US Department of Transportation
Research and Special Projects Administration
Office of Pipeline Safety

Integrity Management Program
49 CFR 195.452

Integrity Management
Inspection Protocols

January 2003

Table of Contents

Explanation of Inspection Form Format

The next two pages provide a brief description of each item in the Integrity Management Inspection Form.

Protocol #	*Keywords reflecting the subject area of the Protocol Question are entered here. Each question has a unique number, as indicated to the left.*
Protocol Question	*Question to be answered in reviewing an operator's Integrity Management Program or the implementation of its Program.* *Some questions in the Integrity Management Inspection Protocols have two parts. One part deals with the inspection of a particular aspect or feature of the operator's Integrity Management processes, procedures, technical methods, etc. The second part addresses how effectively the operator has implemented that process and the results that have been obtained.*
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. *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.*	
Rule Requirement	*Reference to related rule requirement(s).*

<table>
<tr><td rowspan="2">Inspection Summary</td><td>Process</td><td>This space is provided to record any issues or concerns the inspector identifies in reviewing the operator’s response to the protocol question. As noted above, some questions in the Integrity Management Inspection Protocols have two parts: a “process” review, and a review of the operator’s “implementation” of that process. To deal with these different perspectives, this part of the inspection form has been subdivided into “Process” and “ Implementation” portions.</td></tr>
<tr><td>Implementation</td><td></td></tr>
</table>

<table>
<tr><td rowspan="3">Inspection Results
The boxes to the right are checked based on the information supplied in the Summary.</td><td></td><td>No Issues Identified</td></tr>
<tr><td></td><td>Potential Issues Identified (explain in summary)</td></tr>
<tr><td></td><td>Not Applicable (explain in summary)</td></tr>
</table>

Documents Reviewed: *Documents reviewed in answering the Protocol Question are listed below.*

Document Number	Rev.	Date	Document Title

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:			

OPS Representatives: ____________________ **Dates:** __________

System Descriptions:

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.

Protocol # 1.01	Segment Identification: HCA Identification
Protocol Question	Does the process to identify segments that could affect HCAs include steps to identify, document, and maintain up-to-date geographic locations and boundaries of HCAs using the NPMS and other information sources as necessary? ——————————— Verify that the operator correctly identifies and maintains up-to-date locations and boundaries of HCAs using NPMS and other information sources as appropriate for all states/regions in which it operates.

An operator's process to identify pipeline segments that could affect HCAs must identify the location of HCAs that could be affected by pipeline failures. To accomplish this step, the operator's documented IM process would be expected to include the following elements:

1. The use of NPMS (or equivalent sources) to identify HCAs.
2. Adequate measures to identify drinking water USAs in New York state and ecological USAs in Pennsylvania (these are the only states for which NPMS has no drinking water or ecological USA data).
3. Adequate provisions to assure that local knowledge, information obtained from routine field activities (e.g., ROW surveillance, aerial surveys), and other information sources are used as required to supplement NPMS data in order to accurately reflect current conditions in the vicinity of the pipeline.
4. Provisions for periodic review and update of HCA boundaries, including timely use of revised NPMS data and local information in the update (e.g., per the requirements of 452 (d)(3)).

Rule Requirement

§452 (f) An operator must include, at minimum, each of the following elements in its written integrity management program: (1) A process for identifying which pipeline segments could affect a high consequence area.

§452 (b) *What program and practices must operators use to manage pipeline integrity?* Each operator of a pipeline covered by this section must: (1) Develop a written integrity management program that addresses the risks on each segment of pipeline in the first column of the following table not later than the date in the second column:

Pipeline	Date
Category 1	March 31, 2002.
Category 2	February 18, 2003.
Category 3	1 year after the date the pipeline begins operation.

(2) Include in the program an identification of each pipeline or pipeline segment in the first column of the following table not later than the date in the second column:

Pipeline	Date
Category 1	December 31, 2001
Category 2	November 18, 2002.
Category 3	Date the pipeline begins operation.

§195.452 (d)(3) *Newly-identified areas.* (i) When information is available from the information analysis (see paragraph (g) of this section), or from Census Bureau maps, that the population density around a pipeline segment has changed so as to fall within the definition in §195.450 of a high population area or other populated area, the operator must incorporate the area into its baseline assessment plan as a high consequence area within one year from the date the area is identified.

Inspection Summary	Process	
	Implementation	

Protocol 1.01 Inspection Results		
		No Issues Identified
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

1.01 Inspection Notes:

Protocol # 1.02	Segment Identification: Direct Intersection Method
Protocol Question	Does the operator have an adequate process to determine all locations where its pipeline system is located in a HCA? ——————————— Verify that the operator determined all locations where its pipeline system is located in a HCA (i.e., determine if the operator correlated its complete pipeline system(s) maps with the HCA maps, and identified areas where the pipeline system intersects a HCA).

The purpose of this question is to review the operator's identification of intersections between the operator's pipeline and HCAs. An effective operator process for identification of these intersections would be expected to have the following characteristics:

1. The process requires that segments that are physically located within HCAs are identified and defined by specific locations that represent the place where the pipeline actually intersects that HCA boundary. (The entire segment that could affect the HCA could be much larger based on transport analysis.)
2. The process requires that pipeline facilities that are located in HCAs are identified (not just line pipe).
3. Any GIS or other mapping software used by operators employs a valid analysis algorithm or methodology to identify segments that intersect HCAs.
4. Any manual analysis techniques used by operators employ a valid analysis technique or methodology to identify segments that intersect HCAs.

Rule Requirement	§452 (f) An operator must include, at minimum, each of the following elements in its written integrity management program: (1) A process for identifying which pipeline segments could affect a high consequence area. §452 (b) *What program and practices must operators use to manage pipeline integrity?* Each operator of a pipeline covered by this section must: (1) Develop a written integrity management program that addresses the risks on each segment of pipeline in the first column of the following table not later than the date in the second column: Pipeline — Date Category 1 — March 31, 2002. Category 2 — February 18, 2003. Category 3 — 1 year after the date the pipeline begins operation. (2) Include in the program an identification of each pipeline or pipeline segment in the first column of the following table not later than the date in the second column: Pipeline — Date Category 1 — December 31, 2001 Category 2 — November 18, 2002. Category 3 — Date the pipeline begins operation. §452 (a) *What pipelines are covered by this section?* The section applies to each hazardous liquid pipeline and carbon dioxide pipeline that could affect a high consequence area, including any pipeline located in a high consequence area unless the operator effectively demonstrates by risk assessment that the pipeline could not affect the area.

Inspection Summary	Process	
	Implementation	

Protocol 1.02 Inspection Results		**No Issues Identified**
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

1.02 Inspection Notes:

<table>
<tr><td>Protocol # 1.03</td><td>Segment Identification: Direct Intersection Exceptions</td></tr>
<tr><td>Protocol Question</td><td>Does the operator’s segment identification process require development and documentation of an adequate and convincing technical justification for concluding that segments located in a HCA could not affect the HCA in the event of a release?
____

Determine if the operator identified any segments located in a HCA that could not affect that HCA in the event of a failure. If so, verify that the operator provided an adequate and convincing technical justification for that contention consistent with its documented process.</td></tr>
<tr><td colspan="2">452 (a) presumes that a pipeline segment within a HCA could affect that HCA. If the operator concludes that some segments within HCAs could not affect the HCAs, then a technical justification for this conclusion is required. If the operator intends to maintain any segment intersecting a HCA could not affect that HCA, then an effective operator process would be expected to include provisions for such a technical justification with the following characteristics:

1. Guidance for performing an analysis to substantiate the conclusion that a pipeline segment located within a HCA could not affect the HCA.
2. An adequate level of rigor specified for any analysis that is used to justify the conclusion that a segment located in a HCA could not affect the HCA.
3. A valid analysis to justify the conclusion that a pipeline segment located within a HCA could not affect the HCA.

The operator’s justification that a segment intersecting a HCA could not affect the HCA may be based on different factors. These factors include:

1. Minimal impact. (This justification is based on analysis that shows that the commodity does reach and impact the HCA, but that the impact is insignificant and small enough to justify the assertion that the release could not adversely affect the HCA).
2. HVL properties.
3. Topographical considerations.
4. HCA properties.</td></tr>
<tr><td>Rule Requirement</td><td>§452 (f) An operator must include, at minimum, each of the following elements in its written integrity management program: (1) A process for identifying which pipeline segments could affect a high consequence area.</td></tr>
</table>

	§452 (b) *What program and practices must operators use to manage pipeline integrity?* Each operator of a pipeline covered by this section must: (1) Develop a written integrity management program that addresses the risks on each segment of pipeline in the first column of the following table not later than the date in the second column: Pipeline — Date Category 1 — March 31, 2002. Category 2 — February 18, 2003. Category 3 — 1 year after the date the pipeline begins operation. (2) Include in the program an identification of each pipeline or pipeline segment in the first column of the following table not later than the date in the second column: Pipeline — Date Category 1 — December 31, 2001 Category 2 — November 18, 2002. Category 3 — Date the pipeline begins operation. §452 (a) *What pipelines are covered by this section?* The section applies to each hazardous liquid pipeline and carbon dioxide pipeline that could affect a high consequence area, including any pipeline located in a high consequence area unless the operator effectively demonstrates by risk assessment that the pipeline could not affect the area.

Inspection Summary	Process	
	Implementation	

Protocol 1.03 Inspection Results		
		No Issues Identified
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

1.03 Inspection Notes:

Protocol # 1.04	Segment Identification: Release Locations Selected for Analysis
Protocol Question	Does the operator's segment identification analysis process include a technically adequate method to determine the locations/scenarios of potential commodity releases? Verify that the operator's identified release locations are appropriate, technically adequate, and consistent with its documented process.

The operator's approach for analyzing the potential effects of pipeline failures that could affect HCAs must define potential locations on the pipeline where releases could occur. An effective operator program would be expected to consider the following elements:

1. Proximity to water crossings;
2. Variations in topography near the line;
3. Variations in distance between the pipeline and the HCA (for HCAs that do not intersect the pipeline);
4. Adequate choice of release locations, if fixed spacing along the pipeline is used in the definition of locations;
5. Consideration of spills involving pipeline facilities (e.g, breakout tanks).

Rule Requirement	§452 (f) An operator must include, at minimum, each of the following elements in its written integrity management program: (1) A process for identifying which pipeline segments could affect a high consequence area. §452 (b) *What program and practices must operators use to manage pipeline integrity?* Each operator of a pipeline covered by this section must: (1) Develop a written integrity management program that addresses the risks on each segment of pipeline in the first column of the following table not later than the date in the second column: Pipeline — Date Category 1 — March 31, 2002. Category 2 — February 18, 2003. Category 3 — 1 year after the date the pipeline begins operation. (2) Include in the program an identification of each pipeline or pipeline segment in the first column of the following table not later than the date in the second column: Pipeline — Date Category 1 — December 31, 2001 Category 2 — November 18, 2002. Category 3 — Date the pipeline begins operation.

Inspection Summary	Process	
	Implementation	

Protocol 1.04 Inspection Results		**No Issues Identified**
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

1.04 Inspection Notes:

Protocol # 1.05	Segment Identification: Spill Volume
Protocol Question	Does the operator's process include a technically adequate method to determine the volume of commodity that could be released from a leak or rupture, if needed for the operator's analysis to identify segments that could affect HCAs? ——————————————— Verify that the release volume estimates are adequate and consistent with the operator's documented process.

Analyzing the potential effects of pipeline failures that could affect HCAs involves estimating the volume of commodity that could be released in the event of a failure. An effective operator program would be expected to include appropriate treatment of the following factors that affect estimation of spill volume:

1. Failure hole size;
2. Operating conditions (e.g., flow rate, operating pressure);
3. Leak detection and response time;
4. Calculations of drain down following leak or rupture;
5. Release rate estimates, if air dispersion of vapor clouds is a transport mechanism that is applicable to the operator's system; and
6. Pipeline system design factors (e.g., pipe diameter, distance between isolation valves, location of tanks and other facilities).

If the operator's approach to identify segments that could affect HCAs involves the definition of a spill buffer zone, then the basis for the defined buffer distance would be expected to include appropriate treatment of the above factors.

Note: Because an adequate spill volume analysis may require consideration of various scenarios and combinations of assumptions regarding different variables, the operator's release estimate analysis would be expected to include a sensitivity analysis to variations in assumptions, including consideration of both catastrophic failure and leaks below detection limits.

