

**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)

**December 2007
(Based on December 2007 updated protocol set)**

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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.

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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 # 1.02	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 # 1.07	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	

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 # 2.02	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 <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>
2.02 Additional Data <i>(Type an X in the applicable box to verify task completion.)</i>	
<input type="checkbox"/>	Annual Report Part K Data Reviewed
2.02 Inspection Issues Summary	
2.02 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 # 3.07	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>	
	No Issues Identified
	Potential Issues Identified <i>(explain in summary)</i>
	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 # 4.02	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 reason 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	

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 # 5.02	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: Input Information
Protocol Question	Verify that adequate and appropriate data and information are input into the risk analysis process.
<p>Use of best available data, including the results of integrity assessments.</p> <p>Assurance of completeness and quality of input information.</p> <p>Minimizing the use of input information that is unnecessarily or excessively conservative (to avoid masking best-estimate risk insights).</p> <p>Use of sources best suited to provide whatever subjective information is used (e.g., from operator field personnel).</p> <p>Structured process for obtaining subjective information (e.g., using forms, surveys, interviews, quality checks, etc.) to ensure consistency of data.</p> <p>Use of the operator's and industry's operating experience data where applicable.</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: 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>	
5.04 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>
5.04 Inspection Issues Summary	
5.04 Inspection Notes	

Protocol # 5.05	Risk Analysis: Results
Protocol Question	Verify that analysis results are useful for drawing conclusions and insights for Integrity Management decision making.
Identification of the pipeline locations having the highest estimated risk. Identification of the most important risk drivers and the underlying causes. Means to evaluate and reduce major sources of uncertainties.	
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: 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.	
5.06 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)
5.06 Inspection Issues Summary	
5.06 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 # 6.03	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	

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 is made to PHMSA (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 (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)
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 # 7.05	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 RP-0502-2002 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.
<p>Plan requires adequate data to be identified and collected to support the ECDA pre-assessment; identification and collection of data is adequate</p> <p>ECDA feasibility assessment is conducted by integrating and analyzing the data collected</p> <p>Appropriate requirements for selecting indirect inspection tools:</p> <ul style="list-style-type: none"> • 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. <p>ECDA Regions are identified based on the use of data integration results applied to specific criteria.</p> <p>More restrictive criteria are used when conducting ECDA pre-assessment for the first time on a pipeline segment.</p>	
7.05 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>
7.05 Inspection Issues Summary	
7.05 Inspection Issues Summary	

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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

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>	
<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>
7.08 Inspection Issues Summary	
7.08 Inspection Notes	

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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 Approach
Protocol Question	Verify that the operator's IM Program includes a process for performing IM Program evaluations as required in §195.452 (f) (7).
<p>Use of periodic self-assessments, internal/external audits, management reviews, or other self-critical evaluations to assess program effectiveness.</p> <p>Description of the scope, objectives, and frequency of program evaluations.</p> <p>Clear performance goals to measure the effectiveness of key integrity activities.</p> <p>Assignment of responsibility for implementing required actions.</p> <p>Data collection and analyses have been implemented.</p> <p>Trends and/or insights are being identified.</p> <p>Self-assessments and/or management audits have been completed.</p> <p>Reviews have been performed to ascertain the effectiveness of risk control decisions.</p> <p>Performance problems, positive trends, and improvements have been identified.</p> <p>Records generated for the periodic IM Program Evaluation (e.g., records of completed audits, disposition of recommendations, etc.).</p> <p>Review and follow-up of program evaluation results, findings, and recommendations, etc., by appropriate company managers. Specified actions have been implemented or scheduled for implementation.</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 # 8.03	Program Evaluation: Communication of Evaluation Results
Protocol Question	Verify that the operator communicates goals and IM Program evaluations 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>	
8.03 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 # 8.05	Program Evaluation: Process Revision and Document Control
Protocol Question	Verify 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>	
8.05 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)
8.05 Inspection Issues Summary	
8.05 Inspection Notes	

Protocol # 8.06	Program Evaluation: Process Formality
Protocol Question	Verify the 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>The Integrity Management rule requirements are captured.</p> <p>The technical basis and assumptions of each element are delineated.</p> <p>The procedures required to implement each element are identified.</p> <p>There is sufficient detail and specificity to allow implementation of each element.</p> <p>Responsibilities are identified.</p> <p>Document distribution is delineated.</p> <p>Management involvement is identified.</p> <p>A QC/QA process is defined.</p>	
8.06 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)
8.06 Inspection Issues Summary	
8.06 Inspection Notes	