

**US Department of Transportation
Pipeline and Hazardous Material Safety Administration
Pipeline Safety**

**Integrity Management Program
49 CFR 195.452**

**Integrity Management
Inspection Protocols**

(Consolidated Format)

August 2013

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Explanation of Consolidated Inspection Form Format

This inspection form is a consolidated version of the full Integrity Management Inspection Protocols. This more compact version of the protocols was created to provide inspectors with a more manageable size document for certain applications. This new form contains all of the main protocol questions and key areas for review. It differs from the full protocol set in that the main questions and additional guidance have been written in a summary, more “keyword-like” style. Users should refer to the full protocol form if additional detail is desired. In addition, this consolidated form omits quotations from the rule, and reduces the amount of space devoted to documenting field notes. The illustration below explains the structure of these consolidated protocols.

Protocol #	<i>Keywords reflecting the subject area of the Protocol Question are entered here. Each question has a unique number, as indicated to the left.</i>	
Protocol Question	<i>Question to be answered in reviewing an operator’s Integrity Management Program or the implementation of its Program.</i>	
<p><i>This section contains additional guidance and items for consideration by the inspector in reviewing operator response to the protocol question. This guidance presents characteristics typically expected in an effective Integrity Management Program consistent with the intent of the Rule. Some, all, or none of these characteristics may be appropriate depending on factors unique to each protocol, and the operator’s Integrity Management Program and its pipeline assets. Operators should be able to demonstrate that their programs address each of these characteristics or should be able to describe how their program will be effective in their absence.</i></p> <p><i>For some protocol questions, this portion of the inspection form is also used to articulate specific prescriptive requirements in the Rule. These requirements are mandatory for all Integrity Management Programs.</i></p>		
Inspection Issues Summary	<p><i>This space is provided to record any issues or concerns the inspector identifies in reviewing the operator’s response to the protocol question.</i></p>	
Inspection Results <i>The boxes to the right are checked based on the information supplied in the Inspection Issues Summary.</i>		No Issues Identified
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Inspection Notes:

This section is provided to record more detailed information about the operator's program obtained during the review of the operator's response to the protocol question. For protocol questions dealing with the implementation of a particular facet of an operator program, a summary of the records review is entered at this location.

Integrity Management

Inspection Form

Name of Operator:

Headquarters Address:
Company Official:
Phone Number:
Fax Number:
Operator ID:
Activity ID:

Persons Interviewed	Title	Phone No.	E-Mail
Primary Contact:			

PHMSA/State Representatives:

Dates:

System Description:

Documents Reviewed: <i>Documents reviewed in answering the Protocol Question are listed below.</i>			
Document Number	Rev.	Date	Document Title

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Integrity Management Inspection Protocol 1

Identification of Pipeline Segments That Could Affect High Consequence Areas

Scope:

This Protocol addresses the identification of pipeline segments that could affect one or more HCAs. This Protocol addresses all of the steps to perform the segment identification, including identification of HCAs, correlation of HCAs to pipeline locations, commodity transport to HCAs from spills located outside of HCA boundaries, buffer zones, and justification for excluding segments physically located within a HCA. This Protocol does not address how the segment identification results are further used in other Integrity Management (IM) Program elements.

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Protocol # 1.01	Segment Identification: HCA Identification
Protocol Question	Verify that the operator correctly identifies and maintains up-to-date locations of HCAs.
Use of NPMS to identify HCAs. Identification of PA Ecological HCAs, if applicable. Use of local knowledge to supplement NPMS. Provisions for periodic review and update of HCA boundaries.	
1.01 Inspection Results (Type an X in the applicable box below. Select only one.)	
	No Issues Identified
	Potential Issues Identified (explain in summary)
	Not Applicable (explain in summary)
1.01 Inspection Issues Summary	
1.01 Inspection Notes	

Protocol # 1.02	Segment Identification: Direct Intersect Method and Direct Intersect Exceptions
Protocol Question	Verify that the operator determined all locations where its pipeline system is located in an HCA. If the operator determined that pipeline located within an HCA boundary can not affect that HCA, verify that an adequate and convincing technical justification for this decision has been documented.
<p>Segments physically located within HCAs are identified and defined by specific locations that represent where the pipeline actually intersects that HCA boundary.</p> <p>Pipeline facilities inside HCAs are identified.</p> <p>There is a valid, documented analysis, particularly for exceptions.</p> <p>Justification for exceptions considers the following factors as appropriate: HVL properties, topographical considerations, type of HCA, and significance of consequences.</p>	
1.02 Inspection Results (Type an X in the applicable box below. Select only one.)	
	No Issues Identified
	Potential Issues Identified (explain in summary)
	Not Applicable (explain in summary)
1.02 Inspection Issues Summary	
1.02 Inspection Notes	

Protocol # 1.03	Segment Identification: Release Locations and Spill Volumes
Protocol Question	Verify that the operator identified potential release locations for analysis and spill volumes are technically adequate.
<p>Proximity to water crossings is considered.</p> <p>Consideration of topography.</p> <p>Adequate basis if fixed, predetermined spacing of release points is used.</p> <p>Consideration of facilities (e.g., tank volumes released via nearby piping).</p> <p>Adequate analysis of factors that influence spill volume including, but not limited to, hole size, operating conditions, leak detection and response time, drain down, design factors, and release rate (for HVL air dispersion).</p> <p>If a buffer zone is used, the spill volume basis is “reasonably conservative” and adequately considers the above factors.</p>	
1.03 Inspection Results (Type an X in the applicable box below. Select only one.)	
	No Issues Identified
	Potential Issues Identified (explain in summary)
	Not Applicable (explain in summary)
1.03 Inspection Issues Summary	
1.03 Inspection Notes	

Protocol # 1.04	Segment Identification: Overland Spread of Liquid Pool
Protocol Question	Verify that the operator performed a technically adequate overland spread analysis.
<p>Technical justification of assumptions, including spill response actions. Consideration of topography, ditches, drainage tiles, etc. If a buffer zone is used, the spread assumption(s) are documented and technically justified.</p>	
1.04 Inspection Results (Type an X in the applicable box below. Select only one.)	
	No Issues Identified
	Potential Issues Identified (explain in summary)
	Not Applicable (explain in summary)
1.04 Inspection Issues Summary	
1.04 Inspection Notes	

Protocol # 1.05	Segment Identification: Water Transport Analysis
Protocol Question	Verify that the operator performed a water transport analysis that is technically adequate.
<p>Documented and technically adequate assumptions.</p> <p>Valid buffer zone assumptions that bound “reasonable worst case” scenarios.</p> <p>Consideration of indirect introduction to streams due to overland spread or spray.</p> <p>Consideration of chemical properties, such as solubility of MTBE, where potential consequences warrant.</p>	
1.05 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
	No Issues Identified
	Potential Issues Identified <i>(explain in summary)</i>
	Not Applicable <i>(explain in summary)</i>
1.05 Inspection Issues Summary	
1.05 Inspection Notes	

Protocol # 1.06	Segment Identification: Air Dispersion Analysis
Protocol Question	Verify that the operator analysis of the air dispersion of vapors is technically adequate.
<p>Appropriate analytical model/method for operator's system-specific conditions.</p> <p>Technically valid inputs and assumptions.</p> <p>Use of adequate Threshold Level of Concern or other criteria for determining the extent of deleterious consequences.</p> <p>Valid buffer zone assumptions that bound "reasonable worst case" scenarios.</p>	
1.06 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
<input type="checkbox"/>	No Issues Identified
<input type="checkbox"/>	Potential Issues Identified <i>(explain in summary)</i>
<input type="checkbox"/>	Not Applicable <i>(explain in summary)</i>
1.06 Inspection Issues Summary	
1.06 Inspection Notes	