Rule Requirement	§452 (f) An operator must include, at minimum, each of the following elements in its written integrity management program: (1) A process for identifying which pipeline segments could affect a high consequence area.

	§452 (b) *What program and practices must operators use to manage pipeline integrity?* Each operator of a pipeline covered by this section must: (1) Develop a written integrity management program that addresses the risks on each segment of pipeline in the first column of the following table not later than the date in the second column: Pipeline — Date Category 1 — March 31, 2002. Category 2 — February 18, 2003. Category 3 — 1 year after the date the pipeline begins operation. (2) Include in the program an identification of each pipeline or pipeline segment in the first column of the following table not later than the date in the second column: Pipeline — Date Category 1 — December 31, 2001 Category 2 — November 18, 2002. Category 3 — Date the pipeline begins operation.

Inspection Summary	Process	
	Implementation	

Protocol 1.05 Inspection Results		
		No Issues Identified
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

1.05 Inspection Notes:

Protocol # 1.06	Segment Identification: Overland Spread of Liquid Pool
Protocol Question	Does the operator's process include an adequate analysis of overland flow of liquids to determine the extent of commodity spread and its effects on HCAs? Verify that the operator produced an overland spread analysis (if applicable) that is technically adequate and consistent with its program requirements.

Analyzing the potential effects of pipeline failures that could affect HCAs involves estimating the distance and direction of the commodity spilled from a potential failure at a location on the pipeline and determining if the identified direction and extent of the spill could result in adverse consequences to a HCA. Commodity spilled from hazardous liquid pipelines may spread by land, water, or air to impact HCAs. This protocol considers the operator's analysis of overland spill transport. An effective operator process would be expected to include the following characteristics in analyzing overland spread of spills:

1. The assumptions used in the overland spread analysis are valid for all applications of the assumption (e.g., assumptions used to conduct overland spread analysis used as a basis for buffer zone size should be valid for all systems and locations to which the buffer zone is applied).
2. The overland spread analysis technique adequately and accurately evaluates the effects of topography on overland spread consequences.
3. Assumptions on operator spill response actions used to determine the pool spread limits are valid.
4. The overland spread analysis process identifies and adequately analyzes local factors such as ditches, sewers, farm tile, drains, etc.
5. Any computer modeling of overland transport mechanisms that is used produces valid overland spread consequence results.

If the operator's approach to identify segments that could affect HCAs involves the definition of a spill buffer zone, then the basis for the defined buffer distance would be expected to bound the overland spread distances estimated for each location to which the buffer is applied. The analysis used to define the buffer zone would be expected to include the above characteristics.

Rule Requirement	§452 (f) An operator must include, at minimum, each of the following elements in its written integrity management program: (1) A process for identifying which pipeline segments could affect a high consequence area. §452 (b) *What program and practices must operators use to manage pipeline integrity?* Each operator of a pipeline covered by this section must: (1) Develop a written integrity management program that addresses the risks on each segment of pipeline in the first column of the following table not later than the date in the second column: Pipeline — Date Category 1 — March 31, 2002. Category 2 — February 18, 2003. Category 3 — 1 year after the date the pipeline begins operation. (2) Include in the program an identification of each pipeline or pipeline segment in the first column of the following table not later than the date in the second column: Pipeline — Date Category 1 — December 31, 2001 Category 2 — November 18, 2002. Category 3 — Date the pipeline begins operation.

Inspection Summary	**Process**	
	Implementation	

Protocol 1.06 Inspection Results		
	☐	**No Issues Identified**
	☐	**Potential Issues Identified (explain in summary)**
	☐	**Not Applicable (explain in summary)**

Documents Reviewed:

Document Number	Rev.	Date	Document Title

1.06 Inspection Notes:

Protocol # 1.07	Segment Identification: Water Transport Analysis
Protocol Question	Does the operator's process include a technically adequate analysis of water transport of liquids to determine the extent of commodity spread and its effects on HCAs? Verify that the operator produced a water transport analysis (if applicable) that is technically adequate and consistent with its program requirements.

This protocol considers the operator's analysis of spill transport through waterways. An effective operator process would be expected to include the following characteristics in analyzing the transport of spills by water:

1. The analysis adequately evaluates the effects of all applicable factors, including stream conditions, flow characteristics, and water properties on water transport consequences.
2. The assumptions used in the analysis are valid for all systems and locations to which the assumptions are applied (e.g., assumptions used to conduct water transport analysis as a basis for buffer zone size are valid for all systems and locations to which the buffer zone is applied).
3. Pool spread limits based on assumptions of operator spill response actions are defensible.

Additional factors that may be important to understanding water transport of spilled commodity include:

1. Changes in commodity properties due to interaction with the environment (such as dissolved MTBE transport and change in buoyancy and density due to evaporation).
2. Commodity solubility.
3. Abnormal stream conditions such as flood or storm conditions, etc.
4. Subsurface water transport as well as surface water transport.
5. Indirect introduction into water due to overland pool spread that reaches waterways.
6. Introduction into water from spray releases.

If the operator's approach to identify segments that could affect HCAs involves the definition of a spill buffer zone, then the basis for the defined buffer distance would be expected to bound the spill water transport distances estimated for each location to which the buffer is applied. The analysis used to define the buffer zone would be expected to include the above characteristics.

Rule Requirement	§452 (f) An operator must include, at minimum, each of the following elements in its written integrity management program: (1) A process for identifying which pipeline segments could affect a high consequence area.

§452 (b) *What program and practices must operators use to manage pipeline integrity?* Each operator of a pipeline covered by this section must: (1) Develop a written integrity management program that addresses the risks on each segment of pipeline in the first column of the following table not later than the date in the second column:

Pipeline	Date
Category 1	March 31, 2002.
Category 2	February 18, 2003.
Category 3	1 year after the date the pipeline begins operation.

(2) Include in the program an identification of each pipeline or pipeline segment in the first column of the following table not later than the date in the second column:

Pipeline	Date
Category 1	December 31, 2001
Category 2	November 18, 2002.
Category 3	Date the pipeline begins operation.

Inspection Summary	Process	
	Implementation	

Protocol 1.07 Inspection Results		
		No Issues Identified
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

1.07 Inspection Notes:

Protocol # 1.08	Segment Identification: Air Dispersion Analysis
Protocol Question	Does the operator’s documented consequence analysis process include a technically adequate analysis of the air dispersion of vapors from the release of highly volatile liquids and volatile liquids to determine the extent of harmful commodity vapor spread and its effects on HCAs? ——————————————— Verify that the operator produced an analysis of the air dispersion of vapors (if applicable) that is technically adequate and consistent with its program requirements.

This protocol considers the operator’s analysis of spill transport through air dispersion. An effective operator process would be expected to have the following characteristics in analyzing the dispersion of spills through air:

1. The process includes air dispersion analysis where appropriate for the operator’s system and release scenarios.
2. The operator’s selection of analysis model and software tool is appropriate for the operator’s system and release scenario.
3. The analysis correctly models the physical properties of the commodity that could be released.
4. The air dispersion analysis inputs and assumptions used to determine if the release could affect a HCA are adequate.
5. If the air dispersion analysis involves consideration of threshold levels of concern for the adverse effects of releases, then the thresholds that are used are based on valid criteria to determine if releases could affect a HCA.
6. For completeness, the air dispersion analysis considers the potential for secondary effects, (e.g., chemical byproducts of combustion) to adversely affect a HCA.

If the operator’s approach to identify segments that could affect HCAs involves the definition of a spill buffer zone, then the basis for the defined buffer distance would be expected to bound the vapor dispersion distances estimated for each location to which the buffer is applied. The analysis used to define the buffer zone would be expected to include the above characteristics.

Rule Requirement	§452 (f) An operator must include, at minimum, each of the following elements in its written integrity management program: (1) A process for identifying which pipeline segments could affect a high consequence area.

	§452 (b) *What program and practices must operators use to manage pipeline integrity?* Each operator of a pipeline covered by this section must: (1) Develop a written integrity management program that addresses the risks on each segment of pipeline in the first column of the following table not later than the date in the second column: Pipeline — Date Category 1 — March 31, 2002. Category 2 — February 18, 2003. Category 3 — 1 year after the date the pipeline begins operation. (2) Include in the program an identification of each pipeline or pipeline segment in the first column of the following table not later than the date in the second column: Pipeline — Date Category 1 — December 31, 2001 Category 2 — November 18, 2002. Category 3 — Date the pipeline begins operation.

Inspection Summary	**Process**	
	Implementation	

Protocol 1.08 Inspection Results		**No Issues Identified**
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

1.08 Inspection Notes:

Protocol # 1.09	Segment Identification: Identification of Segments that Could Affect HCAs
Protocol Question	Does the operator's analysis process adequately identify all locations of segments that do not intersect, but could affect, HCAs? ——————————— Review the operator's analysis and determine if there is reasonable assurance that the operator correctly identified all specific locations that define segments that could affect a HCA.

This protocol addresses the results of the operator's process for segments that do not intersect, but could affect, HCAs. An effective operator process would be expected to have the following characteristics:

1. The process requires that segments that could affect HCAs (according to the analysis reviewed under protocols 1.04 through 1.08) are identified and defined by specific locations.
2. If the operator used a buffer zone approach to identify segments that could affect HCAs, then the approach identifies all segments that are within the buffer distance of any HCA.
3. If the operator identified any segments based on buffer zone intersection that were declared not to affect the HCA, then the technical justification for this assertion is adequate.
4. The operator's analysis adequately identifies pipeline facilities that could affect HCAs.

Rule Requirement

§452 (f) An operator must include, at minimum, each of the following elements in its written integrity management program:
(1) A process for identifying which pipeline segments could affect a high consequence area.

§452 (b) *What program and practices must operators use to manage pipeline integrity?* Each operator of a pipeline covered by this section must: (1) Develop a written integrity management program that addresses the risks on each segment of pipeline in the first column of the following table not later than the date in the second column:

Pipeline	Date
Category 1	March 31, 2002.
Category 2	February 18, 2003.
Category 3	1 year after the date the pipeline begins operation.

(2) Include in the program an identification of each pipeline or pipeline segment in the first column of the following table not later than the date in the second column:

Pipeline	Date
Category 1	December 31, 2001
Category 2	November 18, 2002.
Category 3	Date the pipeline begins operation.

Inspection Summary	Process	
	Implementation	

Protocol 1.09 Inspection Results		**No Issues Identified**
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

1.09 Inspection Notes:

Protocol # 1.10	Segment Identification: Revision Control
Protocol Question	Does the operator's segment identification process include the control of revisions subsequent to the initial determination, and if so, does the process require that changes be adequately justified, documented, and incorporated into the baseline assessment plan and other program elements? ——————————————— Determine if the operator's segment identification results have been revised since the initial determination, and if so, verify that changes have been adequately justified, documented, and incorporated into the baseline assessment plan and other program elements.

The operator's initial segment identification may require revisions. This protocol examines the operator's steps for controlling revisions. An effective operator program would be expected to have the following characteristics:

1. Adequate controls for developing and implementing revisions to the segment identification analysis.
2. Interfaces with other IM Program elements to assure the revised segment identification results are reflected in the other elements (e.g., baseline assessment plan).
3. Provisions to identify and analyze changes to the pipeline, such as design and operations, for impacts on segment identification and other IM Program elements.
4. Provisions to identify and analyze changes to the local terrain or environment near the pipeline, both from operator activities and from third party activities, to determine the impact on segment identification and other IM Program elements.
5. The operator's process does *not* allow revisions to segment identification analysis after the start of integrity assessments in order to avoid remediation of assessment anomalies.
6. If the operator utilizes the segment identification results in other business processes, then the operator's segment identification process includes interfaces with other operator business program elements, such as emergency plans, to assure proper application of the results.

Rule Requirement	§452 (f) An operator must include, at minimum, each of the following elements in its written integrity management program: (1) A process for identifying which pipeline segments could affect a high consequence area. §195.452 (d)(3) *Newly-identified areas.* (i) When information is available from the information analysis (see paragraph (g) of this section), or from Census Bureau maps, that the population density around a pipeline segment has changed so as to fall within the definition in §195.450 of a high population area or other populated area, the operator must incorporate the area into its baseline assessment plan as a high consequence area within one year from the date the area is identified. §452 (l) *What records must be kept?* (1) An operator must maintain for review during an inspection: (i) A written integrity management program in accordance with paragraph (b) of this section. (ii) Documents to support the decisions and analyses, including any modifications, justifications, variances, deviations and determinations made, and actions taken, to implement and evaluate each element of the integrity management program listed in paragraph (f) of this section. (2) See Appendix C of this part for examples of records an operator would be required to keep.

