECDA Record Form 545	Form 545	06.15.06	02.21-22.07 Post assessment date 12.26.07
Direct Assessment Dig Report	Form 626	06.2006	11.27.07
Pre-Assessment	Form 535	06.2006	06.07.06
HCA Survey Data 051820-01	None	In conjunction w/ ECDA record Form 545 above	12.26.07
USGS 50yr Earthquake hazard analysis		In conjunction anomaly 051820-01 above	11.15.2004

Part 1 - Performance of Integrity Assessments

1A. In-Line Inspection	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			No ILI [Note: Add location specific information, as appropriate.]
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 for preparing, running and monitoring the pipeline for ILI tools include performance requirements (e.g.: tool speeds, pipe cleanliness, operation of tool sensors, and ILI field calibration requirements), as appropriate.				
Other:				
1B. Hydrostatic Pressure Testing	Satisfactory	Unsatisfactory	N/C	Notes:
Verify that hydrostatic pressure tests complied with Part 192 Subpart J requirements.	x			No Hydro
Review documentation of Hydrostatic Pressure Test parameters and results. Verify test was performed without leakage and in compliance with Part 192 Subpart J 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.				
Verify that the baseline assessment is conducted in a manner that minimizes environmental and safety risks (reference §192.919(e) and ADB-04-01)				
Other:				
1C. Direct Assessment Technologies	Satisfactory	Unsatisfactory	N/C	Notes:
Verify that application of "Direct Assessment Technology" complied with Part 192.923	x			ECDA is used. No ICDA ; No SCC
Review documentation of Operator's application of "Direct Assessment Technology", if available. Verify compliance with Part 192.923 and Operator's procedural requirements, as applicable.				
Verify that appropriate tests and/or inspections are being performed and appropriate data is being collected, as appropriate. 0+00; V-100 inlet=715+00; & V-100 outlet=735+00. Validation dig = 09.27.07 @ 800+00.				
Other.				
1D. Other Assessment Technologies	Satisfactory	Unsatisfactory	N/C	Notes:
Verify that application of "Other Assessment Technology" complied with Operator's requirements, that appropriate notifications had been submitted to PHMSA, and that appropriate data was collected.		x		Plidco fittings have been installed to repair long seam issues – no determination made to cause of long seam issue and engineering not consulted for repair.
Review documentation of notification to PHMSA of Operator's application of "Other Assessment Technology", if available. Verify compliance with Operator's procedural requirements. If documentation of notification to PHMSA of Operator's application of "Other Assessment Technology" is available, verify performance of assessment within parameters originally submitted to PHMSA.				
Verify that appropriate tests are being performed and appropriate data is being collected, as appropriate.				Engineering has not been notified or provided with data re: long seam issues on N. Whatcom & Ferndale trans. lines
Other.				

Part 2 - Remediation of Anomalies

2A. Remedial Actions – Process	Satisfactory	Unsatisfactory	N/C	Notes:
Verify that remedial actions complied with the Operator’s procedural requirements.		x		<p>Cathodic Protection readings of pipe to soil at dig site (if available): On Potential: _____ mV Off Potential: _____ mV</p> <p><i>[Note: Add location specific information and note whether CP readings were from the surface or from the pipe following exposure, as appropriate.]</i></p>
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 192 requirements. See 1D. above for details regarding O&M issues.				
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. Review the class location factor and failure pressure ratio used by Operator in determining repair of anomaly. Procedures were not followed.				
Verify that Operator’s personnel have access to and knowledge of applicable procedures. Unknown.				
Other:				
2B. Remediation - Implementation	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		<p>No procedures in O&M for repair used. No repair method used was reviewed or approved by the operator/engineering and no OQ for installation of Plidco.</p> <p>Cathodic Protection readings of pipe to soil at dig site (if available): On Potential: _____ mV Off Potential: _____ mV</p> <p><i>[Note: Add location specific information and note whether CP readings were from the surface or from the pipe following exposure, as appropriate.]</i></p>
If documentation is available, verify that repairs were completed in accordance with the operator’s prioritized schedule and within the time frames allowed in §192.933(d).				
Review any documentation for this inspection site for an immediate repair condition (§192.933(d)(1)) 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 requirements in §192.933(a) 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 §192.103, §192.111, §192.713, §192.717, §192.719, §192.933 and the Operator’s O&M Manual, as appropriate. If welding is performed, verify a qualified welding procedure and qualified welders are used to perform repairs. If composite repair methods are used, verify that a method approved by the Operator is used, procedures are followed, and qualified personnel perform the repair.				
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.				
Other:				