Protocol # 1.07	Segment Identification: Identification of Segments that Could Indirectly Affect an HCA
Protocol Question	Verify that the operator determined all locations where its pipeline system does not intersect, but could affect a HCA.
<p>Segments that can affect HCAs are identified by specific endpoints. If a buffer zone analysis is used, the analysis is technically justified and all pipeline locations within the buffer distance from the HCA are identified. Facilities other than line pipe are identified that could affect HCAs.</p>	
1.07 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
	No Issues Identified
	Potential Issues Identified <i>(explain in summary)</i>
	Not Applicable <i>(explain in summary)</i>
1.07 Inspection Issues Summary	
1.07 Inspection Notes	

Protocol # 1.08	Segment Identification: Timely Completion of Segment Identification
Protocol Question	Verify that the operator has completed segment identification by the appropriate deadline.
<p>Category 1 Pipelines: 12/31/2001. Category 2 Pipelines: 11/18/2002. Category 3 Pipelines: Beginning of Operation. Pipe category is established on May 29, 2001 and does not change regardless of changes in pipeline's operator or owner.</p>	
1.08 Inspection Results (Type an X in the applicable box below. Select only one.)	
	No Issues Identified
	Potential Issues Identified (explain in summary)
	Not Applicable (explain in summary)
1.08 Inspection Issues Summary	
1.08 Inspection Notes	

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Integrity Management

Integrity Management Inspection Protocol 2

Baseline Assessment Plan

Scope:

This Protocol addresses the development of the Baseline Assessment Plan. This Plan identifies the integrity assessment method(s) for each pipeline segment that can affect a High Consequence Area, and provides the schedule when these assessments will be performed. This Protocol addresses the selection of assessment methods and the development of an integrated, risk-based prioritized assessment schedule.

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Protocol # 2.01	Baseline Assessment Plan: Assessment Methods
Protocol Question	Verify that the assessment methods shown in the Baseline Assessment Plan are appropriate for the pipeline specific conditions and risk factors identified for each segment.
<p>Assessment methods appropriate for line-specific risk factors. If ILI is chosen, tools are capable of detecting deformation and corrosion anomalies. Assessment methods comply with §195.452(c)(1)(i). Assessment methods for low frequency ERW or lap welded pipe include capability to assess seam integrity. 90-day notification to use “other technology”. If hydrostatic test is chosen, confirm effectiveness of corrosion control program. Assessment methods address cracks if line has known crack susceptibility. [For review of external corrosion direct assessment (ECDA) refer to protocols 7.03 and 7.05-7.08.]</p>	
2.01 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
	No Issues Identified
	Potential Issues Identified <i>(explain in summary)</i>
	Not Applicable <i>(explain in summary)</i>
2.01 Inspection Issues Summary	
2.01 Inspection Notes	

Protocol # 2.02	Baseline Assessment Plan: Prioritized Assessment Schedule
Protocol Question	Verify that the Baseline Assessment Plan includes a prioritized schedule in accordance with §195.452 (d) that is based on the risk factors required by §195.452 (e).
<p>All segments that could affect HCAs are included in the plan.</p> <p>Newly identified segments are incorporated into BAP within one year.</p> <p>All baseline assessments of the line pipe that can affect HCAs, are scheduled to be completed prior to the compliance deadline (March 31, 2008 for Category 1 pipe, February 17, 2009 for Category 2 pipe, and date the pipeline begins operation for Category 3 pipe).</p> <p>Schedule is reasonable and achievable.</p> <p>Higher risk segments scheduled for assessment early.</p> <p>Priority based on the line specific risk factors, including those in §195.452 (e).</p> <p>Assessments completed as scheduled using methods specified in the plan.</p> <p>Assessment records include field activity completion dates.</p> <p>Data in Part K (Mileage of Baseline Assessments Completed) of the most recent Form PHMSA F 7000-1.1 appear valid and completed per Instructions for Completing Form PHMSA F 7000-1.1.</p>	
2.02 Inspection Results (Type an X in the applicable box below. Select only one.)	
	No Issues Identified
	Potential Issues Identified (explain in summary)
	Not Applicable (explain in summary)
2.02 Additional Data (Type an X in the applicable box to verify task completion.)	
	Annual Report Part K Data Reviewed
2.02 Inspection Issues Summary	
2.02 Inspection Notes	

Protocol # 2.03	Baseline Assessment Plan: Prior Assessments
Protocol Question	Verify that any prior assessments designated as baseline assessments are appropriate.
<p>Baseline assessments performed after January 1, 1996 but before March 31, 2002 for Category 1 pipelines have been performed using the methods prescribed in §195.452 (c) (1) (i) and repairs were categorized and completed IAW the IM rule.</p> <p>Baseline assessments performed after February 15, 1997 but before February 18, 2003 for Category 2 pipelines have been performed using the methods prescribed in §195.452 (c) (1) (i) and repairs were categorized and completed in accordance with the IM rule.</p>	
2.03 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
	No Issues Identified
	Potential Issues Identified <i>(explain in summary)</i>
	Not Applicable <i>(explain in summary)</i>
2.03 Inspection Issues Summary	
2.03 Inspection Notes	

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Integrity Management

Integrity Management Inspection Protocol 3

Integrity Assessment Results Review

Scope:

This Protocol addresses the review, validation, and evaluation of results from integrity assessments (i.e., in-line inspection, pressure testing, or other technologies). In addressing this program element, this protocol covers verification of information accuracy, the integration of other information about the pipeline with the assessment results to help identify and characterize defects, and obtain an improved understanding about the condition of the pipe.

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Protocol # 3.01	Integrity Assessment Results Review: Qualifications of Individuals that Review and Evaluate Assessment Results
Protocol Question	Verify that the operator has a formal, documented process to ensure individuals who review and evaluate integrity assessment results are qualified to perform this work.
<p>Job description, task analysis, or other means to address education, experience, skills, and training requirements, as appropriate.</p> <p>Documentation of existing personnel skills, education, training, and experience that (1) demonstrates the individual's qualification and proficiency, and (2) identifies additional qualification needs for those individuals that do not meet all qualification requirements.</p> <p>Plan for additional training or skills to achieve and maintain qualification, as applicable.</p> <p>[For review of individual qualifications for external corrosion direct assessment (ECDA) refer to protocol 7.03.]</p>	
3.01 Inspection Results (Type an X in the applicable box below. Select only one.)	
	No Issues Identified
	Potential Issues Identified (explain in summary)
	Not Applicable (explain in summary)
3.01 Inspection Issues Summary	
3.01 Inspection Notes	

Protocol # 3.02	Integrity Assessment Results Review: ILI Vendor Specifications
Protocol Question	Verify that the operator assures that those responsible for conducting ILI integrity assessments (i.e., ILI tool vendors) understand their responsibilities and comply with this rule.
<p>Specifications for tool and services to be provided by ILI vendor.</p> <p>Vendor reporting supports immediate and 180-day discovery requirements.</p> <p>Written guidelines for interacting with ILI vendor and resolving problems and variances.</p>	
3.02 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
	No Issues Identified
	Potential Issues Identified <i>(explain in summary)</i>
	Not Applicable <i>(explain in summary)</i>
3.02 Inspection Issues Summary	
3.02 Inspection Notes	

Protocol # 3.03	Integrity Assessment Results Review: Validation of Assessment Results
Protocol Question	Review selected dig records to verify that physical pipeline data obtained from field excavations was appropriately used to validate ILI results.
<p>Appropriate number and location of validation digs. Appropriate information collected during excavation and this data is used to validate ILI tool results. If an operator does not perform validation digs, review the basis for this decision.</p>	
3.03 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
	No Issues Identified
	Potential Issues Identified <i>(explain in summary)</i>
	Not Applicable <i>(explain in summary)</i>
3.03 Inspection Issues Summary	
3.03 Inspection Notes	