Inspection Summary	Process	
	Implementation	

Protocol 1.10 Inspection Results		**No Issues Identified**
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

1.10 Inspection Notes:

Protocol # 1.11	Segment Identification: Process Formality
Protocol Question	Is the operator's process for identifying pipeline segments that could affect HCAs documented with sufficient specificity and detail to provide assurance that it can be implemented in a consistent manner? Are the analytical techniques and assumptions used to identify pipeline segments that could affect HCAs adequately justified and documented in the operator's IM Program? ——— Verify that the operator's process implementation, documentation, records, management practices, and applied resources provide reasonable confidence that the segment identification process has been (and will be) consistently and appropriately implemented.

An effective operator program would be expected to have the following characteristics:

1. The process includes documented guidance or procedures describing the steps required to identify segments that could affect HCAs. The instructions are sufficiently detailed so that different qualified persons would likely be able to independently implement the process and reach similar results.
2. The process to identify and document HCA boundaries and pipeline location data is adequate.
3. The IM Program requires that idle lines be included in the segment identification process.
4. All technical bases and segment identification analysis assumptions are identified and documented.
5. The process includes provisions to document each segment that could affect HCAs by specific identifiable endpoints.
6. The guidance specifies records to be generated in the process of implementing segment identification and specifies the records retention period that complies with IM rule requirements.
7. The guidance specifies distribution, by organizational group or title, for the records/results of segment identification.
8. The process has documented internal review or quality assurance mechanisms in place to assure accurate, complete, appropriate, and consistent results. These mechanisms address both completeness and quality of results, management approval of results, and validation of software applied in segment identification.
9. The process documentation identifies the characteristics of the HCAs that could be affected by specific segments (e.g., the ecological concerns that define a USA).

Rule Requirement	§452 (f) An operator must include, at minimum, each of the following elements in its written integrity management program: (1) A process for identifying which pipeline segments could affect a high consequence area.

	§452 (b) *What program and practices must operators use to manage pipeline integrity?* Each operator of a pipeline covered by this section must: (1) Develop a written integrity management program that addresses the risks on each segment of pipeline in the first column of the following table not later than the date in the second column: Pipeline — Date Category 1 — March 31, 2002. Category 2 — February 18, 2003. Category 3 — 1 year after the date the pipeline begins operation. (2) Include in the program an identification of each pipeline or pipeline segment in the first column of the following table not later than the date in the second column: Pipeline — Date Category 1 — December 31, 2001 Category 2 — November 18, 2002. Category 3 — Date the pipeline begins operation. §452 (l) *What records must be kept?* (1) An operator must maintain for review during an inspection: (i) A written integrity management program in accordance with paragraph (b) of this section. (ii) Documents to support the decisions and analyses, including any modifications, justifications, variances, deviations and determinations made, and actions taken, to implement and evaluate each element of the integrity management program listed in paragraph (f) of this section. (2) See Appendix C of this part for examples of records an operator would be required to keep.

Inspection Summary	Process	
	Implementation	

Protocol 1.11 Inspection Results		No Issues Identified
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

1.11 Inspection Notes:

Protocol # 1.12	Segment Identification: Timely Completion of Segment Identification
Protocol Question	Did the operator complete segment identification by the dates prescribed in 452(b)(2)?
The operator must identify all segments that could affect HCAs by the prescribed dates: 1. 12/31/2001 for Category 1 pipelines 2. 11/18/2002 for Category 2 pipelines 3. Beginning of operation for Category 3 pipelines	
Rule Requirement	§452 (b) *What program and practices must operators use to manage pipeline integrity?* Each operator of a pipeline covered by this section must: (2) Include in the program an identification of each pipeline or pipeline segment in the first column of the following table not later than the date in the second column: Pipeline — Date Category 1 — December 31, 2001 Category 2 — November 18, 2002. Category 3 — Date the pipeline begins operation.

Inspection Summary	**Process**	
	Implementation	

Protocol 1.12 Inspection Results		
		No Issues Identified
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

1.12 Inspection Notes:

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.

Protocol # 2.01	Baseline Assessment Plan: Assessment Methods
Protocol Question	Are the assessment methods shown in the Baseline Assessment Plan appropriate for the pipeline specific conditions and risk factors identified for each segment?

The rule requires that the selected assessment method allow the operator to adequately assess the integrity of the pipeline. The operator's assessment method selection process must exhibit the following characteristics:

1. The assessment methods selected for each segment are effective and appropriate for identifying anomalies associated with the specific risk factors identified for the segment.
2. If ILI tools are used, they are used in combinations that assure the capability to detect corrosion anomalies, deformation anomalies.
3. All of the assessment methods and tools documented in the Baseline Assessment Plan comply with the acceptable methods specified in 195.452 (c) (1) (i).
4. The assessment methods selected for all low-frequency ERW pipe or lap-welded pipe susceptible to longitudinal seam failure are capable of assessing seam integrity and of detecting corrosion and deformation anomalies.
5. Indication/documentation that, if other technology is planned for use, the operator submitted a 90-day notification to OPS regarding the use of other technologies.

Effective Baseline Assessment Plan development would be expected to include:

1. Assurance of corrosion control program effectiveness for line segments that are being hydrostatically tested.
2. Assessments to identify cracks if a pipeline segment is susceptible to cracks or has exhibited crack-like features.

Rule Requirement	§195.452 (b) *What program and practices must operators use to manage pipeline integrity?* Each operator of a pipeline covered by this section must: (3) Include in the program a plan to carry out baseline assessments of line pipe as required by paragraph (c) of this section. §195.452 (c) *What must be in the baseline assessment plan?* (1) An operator must include each of the following elements in its written baseline assessment plan: (i) The methods selected to assess the integrity of the line pipe. An operator must assess the integrity of the line pipe by any of the following methods. The methods an operator selects to assess low frequency electric resistance welded pipe or lap welded pipe susceptible to longitudinal seam failure must be capable of assessing seam integrity and of detecting corrosion and deformation anomalies. (A) Internal inspection tool or tools capable of detecting corrosion and deformation anomalies including dents, gouges and grooves; (B) Pressure test conducted in accordance with subpart E of this part; or (C) Other technology that the operator demonstrates can provide an equivalent understanding of the condition of the line pipe. An operator choosing this option must notify the Office of Pipeline Safety (OPS) 90 days before conducting the assessment, by sending a notice to the address or facsimile number specified in paragraph (m) of this section ... (iii) An explanation of the assessment methods selected and evaluation of risk factors considered in establishing the assessment schedule.

Inspection Summary	

Protocol 2.01 Inspection Results		**No Issues Identified**
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

2.01 Inspection Notes:

Protocol # 2.02	Baseline Assessment Plan: Assessment Schedule
Protocol Question	Does the Baseline Assessment Plan include a prioritized schedule in accordance with §195.452 (d)?

The rule requires that the operator develop a schedule for assessment of pipeline segments. The operator's Baseline Assessment Plan must exhibit the following characteristics:

1. Identification that all pipeline segments that could affect HCAs are included in the Baseline Assessment Plan. (If the plan identifies line pipe by piggable/testable sections, the documentation should identify a cross reference or other means by which the applicable segments that could affect HCAs can be identified.)
2. Beginning with the highest risk pipe, at least 50% of the line pipe that can affect HCAs are scheduled to be assessed prior to the segments compliance deadline (September 30, 2004 for Category 1 and August 16, 2005 for Category 2).
3. 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 one year after the pipeline begins operation for Category 3 pipe).

An effective Baseline Assessment Plan should exhibit the following additional characteristics:

1. The schedule appears to be reasonable and achievable.

Rule Requirement

§195.452 (b) *What program and practices must operators use to manage pipeline integrity?* Each operator of a pipeline covered by this section must: ... (3) Include in the program a plan to carry out baseline assessments of line pipe as required by paragraph (c) of this section.

§195.452 (c) *What must be in the baseline assessment plan?* (1) An operator must include each of the following elements in its written baseline assessment plan ... (ii) A schedule for completing the integrity assessment;

§195.452 (d) *When must operators complete baseline assessments?* Operators must complete baseline assessments as follows: (1) *Time periods.* Complete assessments before the following deadlines:

If the pipeline is:	Then complete baseline assessments not later than the following date according to a schedule that prioritizes assessments:	And assess at least 50 percent of the line pipe on an expedited basis, beginning with the highest risk pipe, not later than:
Category 1	March 31, 2008	September 30, 2004
Category 2	February 17, 2009	August 16, 2005
Category 3	Date the pipeline begins operation	Not applicable

Inspection Summary	Process	
	Implementation	

Protocol 2.02 Inspection Results		No Issues Identified
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

2.02 Inspection Notes:

Protocol # 2.03	**Baseline Assessment Plan: Risk-Based Assessment Schedule**
Protocol Question	Is the prioritized schedule included in the Baseline Assessment Plan established based on the risk factors that reflect the risk conditions for each pipeline segment in accordance with §195.452 (e)?

The rule requires that the operator develop a schedule for assessment of pipeline segments that is prioritized based on the risk associated with a given segment. The operator's assessment schedule must exhibit the following characteristics:

1. A risk based schedule, with the higher risk segments being assessed early in the period required for completion of baseline assessments.
2. The prioritization process considered the risk factors that reflect the risk conditions for each pipeline segment, including, at a minimum, consideration of these risk factors contained in §195.452 (e):
   - Results of the previous integrity assessment, defect type and size that the assessment method can detect, and defect growth rate;
   - Pipe size, material, manufacturing information, coating type and conditions, and seam type;
   - Leak history, repair history, and cathodic protection history;
   - Product transported;
   - Operating stress level;
   - Existing or projected activities in the area;
   - Local environmental factors that could affect the pipeline (e.g., corrosivity of soil, subsidence, climatic conditions);
   - Geo-technical hazards; and
   - Physical support of the segment such as by a cable suspension bridge.

An effective baseline assessment schedule should exhibit the following characteristics:

1. If the Baseline Assessment Plan prioritizes piggable or assessment sections of pipes where the assessment sections include multiple segments that can affect HCAs, the process for determining the relative priority of assessment sections is carefully explained. Furthermore, the methodology assures the highest risk segments that can affect HCAs are scheduled for assessment early in the period allotted for completing baseline assessments.

Rule Requirement	§195.452 (c) *What must be in the baseline assessment plan?* (1) An operator must include each of the following elements in its written baseline assessment plan: ... (iii) An explanation of the assessment methods selected and evaluation of risk factors considered in establishing the assessment schedule.

	§452 (e) *What are the risk factors for establishing an assessment schedule (for both the baseline and continual integrity assessments)?* (1) An operator must establish an integrity assessment schedule that prioritizes pipeline segments for assessment (see paragraphs (d)(1) and (j)(3) of this section). An operator must base the assessment schedule on all risk factors that reflect the risk conditions on the pipeline segment. The factors an operator must consider include, but are not limited to: (i) Results of the previous integrity assessment, defect type and size that the assessment method can detect, and defect growth rate; (ii) Pipe size, material, manufacturing information, coating type and condition, and seam type; (iii) Leak history, repair history and cathodic protection history; (iv) Product transported; (v) Operating stress level; (vi) Existing or projected activities in the area; (vii) Local environmental factors that could affect the pipeline (*e.g.*, corrosivity of soil, subsidence, climatic); (viii) geo-technical hazards; and (ix) Physical support of the segment such as by a cable suspension bridge. (2) Appendix C of this part provides further guidance on risk factors.

Inspection Summary	**Process**	
	Implementation	

Protocol 2.03 Inspection Results		**No Issues Identified**
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

2.03 Inspection Notes:

<table>
<tr><td>Protocol # 2.04</td><td>Baseline Assessment Plan: Prior Assessments</td></tr>
<tr><td>Protocol Question</td><td>Does the Baseline Assessment Plan make use of prior assessments as baseline assessments?</td></tr>
<tr><td colspan="2">Assessments performed prior to the effective date of the rule may be used as baseline assessments provided they are consistent with rule requirements for baseline assessments. The operator’s Baseline Assessment Plan must exhibit the following characteristics:

1. Evidence that baseline assessments performed after January 1, 1996 but before March 29, 2002, for Category 1 pipelines have been performed using the methods prescribed in §195.452 (c) (1) (i).
2. Evidence that baseline assessments performed after February 15, 1997 but before February 15, 2002, for Category 2 pipelines have been performed using the methods prescribed in §195.452 (c) (1) (i).</td></tr>
<tr><td>Rule Requirement</td><td>§195.452 (b) What program and practices must operators use to manage pipeline integrity? Each operator of a pipeline covered by this section must: ... (3) Include in the program a plan to carry out baseline assessments of line pipe as required by paragraph (c) of this section.