Part 3 - Preventive and Mitigative Actions

3A. P&M Measures for Third Party Damage	Satisfactory	Unsatisfactory	N/C	Notes:
Identify additional measures evaluated for the HCA section of the pipeline and facilities.			x	
Verify that P & M measures regarding threats due to third party damage are being implemented: [§192.915(c), §192.935(b)(1)(iv)]:				
Confirm the use of qualified personnel for marking, locating, and direct supervision of known excavation work, as appropriate.				
Confirm the use of qualified personnel for monitoring of excavations conducted on covered pipeline segments by pipeline personnel, as appropriate.				
Other:				
<i>[Note: Add location specific information, as appropriate.]</i>				
3B. Installed Automatic Shut-off Valves (Protocol H.07)	Satisfactory	Unsatisfactory	N/C	Notes:
Verify additional preventive and mitigative actions implemented by Operator.			x	
Document that additional measures evaluated by the operator cover alternatives such as, installing Automatic Shut-off Valves or Remote Control Valves, installing computerized monitoring and leak detection systems, replacing pipe segments with pipe of heavier wall thickness, providing additional training to personnel on response procedures, conducting drills with local emergency responders and implementing additional inspection and maintenance programs, as appropriate				
Verify that the operator has a process to decide if automatic shut-off valves or remote control valves represent an efficient means of adding protection to potentially affected high consequence areas. [§192.935(c)]				
Verify operation of installed remote control valve by reviewing operator inspection/remote control records for partially opening and closing the valve, as appropriate.				
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:
Review HCAs locations as identified by the Operator. Utilize NPMS and Operator maps, as appropriate.				x			
Verify that the operator's integrity management program includes accurate and updated system maps or other suitably detailed means documenting the pipeline segment locations that are located in high consequence areas, as appropriate. [§192.905(a)]							
Review the operator's applicable procedures and forms used to document new information from one-calls, surveys, aerial & ground patrols are being completed by field personnel to communicate new developments that may impact high consequence areas or that may create new high consequence areas to IM personnel, as appropriate. [§192.905(c)]							
Review the operator's applicable procedures and forms to confirm that new HCAs and class location changes are being identified through it's continuing surveillance program as required by §192.613 and §192.905.							[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 observed and reviewed as part of this field activity and the 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.							
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.							At Anomaly Site. Cathodic Protection readings of pipe to soil at dig site (if available): On Potential: <u>-1.0434</u> mV Off Potential: <u>-0.9696</u> mV [Note: Add location specific information and note whether CP readings were from the surface or from the pipe following exposure, 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. See email memo regarding inspection of ROW.							
Comment on Operator's apparent commitment to the integrity and safe operation of their system, as appropriate. No violations noted although patrols/ROW inspection not necessarily/specifically reviewed for IMP purposes.							
Check ROW for pipeline markers in line-of-sight and Emergency call-in number on marker posts.							
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):		Depth of Cover:	
Pipe Nominal Wall thickness (inch):		Coating Type and Condition:	
Grade of Pipe:		MAOP:	
ILI Reported Information			
ILI Technology (e.g., Vendor, Tools): None			
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 (O'clock position):	
Anomaly Details: Length (in):		Width (in):	Depth (in):
Anomaly Log Distance (ft):		Distance from Upstream weld (ft):	
Length of joint(s) of pipe in which anomaly is identified (ft):			
Anomaly Dig Site Information Summary			
Date of Anomaly Dig (MM/DD/YY): 09.27.07; 09.26.07; 11.27.07; 09.27.07			
Location Information (describe or attach map): 715+00; 735+00; 0+00; Confirmatory Dig 800+00			
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): None			
Length (in):		Width (in):	Depth (in):
Near a weld? (Yes / No):			
Gouge or metal loss associated with dent? (Yes / No):		Are multiple dents present? (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): Pitting generalized above ground.			
Length (in):	¼"-16"max	Width (in):	½"-20"max
Max. Depth (in):	.04"	Remaining minimum wall thickness (in):	.335"
Maximum % Wall Loss measurement(%):	10.7% loss	Safe pressure calculation (psi), as appropriate:	
For "Other Types" of Anomalies			
Describe anomaly (e.g., dent with metal loss, crack, seam defect, SCC): mfg. seam defect issues in one location on Sumas line and one location on Ferndale line.			
Length (in):	1/8" Sumas/N Whatcom line/unknown on Ferndale line	Width (in):	unknown
Max. Depth (in):	unknown	Other Information, as appropriate: Repairs completed with Plidco – District failed to notify engineering of longseam issues or in use and installation of Plidco on transmission line. CNG has no procedures for installation of Plidco fittings.	
Did operator perform additional NDE to evaluate presence of cracks? (Yes / No): No			
Cracks present? (Yes / No): UT performed prior to test lead coupon attachment but not identified as completed at longseam leak locations repaired with Plidco fittings..			