Protocol # 3.04	Integrity Assessment Results Review: Integration of Other Information with Assessment Results
Protocol Question	Review records documenting the operator's review of assessment results to determine if the operator integrates and analyzes all appropriate sources of other information with the assessment data.
<p>Process integrates previous assessment results, CP data, ROW data, maintenance data, uncertainty of assessment results including tool tolerances, consequences to HCAs, etc.</p> <p>Documentation of analysis conclusions.</p> <p>Identification of integrity issues and potential trends.</p>	
3.04 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
<input type="checkbox"/>	No Issues Identified
<input type="checkbox"/>	Potential Issues Identified <i>(explain in summary)</i>
<input type="checkbox"/>	Not Applicable <i>(explain in summary)</i>
3.04 Inspection Issues Summary	
3.04 Inspection Notes	

Protocol # 3.05	Integrity Assessment Results Review: Identifying and Categorizing Defects
Protocol Question	Verify that defects have been discovered within 180 days of completion of the assessment and that defects have been categorized in accordance with the special requirements for scheduling remediation contained in §452 (h) (4).
<p>Documented definition of when discovery occurs.</p> <p>Assurance that discovery takes no longer than 180 days after the assessment.</p> <p>Anomalies are properly categorized per §195.452(h).</p> <p>Documentation of actions required if discovery cannot occur in 180 days.</p>	
3.05 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
	No Issues Identified
	Potential Issues Identified <i>(explain in summary)</i>
	Not Applicable <i>(explain in summary)</i>
3.05 Inspection Issues Summary	
3.05 Inspection Notes	

Protocol # 3.06	Integrity Assessment Results Review: Hydrostatic Pressure Testing
Protocol Question	Verify that hydrostatic pressure tests complied with Subpart E requirements, that test results were valid, that the cause of all test failures were determined.
<p>Documentation of test parameters and results to verify compliance with Subpart E.</p> <p>Test procedures and records that document basis for test acceptability and validity.</p> <p>Determination of the cause of hydrostatic test failures.</p> <p>Analysis of pressure reversals.</p> <p>Effective corrosion control program for segments hydrostatically assessed.</p>	
3.06 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
<input type="checkbox"/>	No Issues Identified
<input type="checkbox"/>	Potential Issues Identified <i>(explain in summary)</i>
<input type="checkbox"/>	Not Applicable <i>(explain in summary)</i>
3.06 Inspection Issues Summary	
3.06 Inspection Notes	

Protocol # 3.07	Integrity Assessment Results Review: Results from the Application of Other Assessment Technologies
Protocol Question	For assessments using “other assessment technology,” verify that the operator’s process for evaluation of the results is adequate to identify integrity threats.
<p>Criteria for selection of other technology.</p> <p>Procedures that comply with industry standards, if applicable.</p> <p>Procedures to validate “other technology” results.</p> <p>Procedures that address reporting and analysis of anomalies and defects.</p> <p>[For review of external corrosion direct assessment (ECDA) refer to protocols 7.03, and 7.05-7.08.]</p>	
3.07 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
<input type="checkbox"/>	No Issues Identified
<input type="checkbox"/>	Potential Issues Identified <i>(explain in summary)</i>
<input type="checkbox"/>	Not Applicable <i>(explain in summary)</i>
3.07 Inspection Issues Summary	
3.07 Inspection Notes	

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Integrity Management Inspection Protocol 4

Remedial Action

Scope:

This Protocol addresses the operator's remediation of conditions identified through integrity assessments and information analysis that could affect the integrity of a pipeline segment. This includes the process to repair or remediate these conditions in such a manner to assure they will not jeopardize public safety or environmental protection, and to determine if the operator has implemented this remediation process effectively.

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Protocol # 4.01	Remedial Action: Process
Protocol Question	Verify that the operator has a documented process to assure prompt action to address all anomalous conditions that could reduce a pipeline's integrity that are discovered through the integrity assessment or information analysis.
<p>Preparation of a prioritized schedule for remediation of all identified repair conditions.</p> <p>Documented justification to exceed repair schedules and demonstrate that such changes will not jeopardize public safety or environmental protection.</p> <p>Notify PHMSA if the schedule for evaluation and remediation can not be met and safety can not be provided through a temporary reduction in operating pressure.</p> <p>For immediate repair conditions, the operating pressure of the affected pipeline is temporarily reduced in accordance with the formula in Section 451.7 of ASME/ANSI B31.4, or the pipeline is shut down until the condition is repaired. If the formula of Section 451.7 is not applicable to the type of anomaly, or would produce a higher operating pressure, the process must identify an alternative acceptable method of calculating a safe operating pressure.</p> <p>Temporary pressure reduction cannot exceed 365 days without taking further remedial actions to ensure the safety of the pipeline. When the pressure reduction exceeds 365 days, the operator must notify PHMSA and explain the reasons for the delay.</p> <p>Repairs comply with §195.422.</p> <p>Specification of the records to be generated during the remediation process.</p>	
4.01 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
<input type="checkbox"/>	No Issues Identified
<input type="checkbox"/>	Potential Issues Identified <i>(explain in summary)</i>
<input type="checkbox"/>	Not Applicable <i>(explain in summary)</i>
4.01 Inspection Issues Summary	
4.01 Inspection Notes	

Protocol # 4.02	Remedial Action: Implementation
Protocol Question	Verify that the operator has adequately implemented its remediation process and procedures to effectively remediate conditions identified through integrity assessments or information analysis.
<p>Prioritized schedule for remediation of anomalous conditions were prepared.</p> <p>Repairs were completed within the time frames allowed in §195.452(h).</p> <p>Schedule extensions were demonstrated not to jeopardize public safety or environmental protection.</p> <p>PHMSA was notified in those cases where the schedule for evaluation and remediation could not be met and safety could not be provided through a reduction in operating pressure.</p> <p>For an immediate repair condition, operating pressure was reduced or the pipeline was shutdown.</p> <p>For immediate repair conditions, temporary operating pressure was determined in accordance with the formula in Section 451.7 of ASME/ANSI B31.4, if applicable. If Section 451.7 was not applicable to the type of anomaly or produced a higher operating pressure, an alternative acceptable method was used to calculate the amount of pressure reduction.</p> <p>Operating pressure was not reduced for more than 365 days without notifying PHMSA explaining the reasons for the delay, and taking further remedial action to ensure safety.</p> <p>Repairs were performed in accordance with §195.422.</p> <p>Data in Part J (Integrity Inspections Conducted and Actions Taken Based on Inspection) of the most recent Form PHMSA F 7000-1.1 appear valid and completed per Instructions for Completing Form PHMSA F 7000-1.1.</p>	
4.02 Inspection Results (Type an X in the applicable box below. Select only one.)	
	No Issues Identified
	Potential Issues Identified (explain in summary)
	Not Applicable (explain in summary)
	Annual Report Part J Data Reviewed
4.02 Additional Data (Type an X in the applicable box to verify task completion.)	
	Annual Report Part J Data Reviewed
4.02 Inspection Issues Summary	
4.02 Inspection Notes	

Integrity Management Inspection Protocol 5

Risk Analysis

Scope:

This Protocol addresses the overall risk analysis/information analysis process employed by operators to support various integrity management program elements, including Baseline Assessment Plan development, continuing evaluation and assessment of pipeline integrity, and identification of preventive and mitigative measures. The Protocol addresses the comprehensiveness of the risk analysis process, the methods of combining/integrating risk information, input information, the subdividing of pipelines for risk analysis, results, the risk analysis of facilities, and implementation of the risk analysis process. Evaluations of application-specific risk analyses are performed in the respective Protocol area in which they are utilized.