§195.452 (d) (2) Prior assessment. To satisfy the requirements of paragraph (c)(1)(i) of this section for pipelines in the first column of the following table, operators may use integrity assessments conducted after the date in the second column, if the integrity assessment method complies with this section. However, if an operator uses this prior assessment as its baseline assessment, the operator must reassess the line pipe according to paragraph (j)(3) of this section. The table follows:

<u>Pipeline</u> — <u>Date</u>
Category 1 — January 1, 1996
Category 2 — February 18,1997</td></tr>
</table>

Inspection Summary	Process	
	Implementation	

Protocol 2.04 Inspection Results		**No Issues Identified**
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

2.04 Inspection Notes:

Protocol # 2.05	Baseline Assessment Plan: Updates and Revision Control
Protocol Question	Does the Integrity Management Program adequately assure that updates and revisions to the Baseline Assessment Plan are identified, justified, documented, and implemented consistent with the requirements of §195.452 (c) and (d)?

The rule requires that changes to the Baseline Assessment Plan be justified and documented prior to implementation of the change. The operator's Baseline Assessment Plan and its process for keeping the plan current must exhibit the following characteristics:

1. Plan revisions that have been made subsequent to initial issuance of the plan are properly documented, along with the reason for the change.
2. Provisions for ensuring revisions are documented prior to their implementation.
3. Justification is documented for any segments that are removed from the Baseline Assessment Plan.
4. When new HCAs are identified or the boundaries of existing HCAs change, the pipeline segments that can affect these HCAs are identified and incorporated into the Baseline Assessment Plan.
5. If new segments are added or segments are expanded, the schedule is modified to assure compliance deadlines for baseline assessments are met (1 year from identification to incorporate into the Baseline Assessment Plan and 5 years from identification to perform the assessment).
6. The Baseline Assessment Plan is revised as appropriate to reflect the insights gained from completed assessments as well as other information that might impact the priority or assessment method of future integrity assessments. (For example, if early assessments or other information determine that internal corrosion is a greater problem than previously thought, the operator may elect to use ILI tools with improved ability to discriminate internal wall loss in future assessments and alter the Baseline Assessment Plan accordingly.)

Rule Requirement	§195.452 (c) (2) An operator must document, prior to implementing any changes to the plan, any modification to the plan, and reasons for the modification. §195.452 (d) *When must operators complete baseline assessments?* Operators must complete baseline assessments as follows: ... (3) *Newly-identified areas*. (i) When information is available from the information analysis (see paragraph (g) of this section), or from Census Bureau maps, that the population density around a pipeline segment has changed so as to fall within the definition in § 195.450 of a high population area or other populated area, the operator must incorporate the area into its baseline assessment plan as a high consequence area within one year from the date the area is identified. An operator must complete the baseline assessment of any line pipe that could affect the newly identified high consequence area within five years from the date the area is identified. (ii) An operator must incorporate a new unusually sensitive area into its baseline assessment plan within one year from the date the area is identified. An operator must complete the baseline assessment of any line pipe that could affect the newly-identified high consequence area within five years from the date the area is identified.

Inspection Summary	

Protocol 2.05 Inspection Results		**No Issues Identified**
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

2.05 Inspection Notes:

<table>
<tr><td>Protocol # 2.06</td><td>Baseline Assessment Plan: Completed Assessments</td></tr>
<tr><td>Protocol Question</td><td>Inspect to determine if assessments scheduled to be performed prior to the inspection were, in fact, performed and documented.</td></tr>
<tr><td colspan="2">Inspection of Baseline Assessment Plan implementation should include a check of the following characteristics:

1. Assessments scheduled for completion were, in fact, completed.
2. Assessment methods were used as described in the plan.
3. The date on which assessment field activities are completed is recorded [so the operator understands the time frame allowable for compliance with the provisions of 452 (h)].
4. The total pipeline mileage for which assessments have been completed, and the total mileage that can affect HCAs for which assessments have been completed should be available.</td></tr>
<tr><td>Rule Requirement</td><td>§195.452 (b) What program and practices must operators use to manage pipeline integrity? Each operator of a pipeline covered by this section must: ... (3) Include in the program a plan to carry out baseline assessments of line pipe as required by paragraph (c) of this section.

§195.452 (h) (1) General requirements. An operator must take prompt action to address all anomalous conditions that the operator discovers through the integrity assessment or information analysis ... evaluate all anomalous conditions and remediate those that could reduce a pipeline’s integrity ... demonstrate that the remediation of the condition will ensure that the condition is unlikely to pose a threat to the long-term integrity of the pipeline. A reduction in operating pressure cannot exceed 365 days without an operator taking further remedial action to ensure the safety of the pipeline. An operator must comply with § 195.422 when making a repair.

§195.452 (h) (4) Special requirements for scheduling remediation (i) Immediate repair conditions.... To maintain safety, an operator must temporarily reduce operating pressure or shut down the pipeline ... calculate the temporary reduction in operating pressure using the formula in section 451.7 of ASME/ANSI B31.4....</td></tr>
</table>

Inspection Summary	Process	
	Implementation	

Protocol 2.06 Inspection Results		**No Issues Identified**
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

2.06 Inspection Notes:

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.

<table>
<tr><td>Protocol # 3.01</td><td>Integrity Assessment Results Review: Qualifications of Employees that Review and Evaluate Assessment Results</td></tr>
<tr><td>Protocol Question</td><td>Does the operator have a formal, documented process to ensure that employees who review and evaluate integrity assessment results are qualified to perform this work?
____

Review records such as job descriptions, resumes, training records, etc., to verify that individuals that review assessment results are qualified to do so.</td></tr>
<tr><td colspan="2">The rule requires that individuals who review assessment results and information analysis be qualified to do so. An effective operator program would be expected to require that appropriate means be taken to ensure the requisite level of qualification, and contain the following characteristics:

1. Job description, task analysis, or other means to identify the qualification requirements for performing reviews of assessment results and information analysis, that address education, experience, skills, and training requirements, as appropriate.
2. 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.
3. Plan and schedule to provide additional training or skills acquisition to achieve and maintain qualification requirements.</td></tr>
<tr><td>Rule Requirement</td><td>§452 (f) An operator must include, at minimum, each of the following elements in its written integrity management program:
(8) A process for review of integrity assessment results and information analysis by a person qualified to evaluate the results and information (see paragraph (h)(2) of this section).</td></tr>
</table>

Inspection Summary	Process	
	Implementation	

Protocol 3.01 Inspection Results	☐	No Issues Identified
	☐	Potential Issues Identified (explain in summary)
	☐	Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

3.01 Inspection Notes:

Protocol # 3.02	Integrity Assessment Results Review: ILI Vendor Specifications
Protocol Question	Do the requirements established by the operator for the In-Line Inspection (ILI) assessment process (such as ILI technical specifications, scope of work statements, etc.) assure that those responsible for conducting in-line integrity assessments (i.e., ILI tool vendors) understand their responsibilities in performing integrity assessments that comply with this rule?

ILI tool vendors perform an important role in pipeline integrity. However, the operator is ultimately responsible for the quality of assessments and the validity of tool data analysis. An effective operator program would be expected to have the following characteristics:

1. Documented process by which ILI tool vendors are held accountable for performance that could impact pipeline integrity;
2. Documented specification of services to be provided by ILI vendors;
3. Documented specification of tools (including tool tolerances) to be provided by ILI vendors;
4. Vendor reporting requirements that support the operator's compliance with rule requirements (i.e., no later than 180 days after an integrity assessment);
5. Requirements for vendors to immediately report imminent threats to pipeline integrity;
6. Definition and criteria for vendor ILI data and analysis results that are to be reported to the operator (e.g., type of defect such as internal corrosion, external corrosion, and dents; as well as minimum defect sizes to be reported);
7. Procedures for interacting with the tool vendor to identify and effectively disposition anomalies;
8. Procedures for documenting and approving variances to the vendor's performance specifications; and
9. Qualification of vendor personnel.

Rule Requirement	§452 (f) An operator must include, at minimum, each of the following elements in its written integrity management program: (4) Criteria for remedial actions to address integrity issues raised by the assessment methods and information analysis (see paragraph (h) of this section); (8) A process for review of integrity assessment results and information analysis by a person qualified to evaluate the results and information (see paragraph (h)(2) of this section). §452 (h) *What actions must an operator take to address integrity issues?* (2) *Discovery of a condition*. Discovery of a condition occurs when an operator has adequate information about the condition to determine that the condition presents a potential threat to the integrity of the pipeline. An operator must promptly, but no later than 180 days after an integrity assessment, obtain sufficient information about a condition to make that determination, unless the operator can demonstrate that the 180-day period is impracticable.

Inspection Summary	**Process**	
	Implementation	

Protocol 3.02 Inspection Results		**No Issues Identified**
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	**Rev.**	**Date**	**Document Title**

3.02 Inspection Notes:

Protocol # 3.03	Integrity Assessment Results Review: Validation of Assessment Results
Protocol Question	Does the operator's integrity assessment results review process provide sufficient assurance that all activities required to validate the in-line inspection data are identified and implemented? ___ Review selected verification/calibration dig records to verify that physical pipeline data obtained from field excavations was appropriately used to verify and calibrate ILI results.

After ILI tool runs are completed, an operator may implement a process by which called anomalies are excavated so that tool results may be validated (and/or tool data may be calibrated) using actual, measured defect characteristics, in order to have confidence in the assessment results. An effective operator program would be expected to have the following characteristics:

1. Determination of the appropriate number (representative sample) and type of defects (representative of the different types of anomalies called such as internal corrosion, external corrosion, and dents) for which calibration digs are required.
2. Identification, collection, and documentation of all pertinent information during the calibration dig process, and dissemination to the individuals reviewing assessment results.
3. Field validation digs that assure that the locations of all anomalies are verified, and that collect all information needed to compare the actual anomaly characteristics to the vendor report.

If an operator chooses not to validate/calibrate tool results, an effective operator program would be expected to have documented justification to demonstrate that validation and/or calibration activities are not necessary for its circumstances.

Rule Requirement	§452 (f) An operator must include, at minimum, each of the following elements in its written integrity management program: (8) A process for review of integrity assessment results and information analysis by a person qualified to evaluate the results and information (see paragraph (h)(2) of this section). §452 (h) (2) *Discovery of a condition*. Discovery of a condition occurs when an operator has adequate information about the condition to determine that the condition presents a potential threat to the integrity of the pipeline. An operator must promptly, but no later than 180 days after an integrity assessment, obtain sufficient information about a condition to make that determination, unless the operator can demonstrate that the 180-day period is impracticable.

Inspection Summary	Process	
	Implementation	

Protocol 3.03 Inspection Results		**No Issues Identified**
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	**Rev.**	**Date**	**Document Title**

3.03 Inspection Notes:

Protocol # 3.04	Integrity Assessment Results Review: Integration of Other Information with Assessment Results
Protocol Question	Does the operator's integrity management process documentation require the integration of additional sources of pertinent risk-factor data with the assessment results (either ILI, pressure testing, or "other technology") to support evaluation of the condition of the pipeline, or to make decisions related to the repair or remediation of pipeline defects? ______________________________ 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.

The rule requires that operators integrate assessment results with other pertinent information about the risk-conditions of the pipeline to uncover integrity issues that might not be evident from the assessment data alone. An effective operator program would be expected to have the following characteristics:

1. A process to ensure that the analyst is aware of and uses other sources of data in order to make the best integrity decisions (e.g., corrosion control data such as rectifier readings, close interval surveys, or corrosion coupon results).
2. A documented process by which data is collected and disseminated to persons evaluating assessment results.
3. A process that integrates the following types of information, as appropriate:
   - Previous assessment results;
   - Surveillance, testing, and other monitoring data (e.g., internal corrosion coupon monitoring);
   - Historical maintenance and repair information;
   - Uncertainty of assessment results including tool tolerances;
   - Any other information related to pipeline integrity; and
   - Information about how a failure would affect the high consequence area.
4. Consideration of new information such as industry reports on new technology, incident reports, etc.
5. Documentation of the overall results of integrated data analysis and conclusions regarding the integrity of the segment, including the nature of the integrity threats identified, and a reliable characterization of anomalies such as type of anomaly (e.g., internal corrosion, external corrosion, and dents), size (amount of metal loss, depth of dent) and location (e.g., axial location and circumferential orientation).
6. Identification and documentation of integrity issues and potential trends in the integrity of the pipeline.