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

Repair Information
Was a repair of the anomaly made? (Yes / No): Yes
Was Operating Pressure Reduced per 192.933(a) requirements? Operator records do not identify this was considered.
Was defect ground out to eliminate need for repair? (Yes / No): No. Records do not identify an evaluation.
If grinding used, complete the following for affected area:
Length (in): Width (in): Depth (in):
If NO repair of an anomaly for which RSTRENG/B31.G is applicable, were the Operator's RSTRENG/B31.G calculations reviewed? (Yes / No): No - engineering was not notified of repair
If Repair made, complete the following:
Repair Type (e.g., Type B-sleeve, composite wrap) Plidco sleeve on 20" Sumas line & Ferndale line.
Was defect ground out prior to making repair? (Yes / No): No. Records do not identify grinding.
Operating Pressure at the time of repair: 613psig Sumas
Length of Repair: Unknown Pipe re-coating material used: Unknown
Comments on Repair material, as appropriate (e.g., grade of steel, wall thickness): Plidco utilized – no procedure or engineering review of long seam defect
Comments on Repair procedure, as appropriate (e.g., welded sleeve, composite wrap): No Plidco repair procedure in the CP's. No engineering notification or review on long seam anomaly and repair. No engineering oversight.
General Observations and Comments
Was a diagram (e.g., corrosion map) of the anomaly made? (Yes / No): no (Include in report if available)
Were pipe-to-soil cathodic protection readings taken? (Yes / No): Yes
If CP readings taken, Record: On Potential: _____ mV; Off Potential: _____ mV
<i>[Note: Note whether CP readings were from the surface or from the pipe following exposure, as appropriate.]</i>
Describe method used by Operator to locate anomaly (as appropriate): CIS identified on Ferndale.
Sumas long seam anomaly identified by leak survey personnel.
Comments regarding procedures followed during excavation, repair of anomaly, and backfill (as appropriate):
With regard to leaks found in transmission lines determined to be on long seam with no cause attributed. No procedures to follow, no engineering notification, no engineering review. No anomaly calculations completed since engineering not notified. Test lead coupons (material has not been reviewed/approved by engineering for attachment to transmission lines) attached to transmission lines w/o notification/approval of engineering – no procedure for attachment of material to transmission lines.
General Observations and Comments <i>(Note: attach photographs, sketches, etc., as appropriate)</i> : There appears to be a general disconnect between engineering and other departments. General observation is that engineering is not being consulted.