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Protocol # 5.01	Risk Analysis: Comprehensiveness of Approach
Protocol Question	Verify that the operator's process for evaluating risk requires consideration of all relevant risk categories and operating conditions when evaluating pipeline segment risk.
<p>Important risk factors related to the likelihood of failure.</p> <p>Important risk factors related to the consequences of failure.</p> <p>Integration of Segment Identification results.</p> <p>Consideration of alternate modes of pipeline operation, as applicable.</p>	
5.01 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
<input type="checkbox"/>	No Issues Identified
<input type="checkbox"/>	Potential Issues Identified <i>(explain in summary)</i>
<input type="checkbox"/>	Not Applicable <i>(explain in summary)</i>
5.01 Inspection Issues Summary	
5.01 Inspection Notes	

Protocol # 5.02	Risk Analysis: Integration of Risk Information
Protocol Question	Verify that the process for evaluating risk appropriately integrates the various risk factors and other information utilized to characterize the risk of pipeline segments.
<p>Use of appropriate variables needed to adequately characterize the relevant risk factors (e.g., sufficient information to determine the potential for external corrosion).</p> <p>Technically justifiable basis for the analytical structure of any tools, models, or algorithms utilized to integrate risk information (and recognition of any limitations).</p> <p>Logical, structured, and documented processes and guidelines for any subject matter expert evaluations that are used for the integration of risk information.</p> <p>Justification for any numerical weights used in estimating measures of risk.</p> <p>Emphasis on risk to safety and environment as compared to “non-safety” risk factors such as those principally associated with business and economic risks.</p> <p>If a risk model is utilized, integration of the risk model output with any important risk factors not included in the model (for a more complete analysis of risk).</p>	
5.02 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
	No Issues Identified
	Potential Issues Identified <i>(explain in summary)</i>
	Not Applicable <i>(explain in summary)</i>
5.02 Inspection Issues Summary	
5.02 Inspection Notes	

Protocol # 5.03	Risk Analysis: Process for Input of Data and Information
Protocol Question	Verify that the risk analysis process requires that adequate and appropriate data and information are input into the risk analysis.
<p>Use of the most accurate available data to represent pipeline characteristics in the analysis of different segments, including the results of integrity assessments.</p> <p>A procedure for ensuring the accuracy and completeness of information and data used in the identification of potential threats and the risk analysis.</p> <p>Includes plans for additional inspection activities or field data collection efforts as needed to ensure data completeness and accuracy.</p> <p>Provides guidance to minimize the use of input information that is unnecessarily or excessively conservative (to avoid masking best-estimate risk insights).</p> <p>Requires the use of sources best suited to provide whatever subjective information is used (e.g., from operator personnel, including field units).</p> <p>Requires the use of a sufficiently structured process for obtaining subjective information (e.g., using forms, surveys, interviews, quality checks, etc.) to ensure that consistent information is provided for different segments.</p> <p>Requires the use of the operator's and industry's collective operating experience data where applicable.</p> <p>Requires a plan to address currently unknown or missing data.</p> <p>Requires the comparison of leak, failure, and incident measures to the operator's risk model, and modifying the risk model if necessary to reflect system performance.</p>	
5.03 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
	No Issues Identified
	Potential Issues Identified <i>(explain in summary)</i>
	Not Applicable <i>(explain in summary)</i>
5.03 Inspection Issues Summary	
5.03 Inspection Notes	

Protocol # 5.04	Risk Analysis: Adequacy of Data and Input Information		
Protocol Question	Verify that adequate data and information are input into the risk analysis.		
<p>Records show the use of the most accurate available data to represent pipeline characteristics in the analysis of different segments.</p> <p>Records show controls to provide assurance of the completeness and accuracy of input information were in accordance with the operator's procedure.</p> <p>Records show the use of sources best suited to provide whatever subjective information is used.</p> <p>Records show that additional inspection or field data collection activities were performed to improve the accuracy and completeness of the data.</p> <p>Records show the use of a sufficiently structured process for obtaining subjective information to ensure that consistent information is provided for different segments.</p> <p>Records show the use of the operator's, and industry's, collective operating experience data where applicable.</p> <p>Records show that local/field knowledge was used.</p> <p>Records show that a plan to populate unknown data is being implemented.</p> <p>Records show that the operator's leak, failure, and incident measures have been compared to its risk model and the risk model modified as necessary to reflect system performance.</p>			
5.04 Inspection Results (Type an X in the applicable box below. Select only one.)			
		No Issues Identified	
		Potential Issues Identified (explain in summary)	
		Not Applicable (explain in summary)	
5.04 Inspection Issues Summary			
5.04 Documents Reviewed (Tab from bottom-right cell to add additional rows.)			
Document Number	Rev.	Date	Document Title
5.04 Inspection Notes			

Protocol # 5.05	Risk Analysis: Risk Analysis of Segments that Could Affect HCAs
Protocol Question	Verify that variation in risk factors along the line are considered such that segment-specific risk results and insights are obtained.
<p>The ability to clearly differentiate the relative risks of different pipeline segments.</p> <p>Appropriate application of risk factors to a pipeline subdivision unit when the factors differ across the unit.</p> <p>Method for relating the subdivision of the pipeline used in risk analysis to: (1) the sectioning of the pipeline defined for the operator's integrity assessments, and (2) the segments that can affect high consequence areas.</p>	
5.05 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
	No Issues Identified
	Potential Issues Identified <i>(explain in summary)</i>
	Not Applicable <i>(explain in summary)</i>
5.05 Inspection Issues Summary	
5.05 Inspection Notes	

Protocol # 5.06	Risk Analysis: Results
Protocol Question	Verify that analysis results are useful for drawing conclusions and insights for Integrity Management decision making.
<p>Identification of the pipeline locations having the highest estimated risk.</p> <p>Identification of the most important risk drivers and the underlying causes.</p> <p>Means to evaluate and reduce major sources of uncertainties.</p>	
5.06 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
<input type="checkbox"/>	No Issues Identified
<input type="checkbox"/>	Potential Issues Identified <i>(explain in summary)</i>
<input type="checkbox"/>	Not Applicable <i>(explain in summary)</i>
5.06 Inspection Issues Summary	
5.06 Inspection Notes	

Protocol # 5.07	Risk Analysis: Facilities
Protocol Question	Verify that technically adequate approaches are used to identify and evaluate the risks of facilities that can affect HCAs.
Documentation of the approach to evaluate risk of facilities that could affect HCAs. Results that facilitate the determination of measures to reduce facility risks.	
5.07 Inspection Results (Type an X in the applicable box below. Select only one.)	
	No Issues Identified
	Potential Issues Identified (explain in summary)
	Not Applicable (explain in summary)
5.07 Inspection Issues Summary	
5.07 Inspection Notes	

Integrity Management Inspection Protocol 6

Preventive and Mitigative Measures

Scope:

This Protocol addresses the evaluation of preventive and mitigative measures, and is divided into three parts:

1. Questions applicable to all areas of the preventive and mitigative measures evaluation, including risk analysis requirements (§194.452(i)(1)-(i)(4));
2. Questions specific to the evaluation of leak detection system capabilities and the need for upgrades (§194.452(i)(3));
3. Questions specific to the evaluation of the need for installation of additional EFRDs (§194.452(i)(4)).

Note: While this Protocol addresses the specific requirements for application of risk analysis to the evaluation of preventive and mitigative measures, the overall adequacy of the operator's risk analysis process is separately covered in Protocol Area 5, Risk Analysis.