Rule Requirement	§452 (f) An operator must include, at minimum, each of the following elements in its written integrity management program: (8) A process for review of integrity assessment results and information analysis by a person qualified to evaluate the results and information (see paragraph (h)(2) of this section). 452(g) *What is an information analysis?* In periodically evaluating the integrity of each pipeline segment (paragraph (j) of this section), an operator must analyze all available information about the integrity of the entire pipeline and the consequences of a failure. This information includes: (1) Information critical to determining the potential for, and preventing, damage due to excavation, including current and planned damage prevention activities, and development or planned development along the pipeline segment; (2) Data gathered through the integrity assessment required under this section; (3) Data gathered in conjunction with other inspections, tests, surveillance and patrols required by this Part, including, corrosion control monitoring and cathodic protection surveys; and (4) Information about how a failure would affect the high consequence area, such as location of the water intake.

Inspection Summary	Process	
	Implementation	

Protocol 3.04 Inspection Results		**No Issues Identified**
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

3.04 Inspection Notes:

Protocol # 3.05	**Integrity Assessment Results Review: Identifying and Categorizing Defects**
Protocol Question	Does the operator's process documentation provide adequate guidance to assure the appropriate categorization (and scheduling for repair) of all identified anomalies in accordance with the criteria contained in the rule? ______________________________ Review assessment records to verify that defects have been discovered within 180 days of completion of the assessment, that defects have been categorized in accordance with the special requirements for scheduling remediation contained in §452 (h) (4), and that a schedule for repair has been developed.

Upon discovery of a condition, the operator is required to determine if the condition meets any of the rule's special requirements for scheduling remediation. If so, repair or remediation must be scheduled for completion within the time frames established by the rule. An effective operator program would be expected to have the following characteristics:

1. Provisions to ensure that all repair conditions are discovered within 180 days of completion of the assessment.
2. Procedures to ensure that all anomalies are correctly categorized in accordance with the repair provisions of the rule ("immediate repair," 60-day, 180-day, and "other" conditions).
3. Procedures that define the time at which the discovery of an anomaly occurs.
4. Procedures that define actions to be taken if the review cannot be completed within 180 days of assessment completion. (The rule specifically requires that the operator demonstrate that discovery within 180 days is not practical and document this justification.)

Rule Requirement	§452 (f) An operator must include, at minimum, each of the following elements in its written integrity management program: (4) Criteria for remedial actions to address integrity issues raised by the assessment methods and information analysis (see paragraph (h) of this section); 452 (h) (2) *Discovery of a condition.* Discovery of a condition occurs when an operator has adequate information about the condition to determine that the condition presents a potential threat to the integrity of the pipeline. An operator must promptly, but no later than 180 days after an integrity assessment, obtain sufficient information about a condition to make that determination, unless the operator can demonstrate that the 180-day period is impracticable. 452 (h) (4) *Special requirements for scheduling remediation* (i) *Immediate repair conditions* ... (ii) *60-day conditions* ... (iii) *180-day conditions* ... (iv) *Other conditions....*

Inspection Summary	Process	
	Implementation	

Protocol 3.05 Inspection Results		
	☐	No Issues Identified
	☐	Potential Issues Identified (explain in summary)
	☐	Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

3.05 Inspection Notes:

<table>
<tr><td>Protocol # 3.06</td><td>Integrity Assessment Results Review: Documentation and Distribution</td></tr>
<tr><td>Protocol Question</td><td>Does the operator’s process assure the proper documentation and dissemination of assessment report review activities?
____
Were results from completed assessments documented and distributed in accordance with procedures?</td></tr>
<tr><td colspan="2">The documentation and communication of assessment results is an expected part of an operator’s process to make effective use of new knowledge about the condition of a pipeline, to make strategic and logistical decisions related to pipeline integrity, and to foster continual improvement. An effective operator program would be expected to have the following characteristics:

1. Requirements to keep records of all integrity assessment reviews.
2. Procedures to distribute assessment review results to those persons or organizational elements that need the information to fulfill their integrity-related responsibilities. (For example, observations about effectiveness of internal and external corrosion control from ILI tool runs are provided to the engineer in charge of corrosion control.)
3. A process to assure that information important to the ILI vendor (e.g., indications of tool inadequacy or inadequate assessment results interpretations) is fed back promptly to the vendor.</td></tr>
<tr><td>Rule Requirement</td><td>§452 (f) An operator must include, at minimum, each of the following elements in its written integrity management program:
(8) A process for review of integrity assessment results and information analysis by a person qualified to evaluate the results and information (see paragraph (h)(2) of this section).

§452 (l) What records must be kept?
(1) An operator must maintain for review during an inspection:
(i) A written integrity management program in accordance with paragraph (b) of this section.
(ii) Documents to support the decisions and analyses, including any modifications, justifications, variances, deviations and determinations made, and actions taken, to implement and evaluate each element of the integrity management program listed in paragraph (f) of this section.</td></tr>
</table>

Inspection Summary	**Process**	
	Implementation	

Protocol 3.06 Inspection Results		
		No Issues Identified
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	**Rev.**	**Date**	**Document Title**

3.06 Inspection Notes:

Protocol # 3.07	Integrity Assessment Results Review: Hydrostatic Pressure Testing
Protocol Question	For integrity assessments using hydrostatic pressure testing, has the operator reviewed the test results to determine whether the failures experienced imply that additional assessment activities are needed? ____ Review hydrostatic pressure test records to verify that the test complied with Subpart E requirements, that test acceptance was valid, that the cause of all test failures were analyzed and documented, and that appropriate, timely corrective action was taken.

Upon successful completion of a Subpart E hydrostatic pressure test, the pipeline's integrity has been demonstrated, for that point in time. However, analysis of the test failures that occur provides valuable information about the condition of the pipe and the integrity threats to which the pipe is being subjected. Such analyses are a source of data with which other integrity-related data can be integrated for further analysis. An effective operator program would be expected to have the following characteristics:

1. Documentation and evaluation of hydrostatic pressure test failures to understand the cause of the failure (e.g., Was the failure due to hook cracks, selective seam corrosion, internal corrosion, etc?).
2. Metallurgical evaluation of test failures, as required, to assure a full understanding of test failures.
3. Identification, documentation, and analysis of pressure reversals to determine the cause of pressure reversals and identify any integrity threats indicated by the pressure reversals.
4. Test records must document test parameters sufficient to verify compliance with Subpart E requirements.
5. Test procedures and records that document the basis for test acceptance and test validity.

Rule Requirement	§452 (f) An operator must include, at minimum, each of the following elements in its written integrity management program: (8) A process for review of integrity assessment results and information analysis by a person qualified to evaluate the results and information (see paragraph (h)(2) of this section). §452 (h) *What actions must an operator take to address integrity issues?* (1) *General requirements.* An operator must take prompt action to address all anomalous conditions that the operator discovers through the integrity assessment or information analysis. 452 (j) (5) *Assessment methods.* An operator must assess the integrity of the line pipe by any of the following methods. The methods an operator selects to assess low frequency electric resistance welded pipe or lap welded pipe susceptible to longitudinal seam failure must be capable of assessing seam integrity and of detecting corrosion and deformation anomalies.... (ii) Pressure test conducted in accordance with subpart E of this part;

Inspection Summary	**Process**	
	Implementation	

Protocol 3.07 Inspection Results		**No Issues Identified**
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

3.07 Inspection Notes:

Protocol # 3.08	**Integrity Assessment Results Review: Results from the Application of Other Assessment Technologies**
Protocol Question	For assessments using "other assessment technology," is the operator's process for evaluation of the results adequate to identify integrity threats? Review selected assessment records for assessments conducted using "other technology" to verify that all anomalous conditions or potential defects (including the cause) were analyzed and documented, and that appropriate, timely corrective action was taken.

An operator that chooses to use "other technology" for its integrity assessments is expected to have a documented process to assure that the chosen technology will result in a level of understanding of a pipeline's condition, equivalent to that obtained through the use of accepted ILI tools or a hydrostatic pressure test. An effective operator program would be expected to have the following characteristics:

1. Criteria for the selection of other technology that support major integrity decisions, such as (a) identification of minimum data analysis required, (b) data integration requirements prior to the assessment, (c) assignment of priority to excavations, (d) number of excavation digs required, (e) basis for assessing applicability (e.g., some direct assessment techniques may detect external corrosion but not internal corrosion), and (f) validity of assessment results.
2. Procedures that adequately implement industry accepted practices for the successful use of the technology, including conformance to applicable consensus industry standards.
3. Procedures that address the method by which validation of the results of assessments using alternative technology is conducted.
4. Provisions for identification of excavations required to validate other technology results.
5. Provisions for conducting excavation digs that support the applicability and validity of the assessment technology (as a result, additional information may need to be collected beyond the information that the operator typically collects during an excavation, depending on the specifics of the "other technology" selected).
6. Procedures must address reporting requirements and timing of discovery (180 days from completion of the assessment) and repair conditions (per paragraph 452(h)).

Rule Requirement	§452 (f) An operator must include, at minimum, each of the following elements in its written integrity management program: (8) A process for review of integrity assessment results and information analysis by a person qualified to evaluate the results and information (see paragraph (h)(2) of this section). §452 (h) *What actions must an operator take to address integrity issues?* (1) *General requirements*. An operator must take prompt action to address all anomalous conditions that the operator discovers through the integrity assessment or information analysis. 452 (j) (5) *Assessment methods*. An operator must assess the integrity of the line pipe by any of the following methods. The methods an operator selects to assess low frequency electric resistance welded pipe or lap welded pipe susceptible to longitudinal seam failure must be capable of assessing seam integrity and of detecting corrosion and deformation anomalies.... (iii) Other technology that the operator demonstrates can provide an equivalent understanding of the condition of the line pipe. An operator choosing this option must notify OPS 90 days before conducting the assessment, by sending a notice to the address or facsimile number specified in paragraph (m) of this section.

Inspection Summary	Process	
	Implementation	

Protocol 3.08 Inspection Results		
	☐	No Issues Identified
	☐	Potential Issues Identified (explain in summary)
	☐	Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

3.08 Inspection Notes:

Protocol # 3.09	Integrity Assessment Results Review: Process Formality
Protocol Question	Does the operator have documented guidance or procedures that adequately describe the process steps required to perform a detailed review of assessment results, generate a repair schedule, and perform an integrated evaluation of overall pipeline integrity?

The operator is expected to instill sufficient formality of operations and procedural controls to assure quality reviews of assessment results and adequate records. An effective operator program would be expected to have the following characteristics:

1. Guidance or procedures for conducting reviews of assessment such that qualified persons are able to effectively implement the process.
2. Documented roles and responsibilities, by organizational group or title, for the implementation of required actions.
3. Documentation that specifies the information to be used in reviewing integrity assessment results and the sources of the information.
4. Guidance or procedures that specify records required to be generated in the process of implementing assessment results reviews and integrity evaluations, including records retention and distribution requirements.
5. Quality requirements for the review of assessment results (to assure completeness, accuracy, etc.).

Rule Requirement	§452 (f) An operator must include, at minimum, each of the following elements in its written integrity management program: (8) A process for review of integrity assessment results and information analysis by a person qualified to evaluate the results and information (see paragraph (h)(2) of this section).

Inspection Summary	

Protocol 3.09 Inspection Results		
	☐	No Issues Identified
	☐	Potential Issues Identified (explain in summary)
	☐	Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

3.09 Inspection Notes:

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.

Protocol # 4.01	Remedial Action: Process
Protocol Question	Does the operator's Integrity Management Program include 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?