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Protocol # 6.01	Preventive & Mitigative Measures: Actions Considered
Protocol Question	Verify that the process to identify additional preventive and mitigative actions includes consideration of risk and covers a spectrum of alternatives.
<p>Identification of the most significant location-specific risk contributors.</p> <p>Consideration of broad spectrum of preventive and mitigative actions including those listed in §195.452(i)(1).</p> <p>Review of the effectiveness of current preventive and mitigative actions.</p> <p>Consideration of both work processes (e.g., procedures/operations) and physical design modifications.</p> <p>Consideration of additional preventive and mitigative actions for non-pipe facilities.</p> <p>Evaluation of additional preventive and mitigative measures in a timely manner (e.g., within one year) after integrity assessments are conducted on a segment or other events occur that indicate a need for re-evaluation.</p>	
6.01 Inspection Results (Type an X in the applicable box below. Select only one.)	
	No Issues Identified
	Potential Issues Identified (explain in summary)
	Not Applicable (explain in summary)
6.01 Inspection Issues Summary	
6.01 Inspection Notes	

Protocol # 6.02	Preventive & Mitigative Measures: Risk Analysis Application
Protocol Question	Verify that the process evaluates the effects of potential actions on reducing the likelihood and consequences of releases.
<p>Consideration of all risk factors required by §195.452(i)(2). Risk analysis variables are defined such that the impact of preventive and mitigative measures on risk to pipeline segments can be evaluated. Assurance that the risk analysis is up to date prior to use.</p>	
6.02 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
<input type="checkbox"/>	No Issues Identified
<input type="checkbox"/>	Potential Issues Identified <i>(explain in summary)</i>
<input type="checkbox"/>	Not Applicable <i>(explain in summary)</i>
6.02 Inspection Issues Summary	
6.02 Inspection Notes	

Protocol # 6.03	Preventive & Mitigative Measures: Decision Basis
Protocol Question	Verify that the process provides an adequate basis for deciding which candidate preventive and mitigative actions are implemented.
<p>Systematic decision-making process that includes risk analysis results.</p> <p>Priority for additional actions on the highest risk lines and facilities.</p> <p>Basis for decision making that includes the benefit (e.g., risk reduction, reduction in threat to integrity, etc.) proposed measures are expected to produce.</p> <p>Documentation of candidate preventive and mitigative measures that have been considered, including those that have not been implemented.</p> <p>Implementation of approved additional actions as previously planned and scheduled.</p>	
6.03 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
	No Issues Identified
	Potential Issues Identified <i>(explain in summary)</i>
	Not Applicable <i>(explain in summary)</i>
6.03 Inspection Issues Summary	
6.03 Inspection Notes	

Protocol # 6.04	Leak Detection Capability Evaluation: Evaluation Factors
Protocol Question	Verify that the process for evaluating leak detection capability adequately considers all of the §195.452(i)(3)-required factors and other relevant factors.
<p>Evaluation considers the required set of factors, plus other factors that may be relevant to the evaluation of the operator's leak detection capability.</p> <p>Consideration of enhancements to existing leak detection capability (e.g., increasing the monitoring frequency of existing techniques).</p> <p>Consistent application of a risk-based decision-making process for leak detection enhancements, as described in Protocol question 6.03.</p> <p>Evaluation of the operational availability and reliability of the leak detection systems, and the operator's process to manage system failures.</p>	
6.04 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
	No Issues Identified
	Potential Issues Identified <i>(explain in summary)</i>
	Not Applicable <i>(explain in summary)</i>
6.04 Inspection Issues Summary	
6.04 Inspection Notes	

Protocol # 6.05	Leak Detection Capability Evaluation: Operator Actions/Reactions
Protocol Question	Verify that the process adequately considers and documents operator actions and reactions associated with leak detection systems.
<p>Documented basis for all operator reactions credited in the leak detection evaluation.</p> <p>Measures applied to assure that required actions are accomplished and prudently restored if varying modes of pipeline operations require controllers or other personnel to engage/activate or mute/disable certain attributes of the overall leak detection capabilities.</p> <p>Integration of emergency response procedures and incident mitigation plans with associated leak detection indications.</p> <p>Adequate guidance to assure that operating personnel have the authority and responsibility to initiate reaction measures and to shutdown the pipeline if warranted.</p> <p>Assurance that supervision is always promptly available for contact if procedures require that operating personnel contact supervision prior to initiating response actions and/or shutting down the pipeline.</p>	
6.05 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
	No Issues Identified
	Potential Issues Identified <i>(explain in summary)</i>
	Not Applicable <i>(explain in summary)</i>
6.05 Inspection Issues Summary	
6.05 Inspection Notes	

Protocol # 6.06	EFRD Need Evaluation: Factors
Protocol Question	Verify that the process for evaluating the need for additional EFRDs adequately considers all of the §195.452(i)(4)-required factors and other relevant factors.
<p>Consideration of required §195.452(i)(4) evaluation factors, including the benefits of reduced consequences expected due to reducing spill volume.</p> <p>Consideration of any additional relevant line-specific factors.</p> <p>Consideration of risk analysis results (e.g., identification of highest risk segments).</p> <p>Consideration of system detection times, operator response times, remotely controlled valve response characteristics, and system isolation time assessments, as applicable.</p> <p>Evaluation of the need for additional EFRDs to respond to releases during transient conditions.</p> <p>Consideration of the potential effects of additional EFRDs, including a) conducting proper valve sequencing during intended EFRD activations, b) the operator's ability to promptly detect and react to inadvertent EFRD activations, and c) possible elevated pressures caused by transient conditions during EFRD activations.</p> <p>Consistent application of a risk-based decision-making process for additional EFRDs, as described in Protocol question 6.03.</p>	
6.06 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
<input type="checkbox"/>	No Issues Identified
<input type="checkbox"/>	Potential Issues Identified <i>(explain in summary)</i>
<input type="checkbox"/>	Not Applicable <i>(explain in summary)</i>
6.06 Inspection Issues Summary	
6.06 Inspection Notes	

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Integrity Management Inspection Protocol 7

Continual Process of Evaluation and Assessment

Scope:

This Protocol covers the requirements for conducting periodic integrity assessments based on the results of operator evaluations of pipeline integrity. This Protocol addresses the adequacy of re-assessment methods and intervals, compliance with the 5-year maximum re-assessment interval, and adequacy of any notifications for variance from the 5-year interval.

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Protocol # 7.01	Continual Process of Evaluation and Assessment: Periodic Evaluation
Protocol Question	Verify that the operator has an adequate process for performing periodic integrity evaluations of pipeline integrity.
<p>A periodic evaluation of pipeline integrity is performed to update the understanding of pipe condition and location-specific integrity threats.</p> <p>Periodic evaluation intervals are based on risk factors.</p> <p>Consideration of results of baseline and reassessments, risk analysis, remediation actions taken, and, preventive and mitigative actions taken.</p>	
7.01 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
<input type="checkbox"/>	No Issues Identified
<input type="checkbox"/>	Potential Issues Identified <i>(explain in summary)</i>
<input type="checkbox"/>	Not Applicable <i>(explain in summary)</i>
7.01 Inspection Issues Summary	
7.01 Inspection Notes	

Protocol # 7.02	Continual Process of Evaluation and Assessment: Re-assessment Intervals
Protocol Question	Verify that re-assessment intervals are consistent with the risks identified for the pipeline and the results of previous assessments.
<p>Re-assessment intervals that are based on all risk factors associated with the pipeline and adequately consider the risk factors listed in §195.452 (e).</p> <p>Re-assessment intervals are based on all information obtained on pipeline integrity as required by §195.452 (g), including results from the last integrity assessment.</p> <p>Re-assessments are to be performed on a maximum five-year interval, not to exceed 68 months, unless notification to PHMSA is made (see protocol 7.04).</p> <p>Timely determination of future assessment methods and intervals.</p> <p>Documentation that re-assessments were completed as scheduled.</p> <p>[For review of reassessment intervals for external corrosion direct assessment (ECDA), refer to Protocol 7.08.]</p>	
7.02 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
	No Issues Identified
	Potential Issues Identified <i>(explain in summary)</i>
	Not Applicable <i>(explain in summary)</i>
7.02 Inspection Issues Summary	
7.02 Inspection Notes	

Protocol # 7.03	Continual Process of Evaluation and Assessment: Assessment Methods
Protocol Question	Verify that the assessment methods shown in the continual assessment plan appear to be appropriate for the pipeline specific integrity threats.
<p>Appropriate assessment methods for segment-specific integrity issues and risks. Consideration of completed assessment results. ILI tools must be capable of detecting corrosion and deformation anomalies (including dents, gouges, and grooves). Assessment methods for all low-frequency ERW pipe or lap-welded pipe are capable of assessing seam integrity unless an engineering analysis shows that the pipe is not susceptible to longitudinal seam failure. If external corrosion direct assessment (ECDA) is the selected method, a complete ECDA Plan that addresses the requirements of NACE RP0502-2002. [Note: Review of specific ECDA plan details are covered under Protocols 7.05-7.08.] In addition, the operator is expected to address:</p> <ul style="list-style-type: none"> • Formal, documented process to ensure that individuals who implement and evaluate ECDA assessments are qualified to perform that work. Characteristics of an effective process include: <ul style="list-style-type: none"> ○ Means to identify qualification requirements for the various ECDA steps, ○ Documentation that demonstrates the individual's qualifications and proficiency, and ○ Plan and schedule to provide additional training or skills acquisition to achieve and maintain qualification requirements, as applicable. • Requirements for any vendors conducting ECDA assessment activities (e.g., indirect inspection) to assure that the vendors understand their responsibilities in performing integrity assessments that comply with this rule. <p>If technology other than pressure testing, external corrosion direct assessment , or in-line inspection is planned, notification to PHMSA at least 90 days before conducting the assessment is required.</p>	
7.03 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
	No Issues Identified
	Potential Issues Identified <i>(explain in summary)</i>
	Not Applicable <i>(explain in summary)</i>
7.03 Inspection Issues Summary	
7.03 Inspection Notes	

Protocol # 7.04	Continual Process of Evaluation and Assessment: Assessment Interval Variance
Protocol Question	Verify that the operator's IM Program includes provisions for submitting notifications to PHMSA for assessment intervals longer than 5-years.
<p>Engineering Justification Notifications</p> <ul style="list-style-type: none"> • 270 days before the end of the five year re-assessment deadline; • Describe use of other technology such as external monitoring to provide equivalent understanding of the condition of the line pipe; and • Propose an alternate interval. <p>Unavailable Technology Notifications</p> <ul style="list-style-type: none"> • 180 days before the end of the five year re-assessment deadline; • Demonstrate interim actions to evaluate integrity of pipeline segment; and • Provide an estimate of when assessment can be completed. <p>Adequate technical justification and other records to support any notifications for variance from the 5-year re-assessment interval.</p>	
7.04 Inspection Results (Type an X in the applicable box below. Select only one.)	
<input type="checkbox"/>	No Issues Identified
<input type="checkbox"/>	Potential Issues Identified (explain in summary)
<input type="checkbox"/>	Not Applicable (explain in summary)
7.04 Inspection Issues Summary	
7.04 Inspection Notes	

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Protocol # 7.05	Continual Process of Evaluation and Assessment: External Corrosion Direct Assessment (ECDA) – Pre-Assessment
Protocol Question	Verify that the ECDA pre-assessment process complies with NACE RP0502-2002 Section 3 and §195.588 to (1) determine if ECDA is feasible for the pipeline to be evaluated, (2) select indirect inspection tools, and (3) identify ECDA regions.

Plan requires adequate data to be identified and collected to support the ECDA pre-assessment; identification and collection of data is adequate

ECDA feasibility assessment is conducted by integrating and analyzing the data collected

Appropriate requirements for selecting indirect inspection tools:

- Minimum of 2 complementary tools must be selected such that the strength of one tool compensates for the limitations of the other tool. (Note: The operator must consider whether more than two indirect inspection tools are needed to reliably detect corrosion activity.)
- Tools are able to assess and reliably detect corrosion activity and/or coating holidays.
- Documented basis on which at least two different, but complementary, indirect assessment tools are selected.
- For selected tools that are not listed in NACE RP0502-2002, Appendix A, justification and documentation of the method’s applicability, validation basis, equipment used, application procedure, and utilization data.

ECDA Regions are identified based on the use of data integration results applied to specific criteria.

More restrictive criteria are used when conducting ECDA pre-assessment for the first time on a pipeline segment.

7.05 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
<input type="checkbox"/>	No Issues Identified
<input type="checkbox"/>	Potential Issues Identified <i>(explain in summary)</i>
<input type="checkbox"/>	Not Applicable <i>(explain in summary)</i>

7.05 Inspection Issues Summary

7.05 Inspection Issues Summary

Protocol # 7.06	Continual Process of Evaluation and Assessment: External Corrosion Direct Assessment (ECDA) – Indirect Inspection
Protocol Question	Verify that the ECDA indirect inspection process complies with NACE RP0502-2002 Section 4 and §195.588 to identify and characterize the severity of coating fault indications, other anomalies, and areas at which corrosion activity may have occurred or may be occurring, and establish priorities for excavation.
<p>Indirect inspection measurements conducted in accordance with NACE RP0502-2002, Section 4.2:</p> <ul style="list-style-type: none"> • Identifies and clearly marks the boundaries of the each ECDA region. • Performs indirect inspections over entire length of each ECDA region and the inspections conform to generally accepted industry practices. • Specifies and follows generally accepted industry practices for conducting ECDA indirect inspections and analyzing results. • Specifies physical spacing of readings (and practices for changing the spacing as needed) such that suspected corrosion activity on the segment can be detected and located. <p>Indications properly aligned and compared with data from each indirect inspection to characterize both the severity of indications and urgency for direct examination in accordance with NACE RP0502-2002, Sections 4.3 and 5.2.</p> <ul style="list-style-type: none"> • Specifies criteria for identifying and documenting those indications that must be considered for excavation and direct examination, including at least the following: <ul style="list-style-type: none"> ○ The known sensitivities of assessment tools ○ The procedures for using each tool ○ The approach to be used for decreasing the physical spacing of indirect assessment tool readings when the presence of a defect is suspected • Specifies and applies criteria for classification of the severity of each indication. <ul style="list-style-type: none"> ○ Considers impacts of spatial errors when aligning indirect inspection results ○ Compares the results from the indirect inspections and determines the consistency of indirect inspection results to resolve conflicting or differing indications by the primary and secondary tools. ○ Compares indirect inspection results with pre-assessment results to confirm or reassess ECDA feasibility and ECDA region definitions. • For each indication identified during indirect examination, specifies and applies criteria for: <ul style="list-style-type: none"> ○ Defining the urgency level of excavation and direct examination of indications based on the likelihood of current corrosion activity plus the extent and severity of prior corrosion. ○ Defining the excavation urgency as immediate, scheduled, or monitored. • Specifies and applies criteria for scheduling excavations of indication in each urgency level. <p>More restrictive criteria are used when conducting ECDA indirect inspection for the first time on a pipeline segment.</p>	
7.06 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
	No Issues Identified
	Potential Issues Identified <i>(explain in summary)</i>
	Not Applicable <i>(explain in summary)</i>

7.06 Inspection Issues Summary

7.06 Inspection Notes

Protocol # 7.07	Continual Process of Evaluation and Assessment: External Corrosion Direct Assessment (ECDA) – Direct Examination
Protocol Question	Verify that the ECDA direct examination process complies with NACE RP0502-2002, Section 5 and §195.588 to determine which indications from the indirect inspections are most severe, collect data to assess corrosion activity, and remediate defects discovered.
<p>Excavations and data collection performed in accordance with NACE RP0502-2002, Sections 5.3, 5.4, 5.10, and 6.4.2:</p> <ul style="list-style-type: none"> • Makes excavations based on priority categories described in NACE Section 5.2. • Identifies and implements minimum requirements for data collection, measurements, and recordkeeping to evaluate coating condition and significant corrosion defects at each excavation location. • The number and location of direct examinations complies with NACE RP0502-2002, Sections 5.10 and 6.4.2. <p>Criteria developed and applied for deciding what action should be taken if corrosion defects are discovered that exceed allowable limits (Section 5.5.2.2 of NACE RP0502-2002):</p> <ul style="list-style-type: none"> • Determines the remaining strength at locations where corrosion defects are found. • Defects discovered during direct examination are remediated in accordance with §195.452 (h) (4) (“immediate repair,” 60-day, 180-day, and “other” conditions). <p>Root cause identified for all significant corrosion activity and all other indications identified and reevaluated that occur in the pipeline where similar root-cause conditions exist.</p> <ul style="list-style-type: none"> • Develops and applies criteria if root cause analysis reveals conditions for which ECDA is not suitable (Section 5.6.2 of NACE RP0502-2002 provides guidance for criteria) and alternative methods of assessing the integrity of the pipeline segment are necessary. <p>Future external corrosion resulting from significant root causes mitigated or precluded.</p> <p>Evaluation of indirect inspection data, results from the remaining strength evaluation, and root cause analysis to evaluate the criteria and assumptions used to:</p> <ul style="list-style-type: none"> • Categorize the need for repairs • Classify the severity of individual indications <p>Criteria developed and applied that describe how and on what basis indications are reclassified and reprioritized in accordance with the provisions specified in NACE RP0502-2002, Section 5.9.</p> <p>Criteria and internal notification procedures established and implemented for any changes in the ECDA Plan, including changes that affect the severity classification, the priority of direct examination, and the time frame for direct examination of indications.</p> <p>Processes to consider the use of assessment methods other than ECDA (e.g., ILI or Subpart E pressure test) to assess the impact of defects other than external corrosion (e.g., mechanical damage, stress corrosion cracking) discovered during direct examination.</p> <p>More restrictive criteria are applied when conducting ECDA direct examinations for the first time on a pipeline segment.</p>	
7.07 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
	No Issues Identified
	Potential Issues Identified <i>(explain in summary)</i>
	Not Applicable <i>(explain in summary)</i>