The rule requires the operator must take prompt action to address all anomalous conditions that the operator discovers through the integrity assessment or information analysis. An effective operator program would be expected to contain the following characteristics:

1. A requirement to develop a prioritized schedule for remediation of all identified repair conditions consistent with the repair criteria and time frames found in §195.452(h).
2. A requirement to document justification for changes to the repair/remediation schedule including demonstration that such changes will not jeopardize public safety or environmental protection.
3. A requirement to notify OPS if the operator cannot meet the remediation schedule and cannot provide safety through a temporary reduction in operating pressure.
4. A requirement that if an immediate repair condition is identified, the operating pressure of the affected pipeline be temporarily reduced in accordance with the formula in Section 451.7 of ASME/ANSI B31.4 or the pipeline be shutdown until the condition is repaired. Where pressure reduction cannot be calculated using the method of Section 451.7, the process should identify alternative methods of calculating a safe operating pressure.
5. A requirement that any temporary reduction in operating pressure taken until repair or remediation can be completed cannot exceed 365 days without the operator taking additional remedial actions to assure the safety of the pipeline.
6. A requirement that the operator comply with §195.422 when making a repair.
7. Specification of the records to be generated during the remediation process.

Rule Requirement	§195.452 (h) (1) *General requirements*. An operator must take prompt action to address all anomalous conditions that the operator discovers through integrity assessment or information analysis ... evaluate all anomalous conditions and remediate those that could reduce a pipeline's integrity ... demonstrate that the remediation of the condition will ensure the condition is unlikely to pose a threat to the long-term integrity of the pipeline. A reduction in operating pressure cannot exceed 365 days without an operator taking further remedial action to ensure the safety of the pipeline. An operator must comply with § 195.422 when making a repair. §195.452 (h) (3) *Schedule for evaluation and remediation*. An operator must complete remediation of a condition according to a schedule that prioritizes the conditions for evaluation and remediation.... the operator must justify the reasons why it cannot meet the schedule and that the changed schedule will not jeopardize public safety or environmental protection. An operator must notify OPS if the operator cannot meet the schedule and cannot provide safety through a temporary reduction in operating pressure. §195.452 (h) (4) *Special requirements for scheduling remediation*. (i) *Immediate repair conditions*.... To maintain safety, an operator must temporarily reduce operating pressure or shut down the pipeline ... calculate the temporary reduction in operating pressure using the formula in section 451.7 of ASME/ANSI B31.4....

Inspection Summary	

Protocol 4.01 Inspection Results		
		No Issues Identified
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

4.01 Inspection Notes:

Protocol # 4.02	Remedial Action: Implementation
Protocol Question	Has the operator adequately implemented its remediation process and procedures to effectively remediate conditions identified through integrity assessments or information analysis?

The rule requires that an operator must evaluate all anomalous conditions and remediate those that could reduce a pipeline's integrity. An operator must be able to demonstrate that the remediation of the condition will ensure that the condition is unlikely to pose a threat to the long-term integrity of the pipeline. The inspection should ensure that:

1. A prioritized schedule was prepared by the operator for remediation of anomalous conditions.
2. Repairs were made in accordance with the operator's prioritized schedule and within the time frames allowed in §195.452(h).
3. Changes to the schedule were justified by the operator and the schedule changes were demonstrated not to jeopardize public safety or environmental protection.
4. OPS was notified in those cases where the schedule could not be met and safety could not be provided through a reduction in operating pressure.
5. For an immediate repair condition, operating pressure was reduced or the pipeline was shutdown.
6. For an immediate repair condition, temporary operating pressure was determined in accordance with the formula in Section 451.7 of ASME/ANSI B31.4 or, if not applicable, the operator should provide an engineering basis justifying the amount of pressure reduction.
7. Operating pressure was not reduced for more than 365 days without the operator taking further remedial action to ensure the safety of the pipeline.
8. Repairs were performed in accordance with §195.422 and applicable industry standards.

Rule Requirement	§195.452 (h) (1) *General requirements.* An operator must take prompt action to address all anomalous conditions that the operator discovers through integrity assessment or information analysis ... evaluate all anomalous conditions and remediate those that could reduce a pipeline's integrity ... demonstrate that the remediation of the condition will ensure the condition is unlikely to pose a threat to the long-term integrity of the pipeline. A reduction in operating pressure cannot exceed 365 days without an operator taking further remedial action to ensure the safety of the pipeline. An operator must comply with §195.422 when making a repair. §195.452 (h) (3) *Schedule for evaluation and remediation.* An operator must complete remediation of a condition according to a schedule that prioritizes the conditions for evaluation and remediation ... the operator must justify the reasons why it cannot meet the schedule and that the changed schedule will not jeopardize public safety or environmental protection.... An operator must notify OPS if the operator cannot meet the schedule and cannot provide safety through a temporary reduction in operating pressure. §195.452 (h) (4) *Special requirements for scheduling remediation* (i) *Immediate repair conditions*.... To maintain safety, an operator must temporarily reduce operating pressure or shut down the pipeline ... calculate the temporary reduction in operating pressure using the formula in section 451.7 of ASME/ANSI B31.4.

Inspection Summary	

Protocol 4.02 Inspection Results		**No Issues Identified**
		Potential Issues Identified
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	**Rev.**	**Date**	**Document Title**

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.

<table>
<tr><td>Protocol # 5.01</td><td>Risk Analysis: Comprehensiveness of Approach</td></tr>
<tr><td>Protocol Question</td><td>Does the operator’s process for evaluating risk require consideration of all relevant risk categories when evaluating pipeline segments?</td></tr>
<tr><td colspan="2">
At the onset of examining the operator’s process for evaluating risk, it is important to establish the general categories of risk factors that the operator has included in their process. To that end, this protocol question addresses the overall comprehensiveness of the risk evaluation process. An effective operator program would be expected to have the following characteristics:

Inclusion of all relevant important factors that might constitute a threat to pipeline integrity, such as:

external and internal corrosion
stress corrosion cracking
materials problems
third party damage
operator or procedures errors
equipment failures
natural forces damage
construction errors

Inclusion of all important relevant factors that affect the consequences of pipeline failures, such as

health and safety impact
environmental damage
property damage

Integration of results from the analysis of how pipeline failures could affect high-consequence areas from the segment identification process.

Note: The Protocols are organized such that verification of the use of specific required risk factors in various parts of the rule (e.g., risk factors required for assessment scheduling) is done as part of the protocols for each respective part of the rule, as follows:
Baseline Assessment Plan Factors: Protocol Question 2.03
Continual Assessment Plan Factors: Protocol Question 7.01 and 7.02
Preventive & Mitigative Risk Analysis: Protocol Question 6.02
Leak Detection Evaluation Factors: Protocol Question 6.06
EFRD Evaluation Factors: Protocol Question 6.08
</td></tr>
<tr><td>Rule Requirement</td><td>
§195.452(e) What are the risk factors for establishing an assessment schedule (for both the baseline and continual integrity assessments)? ....
§195.452(f) An operator must include, at minimum, each of the following elements in its written integrity management program: (3) An analysis that integrates all available information about the integrity of the entire pipeline and the consequences of a failure (see paragraph (g) of this section);
§452(g) What is an information analysis? In periodically evaluating the integrity of each pipeline segment (paragraph (j) of this section), an operator must analyze all available information about the integrity of the entire pipeline and the consequences of a failure....
§195.452(i)(2) Risk analysis criteria. In identifying the need for additional preventive and mitigative measures, an operator must evaluate the likelihood of a pipeline release occurring and how a release could affect the high consequence area. This determination must consider all relevant risk factors, including, but not limited to: ....
</td></tr>
</table>

Inspection Summary	

Protocol 5.01 Inspection Results		
		No Issues Identified
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

5.01 Inspection Notes:

Protocol # 5.02	Risk Analysis: Integration of Risk Information
Protocol Question	Does the process for evaluating risk appropriately integrate the various risk factors and other information utilized to characterize the risk of pipeline segments?

Methods to evaluate risk utilize a variety of input data to characterize the physical condition of pipelines and the surrounding population/environment for which consequences are estimated. This information, including "risk factors," is typically combined in some fashion (e.g., input into an algorithm or mathematical model, evaluated by subject matter experts, etc.) to produce an estimate of the risk for a particular section of pipe. In some methods used to combine risk information, numerical "weights" are applied to risk factors when calculating or estimating risk. An effective operator program would be expected to have the following characteristics:

1. Inclusion of the pertinent input parameters needed to adequately characterize the relevant risk factors that are identified and integrated into the risk evaluation process (e.g., sufficient information to determine the potential for area-specific external and internal corrosion).
2. A technically justifiable basis for the analytical structure of any tools, models, or algorithms utilized to integrate risk information, and recognition of any limitations of these analytical structures.
3. Logical, structured, and documented processes and guidelines for any subject matter expert evaluations that are used to perform or influence the integration of risk information.
4. Justification for the relative magnitude of any numerical weights used to estimate measures of risk.
5. A risk integration/combination process that emphasizes the potential risk to human health and the environment as compared to "non-safety" risk factors such as those principally associated with business and economic risks.
6. In cases where a risk model is utilized, a method that integrates the risk model output with any important risk factors that were not included in the model to provide a more complete evaluation of the risk.

Rule Requirement	§195.452(e) *What are the risk factors for establishing an assessment schedule (for both the baseline and continual integrity assessments)? ....* §195.452(f) An operator must include, at minimum, each of the following elements in its written integrity management program: (3) An analysis that integrates all available information about the integrity of the entire pipeline and the consequences of a failure (see paragraph (g) of this section); §452(g) *What is an information analysis?* In periodically evaluating the integrity of each pipeline segment (paragraph (j) of this section), an operator must analyze all available information about the integrity of the entire pipeline and the consequences of a failure .... §195.452(i)(2) *Risk analysis criteria.* In identifying the need for additional preventive and mitigative measures, an operator must evaluate the likelihood of a pipeline release occurring and how a release could affect the high consequence area. This determination must consider all relevant risk factors, including, but not limited to: ....

Inspection Summary	

Protocol 5.02 Inspection Results		**No Issues Identified**
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

5.02 Inspection Notes:

Protocol # 5.03	Risk Analysis: Input Information
Protocol Question	Are adequate and appropriate data and information input into the risk analysis process?

The overall quality and usefulness of a risk evaluation processes are highly dependent on the validity and quality of input data and information. An effective operator program would be expected to have the following characteristics:

1. Use of the most accurate available data to represent pipeline characteristics in the analysis of different segments, including the results of integrity assessments.
2. Controls to provide assurance of the completeness and quality of input information.
3. Guidance to minimize the use of input information that is unnecessarily or excessively conservative (to avoid masking best-estimate risk insights).
4. Use of sources best suited to provide whatever subjective information is used (e.g., from operator personnel, including field units).
5. 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.
6. Use of the operator's and industry's collective operating experience data where applicable.

Rule Requirement	§195.452(e) *What are the risk factors for establishing an assessment schedule (for both the baseline and continual integrity assessments)?* .... §195.452(f) An operator must include, at minimum, each of the following elements in its written integrity management program: (3) An analysis that integrates all available information about the integrity of the entire pipeline and the consequences of a failure (see paragraph (g) of this section); §452(g) *What is an information analysis?* In periodically evaluating the integrity of each pipeline segment (paragraph (j) of this section), an operator must analyze all available information about the integrity of the entire pipeline and the consequences of a failure .... §195.452(i)(2) *Risk analysis criteria.* In identifying the need for additional preventive and mitigative measures, an operator must evaluate the likelihood of a pipeline release occurring and how a release could affect the high consequence area. This determination must consider all relevant risk factors, including, but not limited to: ....

Inspection Summary	

Protocol 5.03 Inspection Results		
		No Issues Identified
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

5.03 Inspection Notes:

<table>
<tr><td>Protocol # 5.04</td><td>Risk Analysis: Pipeline Subdividing for Risk Analysis</td></tr>
<tr><td>Protocol Question</td><td>For the purposes of evaluating risk, is the operator’s pipeline system sufficiently subdivided such that the analysis provides appropriate results, insights, and conclusions?</td></tr>
<tr><td colspan="2">The manner in which a pipeline is subdivided for the evaluation of risk is an important factor when considering the results of the analysis. An effective operator program would be expected to have the following characteristics:

1. Subdivision units with sufficiently uniform risk characteristics such that results are meaningful and representative when comparing risk at different locations. [Note: The manner in which a pipeline is divided up for the purposes of risk analysis may sometimes differ from “segments” established for segment identification and/or assessment schedules.]
2. An approach for applying risk factors to a pipeline subdivision unit when the factors differ across the unit.
3. A 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.</td></tr>
<tr><td>Rule Requirement</td><td>§195.452(e) What are the risk factors for establishing an assessment schedule (for both the baseline and continual integrity assessments)? ....