7.07 Inspection Issues Summary

7.07 Inspection Notes

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Protocol # 7.08	Continual Process of Evaluation and Assessment: External Corrosion Direct Assessment (ECDA) – Post-Assessment
Protocol Question	Verify that the ECDA post assessment process complies with NACE RP0502-2002 Section 6 and §195.588 to (1) define reassessment intervals and (2) assess the overall effectiveness of the ECDA process.
<p>Reassessment intervals determined in accordance with NACE RP0502-2002, Section 6:</p> <ul style="list-style-type: none"> • Remaining life calculations are adequate • Maximum re-assessment intervals for each region are no more than one half the calculated remaining life • Criteria specified and applied for evaluating whether conditions discovered by direct examination of indications in each ECDA region indicate a need for reassessment of the pipeline segment at an interval less than that specified in Sections 6.2 and 6.3 of NACE RP0502-2002 <p>Reassessment intervals adjusted if required in accordance with §195.452(j)(3).</p> <p>Performance measures defined and monitored for evaluating the long-term effectiveness of ECDA in addressing external corrosion.</p> <ul style="list-style-type: none"> • At least one additional, randomly selected anomaly location excavated for process validation. • Additional criteria have been established and monitored to evaluate long-term program effectiveness such as those identified in NACE RP0502-2002, Section 6.4.3. <p>Feedback incorporated at all appropriate opportunities throughout the ECDA process to demonstrate continuous improvement.</p>	
7.08 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
	No Issues Identified
	Potential Issues Identified <i>(explain in summary)</i>
	Not Applicable <i>(explain in summary)</i>

7.08 Inspection Issues Summary

7.08 Inspection Notes

Integrity Management Inspection Protocol 8

Program Evaluation

Scope:

This Protocol addresses the requirement to measure whether the Integrity Management (IM) Program is effective in assessing and evaluating integrity and in protecting the high consequence areas. This Protocol addresses periodic internal reviews or audits of the IM Program, threat specific and aggregate program-wide performance measures, program goals, trend analysis, root cause analysis, and communication of program results and lessons learned.

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Protocol # 8.01	Program Evaluation: Process for Measuring IM Program Effectiveness
Protocol Question	Verify that the process for measuring IM program effectiveness includes the elements necessary to conduct a meaningful evaluation.
<p>Use of periodic self assessments, internal/external audits, management reviews, performance measures, or other self critical evaluations to assess program effectiveness.</p> <p>A description of the scope, objectives, and frequency of program evaluations.</p> <p>Includes bench-marking company performance using data from outside the company (e.g., API's Pipeline Performance Tracking System).</p> <p>Clearly defines the use of performance metrics in evaluating program performance.</p> <p>Provides for feedback to corrective action programs, preventive and mitigative measure decisions, and the threat and risk analysis.</p> <p>Assures management awareness and commitment, including the resources required to address integrity management program improvements identified through performance measurement.</p> <p>Provisions for the assignment of responsibility, by organization, group, or title, for implementation of required actions.</p> <p>Provisions for the review and follow-up of program evaluation results, findings, and recommendations, etc., by appropriate company managers.</p>	
8.01 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
<input type="checkbox"/>	No Issues Identified
<input type="checkbox"/>	Potential Issues Identified <i>(explain in summary)</i>
<input type="checkbox"/>	Not Applicable <i>(explain in summary)</i>
8.01 Inspection Issues Summary	
8.01 Inspection Notes	

Protocol # 8.02	Program Evaluation: Records Demonstrate IM Program Effectiveness		
Protocol Question	Verify that records indicate that the methods to measure program effectiveness provide effective evaluation of program performance and result in program improvement where necessary.		
<p>Records show that periodic self-assessments, internal and/or external audits, management reviews, or other self-critical program evaluations have been performed at the established frequency.</p> <p>Records indicate that the process has been implemented consistent with its scope and objectives, and at the established frequency.</p> <p>Records show that integrity management program evaluations provide a comprehensive and in-depth examination of performance, and effectively used the established performance metrics in the process.</p> <p>Records show bench-marking performance using data from outside the company (e.g., API's Pipeline Performance Tracking System).</p> <p>Records show evidence of feedback to corrective action programs, preventive and mitigative measure decisions, and the threat and risk analysis.</p> <p>Records include the assignment of responsibility, by organization, group, or title, for implementing required actions.</p> <p>Records show that deficiencies identified in integrity management program evaluations and recommended improvements have been implemented in a timely manner.</p>			
8.02 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>			
		No Issues Identified	
		Potential Issues Identified <i>(explain in summary)</i>	
		Not Applicable <i>(explain in summary)</i>	
8.02 Inspection Issues Summary			
8.02 Documents Reviewed <i>(Tab from bottom-right cell to add additional rows.)</i>			
Document Number	Rev.	Date	Document Title
8.02 Inspection Notes			

Protocol # 8.03	Program Evaluation: Process for Defining Performance Metrics
Protocol Question	Verify that the process to evaluate IM program effectiveness includes an adequate set of performance metrics to provide meaningful insight into IM program performance.
<p>Includes a description of the performance metrics to be used and the frequency for data collection.</p> <p>Defines metrics that: provide an overall measure of program effectiveness such as number of leaks, volume released, etc.; reflect the accomplishment of the program's objectives such as number of miles of pipeline assessed; number of anomalies found requiring repair or mitigation; number of right-of-way encroachments, and provide threat-specific insight, such as: number of leaks caused by internal/external corrosion; anomalies from manufacturing defects; third party damage; operator error; over-fill/over-pressure (tanks); equipment or non-pipe problems.</p> <p>Includes performance metrics developed in accordance with Appendix C, specifically: Activity Metrics that monitor the surveillance and preventive activities that are in place to control risk. These metrics indicate how well an operator is implementing the elements of its integrity management program; Deterioration Metrics that monitor operational and maintenance trends to indicate if the program is effective or ineffective, or the desired outcome is being achieved or not, despite the risk control activities in place; Failure Metrics that reflect whether the program is effective in achieving the objective of improving integrity. These are typically lagging indicators that measure the number of releases, the volume spilled, per cent recovered, etc.</p> <p>Includes trending of equipment or material failures (e.g., valve gaskets or pump seals) as a means to evaluate pipeline deterioration (an indicator of the end of useful life of materials and components), including a method to establish the magnitude of trends that represent normal fluctuations versus significant deviations (e.g., significant enough to warrant corrective action).</p> <p>Includes trending of leading indicators such as inadvertent over-pressurization, right-of-way encroachments without one-call notification, SCADA outages, operation of overpressure or other safety devices, or other abnormal operations such as those listed in 195.402(d)? Leading indicators measure the effectiveness of proactive efforts. These indicators can uncover weaknesses before they develop into full-fledged problems.</p> <p>Provides for the periodic review and revision (if needed) of performance metrics to assure they are providing useful information about the effectiveness of IM Program activities.</p> <p>Includes procedures to ensure the completeness and accuracy of performance measure data – both for metrics reported to PHMSA and the metrics used internally.</p> <p>Defines performance goals, including segment-specific issues related to the operator's unique operating environment such as a decrease in the number, and depth, of corrosion related anomalies, a decrease in the threat of mechanical damage due to a decrease in one-calls, a change in operations resulting in a decrease in pressure cycles, a decrease in the number of crack anomalies, etc.</p> <p>Provides for the periodic review of performance goals and their revision (if needed) based on the results of program evaluations.</p> <p>Includes comparing leak, failure, and incident metrics to risk model results, and uses these comparisons to modify the risk model as necessary.</p>	
8.03 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
	No Issues Identified
	Potential Issues Identified <i>(explain in summary)</i>
	Not Applicable <i>(explain in summary)</i>