§195.452(f) An operator must include, at minimum, each of the following elements in its written integrity management program: (3) An analysis that integrates all available information about the integrity of the entire pipeline and the consequences of a failure (see paragraph (g) of this section);

§452(g) What is an information analysis? In periodically evaluating the integrity of each pipeline segment (paragraph (j) of this section), an operator must analyze all available information about the integrity of the entire pipeline and the consequences of a failure ....

§195.452(i)(2) Risk analysis criteria. In identifying the need for additional preventive and mitigative measures, an operator must evaluate the likelihood of a pipeline release occurring and how a release could affect the high consequence area. This determination must consider all relevant risk factors, including, but not limited to: ....</td></tr>
</table>

Inspection Summary	

Protocol 5.04 Inspection Results		**No Issues Identified**
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

5.04 Inspection Notes:

Protocol # 5.05	Risk Analysis: Results
Protocol Question	Are results of the process to evaluate risk useful for drawing conclusions and insights in the operator's Integrity Management Program decision making?

Examination of the application of risk analysis results to specific areas is covered separately in the protocol questions for each applicable Integrity Management program element (e.g., assessment scheduling, preventive and mitigative measures). Overall characteristics of risk results, however, can be examined on a general basis. An effective operator program would be expected to have the following characteristics:

1. Identification of the pipeline locations having the highest estimated risk.
2. Identification of the most important risk drivers for the highest risk locations (e.g., third party damage, internal corrosion, etc.) and the underlying causes (e.g., what conditions are elevating the risk of internal corrosion).
3. The ability to clearly differentiate the relative risks of different pipeline segments.
4. Risk analysis results that account for all modes of pipeline operation (e.g., startup, shutdown, static, and slack line).
5. A means to evaluate and reduce major sources of uncertainties in the process of evaluating risk. [Examples of areas of uncertainty include data and information limitations, subject matter expert opinions, risk model assumptions, and analytical techniques.]

Rule Requirement	§195.452(e) *What are the risk factors for establishing an assessment schedule (for both the baseline and continual integrity assessments)?* .... §195.452(f) An operator must include, at minimum, each of the following elements in its written integrity management program: (3) An analysis that integrates all available information about the integrity of the entire pipeline and the consequences of a failure (see paragraph (g) of this section); §452(g) *What is an information analysis?* In periodically evaluating the integrity of each pipeline segment (paragraph (j) of this section), an operator must analyze all available information about the integrity of the entire pipeline and the consequences of a failure .... §195.452(i)(2) *Risk analysis criteria.* In identifying the need for additional preventive and mitigative measures, an operator must evaluate the likelihood of a pipeline release occurring and how a release could affect the high consequence area. This determination must consider all relevant risk factors, including, but not limited to: ....

Inspection Summary	

Protocol 5.05 Inspection Results		**No Issues Identified**
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

5.05 Inspection Notes:

Protocol # 5.06	Risk Analysis: Facilities
Protocol Question	Are technically adequate approaches used to identify and evaluate the risks of facilities that can affect HCAs?

In addition to line pipe, associated facilities that can affect HCAs are also included in the scope of the Integrity Management rule. While the integrity assessment provisions of the rule apply only to the line pipe, the other provisions of the rule apply to pump stations, break-out tanks, and other equipment if a failure at these locations could affect a high consequence area. Thus, an operator's integrity management program should include processes for addressing these facilities, including the integration of all available information affecting the likelihood and the consequences of equipment or facility failures (i.e., a risk analysis). An effective operator program would be expected to have the following characteristics:

1. Clear documentation of the operator's approach for evaluating the risk of facilities that can affect HCAs.
2. Results that facilitate the determination of measures to reduce facility risks.

Rule Requirement	§195.452(f) An operator must include, at minimum, each of the following elements in its written integrity management program: (3) An analysis that integrates all available information about the integrity of the entire pipeline and the consequences of a failure (see paragraph (g) of this section); §195.452(g) *What is an information analysis?* In periodically evaluating the integrity of each pipeline segment (paragraph (j) of this section), an operator must analyze all available information about the integrity of the entire pipeline and the consequences of a failure.

Inspection Summary	

Protocol 5.06 Inspection Results		**No Issues Identified**
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	**Rev.**	**Date**	**Document Title**

5.06 Inspection Notes:

Protocol # 5.07	Risk Analysis: Process Formality & Implementation
Protocol Question	Does the operator's integrity management program include a detailed process for the evaluation of risk? ——————— Do operator records indicate that the process for the evaluation of risk has been implemented and applied as documented?

The operator is expected to instill sufficient formality of operations and procedural controls to assure quality and that a consistent evaluation of risk is performed. An effective operator program would be expected to have the following characteristics:

1. Documented guidance or procedures describing the process steps required to perform an evaluation of risk.
2. Guidance for the review of results by parties who would be expected to have the requisite technical knowledge to recognize unreasonable results, including operator field organizations.
3. Requirements for adequate training to all participants in the evaluation of risk.
4. Assigned responsibility, by organizational group or title, for the implementation of required actions.
5. Guidance for the distribution of risk evaluation results.
6. Guidance regarding records to be generated and retained (including retention duration).
7. Communication of results to the operator's organizational units and application of results in operator decision processes.

Rule Requirement	§195.452(f) An operator must include, at minimum, each of the following elements in its written integrity management program: (3) An analysis that integrates all available information about the integrity of the entire pipeline and the consequences of a failure (see paragraph (g) of this section); §195.452(g) *What is an information analysis?* In periodically evaluating the integrity of each pipeline segment (paragraph (j) of this section), an operator must analyze all available information about the integrity of the entire pipeline and the consequences of a failure ....

Inspection Summary	Process	
	Implementation	

Protocol 5.07 Inspection Results		
		No Issues Identified
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

5.07 Inspection Notes:

Protocol # 5.08	**Risk Analysis: Revision of Process**
Protocol Question	Does the process for evaluating risk include steps to review and update assumptions, input information and supporting tools as necessary? ――――――――――― Do operator records indicate that the process for update and revision of the risk evaluation process has been implemented as described?

Along with having a process to evaluate risk, it is also important to keep the analysis up to date with respect to the evaluated pipelines and facilities. An effective operator program would be expected to have the following characteristics:

1. A means to assure the risk analysis reflects the current pipeline configuration and operation (e.g., valve additions, changes in commodities).
2. A means to assure the risk analysis reflects the current pipeline material condition and maintenance/surveillance program activities (e.g., feedback from integrity assessments and repairs, updated cathodic protection information, internal corrosion coupon data).
3. A means to assure the risk analysis reflects up to date consequence characteristics in the vicinity of the pipeline (e.g., population growth along right of ways).
4. Control of the process such that changes to the risk evaluation process are documented (e.g., revisions to input information, expert panel re-evaluations, changes in analytical model versions).
5. A periodic review of all risk analysis tools and methods to determine the need for any updates.

Rule Requirement	§195.452(f) An operator must include, at minimum, each of the following elements in its written integrity management program: (3) An analysis that integrates all available information about the integrity of the entire pipeline and the consequences of a failure (see paragraph (g) of this section); §195.452(g) *What is an information analysis?* In periodically evaluating the integrity of each pipeline segment (paragraph (j) of this section), an operator must analyze all available information about the integrity of the entire pipeline and the consequences of a failure ....

Inspection Summary	Process	
	Implementation	

Protocol 5.08 Inspection Results		**No Issues Identified**
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

5.08 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.

Protocol # 6.01	Preventive & Mitigative Measures: Actions Considered
Protocol Question	Does the process to identify additional preventive and mitigative actions include consideration of risk and cover a broad spectrum of alternatives? [Note: Leak detection and EFRDs are covered in more detail in subsequent questions within this protocol.] ——————————————— Do operator records provide documentation of the preventive and mitigative actions that have been considered?

The integrity management rule requires operators to "take measures to prevent and mitigate the consequences of a pipeline failure that could affect a high consequence area." An effective operator program would be expected to have the following characteristics:

1. Identification of the most significant causes/drivers of location-specific risk (e.g., third party damage, internal corrosion, etc.) when evaluating additional preventive and mitigative actions for those locations.
2. Identification of potential preventive and mitigative actions that address the most significant location specific risks, including consideration of preventive and mitigative actions listed in §195.452(i)(1).
3. Review of the effectiveness of current preventive and mitigative actions and the potential for enhancements and upgrades.
4. Consideration of a spectrum of modifications, ranging from incremental improvements to major changes.
5. Consideration of changes to both documented work processes (e.g., procedures, response plans) and physical changes.
6. Consideration of additional preventive and mitigative actions for non-pipe facilities that can affect an HCA.

Rule Requirement	§195.452(i) *What preventive and mitigative measures must an operator take to protect the high consequence area?* (1) *General requirements.* An operator must take measures to prevent and mitigate the consequences of a pipeline failure that could affect a high consequence area. These measures include conducting a risk analysis of the pipeline segment to identify additional actions to enhance public safety or environmental protection. Such actions may include, but are not limited to, implementing damage prevention best practices, better monitoring of cathodic protection where corrosion is a concern, establishing shorter inspection intervals, installing EFRDs on the pipeline segment, modifying the systems that monitor pressure and detect leaks, providing additional training to personnel on response procedures, conducting drills with local emergency responders and adopting other management controls.

Inspection Summary	Process	
	Implementation	

Protocol 6.01 Inspection Results		**No Issues Identified**
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

6.01 Inspection Notes:

Protocol # 6.02	**Preventive & Mitigative Measures: Risk Analysis Application**
Protocol Question	Does the process effectively evaluate the effects of potential actions on reducing the likelihood and consequences of pipeline releases?

Operators must conduct a risk analysis as part of the evaluation of preventive and mitigative measures, including a number of specific risk factors. In addition to the required set of factors, there are other factors that are relevant to the preventive and mitigative measures evaluation. An effective operator program would be expected to have the following characteristics:

1. Consideration of all risk factors required by §195.452(i)(2) in the risk analysis applied to the preventive and mitigative measures evaluation. If all required factors are not considered, a documented basis provided for the exclusion of certain listed factors.
2. A risk analysis process that addresses all other relevant factors that constitute a threat to pipeline integrity (e.g., external and internal corrosion, third party damage, operator or procedures error, equipment failures, natural forces damage, stress corrosion cracking, materials problems, construction errors, various operating modes).
3. A risk analysis process that addresses all other relevant important consequences of pipeline failures (e.g., population impacts, environmental damage, property damage).
4. Measures to assure that the analysis is up to date prior to use (e.g., pipeline data and configuration assumptions verified to be current prior to evaluating the relative impact of a proposed preventive or mitigative measure).

Rule Requirement	§195.452(i) *What preventive and mitigative measures must an operator take to protect the high consequence area?* (1) *General requirements.* An operator must take measures to prevent and mitigate the consequences of a pipeline failure that could affect a high consequence area. These measures include conducting a risk analysis of the pipeline segment to identify additional actions to enhance public safety or environmental protection ... (2) *Risk analysis criteria.* In identifying the need for additional preventive and mitigative measures, an operator must evaluate the likelihood of a pipeline release occurring and how a release could affect the high consequence area. This determination must consider all relevant risk factors, including, but not limited to: (i) Terrain surrounding the pipeline segment, including drainage systems such as small streams and other smaller waterways that could act as a conduit to the high consequence area; (ii) Elevation profile; (iii) Characteristics of the product transported; (iv) Amount of product that could be released; (v) Possibility of a spillage in a farm field following the drain tile into a waterway; (vi) Ditches along side a roadway the pipeline crosses; (vii) Physical support of the pipeline segment such as by a cable suspension bridge; (viii) Exposure of the pipeline to operating pressure exceeding established maximum operating pressure.