8.03 Inspection Issues Summary

8.03 Inspection Notes

Protocol # 8.04	Program Evaluation: Adequacy of Performance Measures
Protocol Question	Verify that records indicate that performance metrics are providing meaningful insight into integrity management program performance.
<p>Records show the performance measure data is being collected and at the frequency established in the program evaluation process.</p> <p>Records show that overall metrics have been defined and data collected for: overall measures of program effectiveness such as number of leaks, volume released, etc.; metrics that reflect the accomplishment of the program's objectives such as number of miles of pipeline assessed; number of anomalies found requiring repair or mitigation; number of right-of-way encroachments; and threat specific metrics, such as: number of leaks caused by internal/external corrosion; anomalies from manufacturing defects; third party damage; operator error; over-fill/over-pressure (tanks); equipment or non-pipe problems.</p> <p>Records show that the performance metrics developed in accordance with Appendix C were implemented. Specifically: Activity Metrics that monitor the surveillance and preventive activities that are in place to control risk. These metrics indicate how well an operator is implementing the elements of its integrity management program; Deterioration Metrics that monitor operational and maintenance trends to indicate if the program is effective or ineffective, or the desired outcome is being achieved or not, despite the risk control activities in place; and Failure Metrics that reflect whether the program is effective in achieving the objective of improving integrity. These are typically lagging indicators that measure the number of releases, the volume spilled, percent recovered, etc.</p> <p>Records show trending of equipment or material failures as a means to evaluate pipeline deterioration.</p> <p>Records show trending of leading indicators such as inadvertent over-pressurization, ROW encroachments without one-call notification, SCADA outages, operation of overpressure or other safety devices, or other abnormal operations such as those listed in 195.402(d).</p> <p>Records show that the performance metrics have been reviewed and updated if needed to assure they are providing useful information about the effectiveness of IM Program activities.</p> <p>Records show that the operator has implemented its program to assure the completeness and accuracy of the data used to measure performance.</p> <p>Records show that the IM performance measures reported to PHMSA are complete and accurate.</p> <p>Records show that the operator has established specific performance goals, including segment specific issues related to the operator's unique operating environment such as the number, and depth, of corrosion related anomalies, the threat of mechanical damage due to one calls, a change in operations resulting in pressure cycles, the number of crack anomalies, etc..</p> <p>Records show that the performance goals have been reviewed and revised based on the results of program evaluations.</p> <p>Records show that the leak, failure, and incident metrics have been compared to the risk model, and that changes to the risk model have been made when the data indicates such changes are necessary.</p>	

8.04 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
<input type="checkbox"/>	No Issues Identified
<input type="checkbox"/>	Potential Issues Identified <i>(explain in summary)</i>
<input type="checkbox"/>	Not Applicable <i>(explain in summary)</i>

8.04 Inspection Issues Summary

8.04 Documents Reviewed <i>(Tab from bottom-right cell to add additional rows.)</i>			
Document Number	Rev.	Date	Document Title

8.04 Inspection Notes

Protocol # 8.05	Program Evaluation: Communication of Evaluation Results
Protocol Question	Verify that the Program Evaluation process requires communication of goals and IM Program effectiveness to managers and workers involved with IM Program implementation.
<p>Periodic reports distributed to responsible field and headquarters managers responsible for IM Program implementation.</p> <p>Communication of performance evaluation results, including the most important integrity issues and actions taken to address these issues.</p> <p>Management follow-up and actions taken to address significant integrity issues.</p>	
8.05 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
	No Issues Identified
	Potential Issues Identified <i>(explain in summary)</i>
	Not Applicable <i>(explain in summary)</i>
8.05 Inspection Issues Summary	
8.05 Inspection Notes	

Protocol # 8.06	Program Evaluation: Root Cause Analysis Process
Protocol Question	Verify that the operator has an effective root cause analysis and a lessons learned program. Is the process being effectively implemented?
Rigorous analyses of problems/incidents that identify human factors issues, management systems problems, generic component or process failures. Identification of recommendations & corrective actions; and tracking of actions to closure. Communication of lessons learned from root cause analysis to company employees. Identification of positive trends and system-wide implementation of good practices.	
8.06 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>	
	No Issues Identified
	Potential Issues Identified <i>(explain in summary)</i>
	Not Applicable <i>(explain in summary)</i>
8.06 Inspection Issues Summary	
8.06 Inspection Notes	

Protocol # 8.07	Program Evaluation: Process Revision and Document Control
Protocol Question	Verify that the operator's Integrity Management Program adequately assures that document updates and revisions are identified, justified, documented, and implemented consistent with the requirements of §195.452.
<p>The Integrity Management Plan is comprehensive.</p> <p>There is adequate documentation to support the decisions, analyses, and action taken to implement and evaluate each element of the integrity management program.</p> <p>Periodic reviews of all IM Program elements are performed.</p> <p>There are adequate interfaces to ensure that changes in one area are properly reflected in all areas.</p> <p>Changes to the pipeline and environment are properly analyzed.</p> <p>Documentation is adequate to identify changes to the BAP.</p> <p>Adequate document control is in place to ensure changes are tracked and the latest revisions are being used.</p> <p>A document retention policy is in place.</p> <p>Documentation is obtained from previous pipeline owner/operator when acquisitions are made.</p>	
8.07 Inspection Results (Type an X in the applicable box below. Select only one.)	
	No Issues Identified
	Potential Issues Identified (explain in summary)
	Not Applicable (explain in summary)
8.07 Inspection Issues Summary	
8.07 Inspection Notes	

Protocol # 8.08	Program Evaluation: Process Formality		
Protocol Question	<p>Verify that the operator's Integrity Management Program has sufficient specificity and detail to provide assurance that it can be implemented in a technically sound and consistent manner.</p> <hr/> <p>Do operator records indicate that the process has been implemented as described? The inspectors should review areas of weakness identified during the inspection against the IMP documentation.</p>		
<p>The requirements of the IM rule are captured. The technical basis and assumptions used in each element of the program are delineated. The procedures required to implement the IMP are identified. There is sufficient detail and specificity to allow successful implementation of each element. The responsibilities for implementing all required actions are identified (e.g., by organizational group or title). The distribution of key IMP documents to appropriate individuals and organizations is defined. Management involvement in key elements of the IMP is identified. Documented internal review or quality assurance mechanisms are in place to assure accurate, complete, and consistent results.</p>			
8.08 Inspection Results <i>(Type an X in the applicable box below. Select only one.)</i>			
	No Issues Identified		
	Potential Issues Identified <i>(explain in summary)</i>		
	Not Applicable <i>(explain in summary)</i>		
8.08 Inspection Issues Summary			
8.08 Documents Reviewed <i>(Tab from bottom-right cell to add additional rows.)</i>			
Document Number	Rev.	Date	Document Title
8.08 Inspection Notes			