Inspection Summary		
Protocol 6.02 Inspection Results		**No Issues Identified**
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

6.02 Inspection Notes:

<table>
<tr><td>Protocol # 6.03</td><td>Preventive & Mitigative Measures: Decision Basis</td></tr>
<tr><td>Protocol Question</td><td>Does the process provide an adequate basis for deciding which candidate preventive and mitigative actions are implemented?
———————————
Do operator records indicate that the decision making process has been applied as described?</td></tr>
<tr><td colspan="2">The process and decision criteria used by an operator to decide if potential actions are to be implemented or rejected are a critical part of the preventive and mitigative measure process. An effective operator program would be expected to have the following characteristics:

1. A systematic decision-making process involving input from relevant parts of the organization such as operations, maintenance, engineering, corrosion control, etc., that considers the results of the risk analysis along with other information in making decisions about which preventive and mitigative actions to implement.
2. Priority in schedule and scope for additional actions on the highest risk lines and facilities.
3. A defined basis regarding how much benefit (e.g., risk reduction, reduction in threat to integrity, etc.) is necessary for additional actions to be evaluated for potential implementation.
4. Integration of approved preventive and mitigative actions with the operator’s work processes responsible for scheduling and implementing the approved actions (e.g., budgeting, project management, maintenance).
5. Documentation of candidate preventive and mitigative measures that have been considered, including those that have not been implemented.
6. Implementation of approved additional actions as previously planned and scheduled.</td></tr>
<tr><td>Rule Requirement</td><td>§195.452(i) What preventive and mitigative measures must an operator take to protect the high consequence area?
(1) General requirements. An operator must take measures to prevent and mitigate the consequences of a pipeline failure that could affect a high consequence area. These measures include conducting a risk analysis of the pipeline segment to identify additional actions to enhance public safety or environmental protection ....</td></tr>
</table>

Inspection Summary	Process	
	Implementation	

Protocol 6.03 Inspection Results		
	☐	No Issues Identified
	☐	Potential Issues Identified (explain in summary)
	☐	Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

6.03 Inspection Notes:

Protocol # 6.04	Preventive & Mitigative Measures: Process Formality and Implementation
Protocol Question	Is the operator's process for identifying and evaluating preventive and mitigative measures to protect HCAs documented with sufficient specificity and detail to provide assurance that it can be implemented in a technically sound and consistent manner? Do operator records indicate that the process has been implemented as described?

A process for evaluating additional preventive and mitigative measures is a key element of an operator's integrity management process. After review of process details in the preceding questions, the inspection team should evaluate the governing process that the operator uses to evaluate additional preventive and mitigative measures. An effective operator program would be expected to have the following characteristics:

1. Inclusion of all major additional preventive and mitigative evaluation areas (general additional measures, Leak Detection, and EFRDs).
2. Evaluation of additional preventive and mitigative measures in a timely manner for segments after integrity assessments are conducted on that segment or other events occur that indicate a need for re-evaluation (e.g., unsatisfactory detection or mitigation of an actual leak).
3. Technical justification or validation of key assumptions, including references to any specific sections of industry standards as applicable.
4. Mechanisms to assure technical quality such as independent review, peer review, external audit, etc.
5. Requirements to assure that relevant pipeline and facility changes are identified and incorporated into any updates to preventive and mitigative evaluations (e.g., interfaces with the system modification/change control process).
6. Assigned responsibilities for implementing all required actions (e.g., by organizational group or title).
7. Specification of records to be generated and the associated retention period. [Note: Retention requirements may be in a separate document retention policy.]
8. Updating the evaluation of preventive and mitigative measures at the frequency specified in the Integrity Management Plan.

Rule Requirement	§195.452(f) *What are the elements of an integrity management program?* An integrity management program begins with the initial framework. An operator must continually change the program to reflect operating experience, conclusions drawn from results of the integrity assessments, and other maintenance and surveillance data, and evaluation of consequences of a failure on the high consequence area. An operator must include, at a minimum, each of the following elements in its written integrity management program: (6) Identification of preventive and mitigative measures to protect the high consequence area (see paragraph (i) of this section);

Inspection Summary	Process	
	Implementation	

Protocol 6.04 Inspection Results		
		No Issues Identified
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

6.04 Inspection Notes:

Protocol # 6.05	**Leak Detection Capability Evaluation: Installed Leak Detection System Information**
Protocol Question	What leak detection capability is installed on pipelines and facilities that are classified as being able to affect an HCA? [Note: As there may be multiple types of leak detection installed on different portions of the pipeline system, the types/categories of leak detection that are in use are listed first, then applied in the table that follows.] Types/Categories of operator leak detection capabilities [e.g., visual observation of pipeline, external field sensors, operations personnel watching pressure gauges, SCADA pressure/flow alarms, Over-Short reports, computerized analysis, modeling, etc.]: 1. 2. 3. 4. 5. Applicable Pipeline Section — Leak Detection Type/Category — Frequency of Monitoring — Actions Required on Suspect Condition
Rule Requirement	§195.452 (i)(3) *Leak detection.* An operator must have a means to detect leaks on its pipeline system. An operator must evaluate the capability of its leak detection means and modify, as necessary, to protect the high consequence area. An operator's evaluation must, at least, consider the following factors-length and size of the pipeline, type of product carried, the pipeline's proximity to high consequence area, the swiftness of leak detection, location of nearest response personnel, leak history, and risk assessment results.

Inspection Summary	

Protocol 6.05 Inspection Results		**No Issues Identified**
		Potential Issues Identified (explain in summary)
		Not Applicable

Documents Reviewed:

Document Number	Rev.	Date	Document Title

6.05 Inspection Notes:

Protocol # 6.06	Leak Detection Capability Evaluation: Evaluation Factors
Protocol Question	Does the process for evaluating leak detection capability adequately consider all of the §195.452(i)(3)-required factors and other relevant factors? ——————————— Do operator records indicate that all required and other relevant factors have been evaluated?

As part of the leak detection-specific portion of the preventive and mitigative section of the integrity management rule, a number of factors are required to be part of the operator's evaluation. In addition to the required set of factors, there are other factors that are relevant to the evaluation of the operator's leak detection capability. An effective operator program would be expected to have the following characteristics:

1. Inclusion of all eight of the required §195.452(i)(3) evaluation factors, including risk assessment results. If all required factors are not considered, a documented basis for the exclusion of certain listed factors. [Note: Risk analysis details are covered in protocol question 6.02.]
2. Identification and evaluation of a sufficient spectrum of leak scenarios to adequately determine the overall effectiveness of leak detection capability (e.g., "most likely" in addition to "maximum possible").
3. Consideration of additional evaluation factors such as:
   - current leak detection method for the HCA areas,
   - use of SCADA,
   - thresholds for leak detection,
   - flow and pressure measurement,
   - specific procedures for lines that are idle but still under pressure,
   - additional leak detection means for areas in close proximity to sole source water supplies, and
   - testing of leak detection means (such as physical removal of product from the pipeline).
4. Evaluation of all modes of line operations including slack line, idled line, and static conditions.
5. If a computational pipeline monitoring technique is part of the leak detection systems, design, maintenance, controller training, and record-keeping aspects of API 1130 are addressed in system design and maintenance practices.
6. Evaluation of leak detection performance during transient conditions, and a strategy to manage any short-term reduced performance.
7. Evaluation of the operational availability and reliability of the leak detection systems, and the operator's process to manage system failures.
8. Consideration of enhancements to existing leak detection capability (e.g.,increasing the monitoring frequency of existing techniques).
9. Consistent application of a risk-based decision-making process for leak detection, as described in protocol question 6.03.

Rule Requirement	§195.452 (i) *What preventive and mitigative measures must an operator take to protect the high consequence area?* (3) *Leak detection.* An operator must have a means to detect leaks on its pipeline system. An operator must evaluate the capability of its leak detection means and modify, as necessary, to protect the high consequence area. An operator's evaluation must, at least, consider the following factors-length and size of the pipeline, type of product carried, the pipeline's proximity to high consequence area, the swiftness of leak detection, location of nearest response personnel, leak history, and risk assessment results.

Inspection Summary	Process	
	Implementation	

Protocol 6.06 Inspection Results		**No Issues Identified**
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

6.06 Inspection Notes:

Protocol # 6.07	**Leak Detection Capability Evaluation: Operator Actions/Reactions**
Protocol Question	Does the process adequately consider and document operator actions and reactions associated with leak detection systems?

The role of operations personnel is critical in responding to leak detection indications as well as making certain that leak detection systems are operating correctly. An effective operator program would be expected to have the following characteristics:

1. A documented basis for all operator reactions credited in the leak detection evaluation (e.g., operational procedures and/or training materials). [Note: This does not imply that integrity management-specific operator procedures and/or training are anticipated. Operator responses assumed in the leak detection evaluation, however, should be based on verifiable operational expectations versus arbitrary assumptions.]
2. 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.
3. Integration of emergency response procedures and incident mitigation plans with associated leak detection indications.
4. Adequate guidance in documented work processes to assure that operating personnel have the authority and responsibility to initiate reaction measures and to shutdown the pipeline if warranted.
5. 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.

Rule Requirement	§195.452(i) *What preventive and mitigative measures must an operator take to protect the high consequence area?* (3) *Leak detection.* An operator must have a means to detect leaks on its pipeline system. An operator must evaluate the capability of its leak detection means and modify, as necessary, to protect the high consequence area. An operator's evaluation must, at least, consider the following factors-length and size of the pipeline, type of product carried, the pipeline's proximity to high consequence area, the swiftness of leak detection, location of nearest response personnel, leak history, and risk assessment results.

Inspection Summary	

Protocol 6.07 Inspection Results		No Issues Identified
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

6.07 Inspection Notes:

Protocol # 6.08	**EFRD Need Evaluation: Factors**
Protocol Question	Does the process for evaluating the need for additional EFRDs adequately consider all of the 195.452(i)(4)-required factors and other relevant factors? ——— Do operator records indicate that all required and other relevant factors have been evaluated?

As part of the EFRD-specific portion of the preventive and mitigative section of the integrity management rule, a number of factors are required to be part of the operator's evaluation. In addition to the required set of factors, there may be other factors that are relevant to the evaluation of the need for additional EFRDs. An effective operator program would be expected to have the following characteristics:

1. Inclusion of all ten of the required 195.452(i)(4) evaluation factors, including consideration of the benefits of reduced consequences expected due to reducing spill size. If all required factors are not considered, a documented basis provided for the exclusion of certain listed factors.
2. Consideration of any additional relevant line-specific factors beyond those listed in 195.452(i)(4) (e.g., the relative reliability of existing or proposed EFRDs, any relevant operating modes beyond nominal full flow conditions, etc.).
3. Consideration of risk analysis results, including identification of highest risk segments. [Note: Risk analysis details are covered in protocol question 6.02.]
4. As part of the "swiftness of leak detection and pipeline shutdown capabilities" factor, consideration of system detection times, operator response times, remotely controlled valve response characteristics, and system isolation time assessments, as applicable.
5. Evaluation of the need for additional EFRDs to respond to releases during transient conditions.
6. 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.
7. Consistent application of a risk-based decision-making process for additional EFRDs, as described in protocol question 6.03.

Rule Requirement	§195.452(i) *What preventive and mitigative measures must an operator take to protect the high consequence area?* (4) *Emergency Flow Restricting Devices (EFRD).* If an operator determines that an EFRD is needed on a pipeline segment to protect a high consequence area in the event of a hazardous liquid pipeline release, an operator must install the EFRD. In making this determination, an operator must, at least, consider the following factors - the swiftness of leak detection and pipeline shutdown capabilities, the type of commodity carried, the rate of potential leakage, the volume that can be released, topography or pipeline profile, the potential for ignition, proximity to power sources, location of the nearest response personnel, specific terrain between the pipeline segment and the high consequence area, and benefits expected by reducing the spill size.

Inspection Summary	Process	
	Implementation	

Protocol 6.08 Inspection Results		
	☐	No Issues Identified
	☐	Potential Issues Identified (explain in summary)
	☐	Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

6.08 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.

Protocol # 7.01	Continual Process of Evaluation and Assessment: Periodic Evaluation and Assessment Intervals
Protocol Question	Does the operator have an adequate process for performing periodic integrity evaluations and determining re-assessment intervals for pipeline segments that could affect HCAs?

An operator must have an approach to periodically evaluate the integrity of the pipeline and to determine future integrity assessment plans. The periodic evaluation and assessment process must include the following provisions:

1. An evaluation of pipeline integrity is performed periodically to update the operator's understanding of pipe condition and the location-specific integrity threats for segments that can affect HCAs. The results of this evaluation are used to establish the intervals for future integrity assessments and the assessment methods to be used (see question 7.02).
2. The re-assessment intervals are based on all risk factors associated with the pipeline and adequately consider, as a minimum the following:
    - Those risk factors listed in paragraph 452 (e):
        – Results of previous integrity assessment, defect type and size that the assessment method can detect, and defect growth rate;
        – Pipe size, material, manufacturing information, coating type and conditions, and seam type;
        – Leak history, repair and remediation history, and cathodic protection history;
        – Product transported;
        – Operating stress level;
        – Existing or projected activities in the area;
        – Local environmental factors that could affect the pipeline (e.g., corrosivity of soil, subsidence, climatic conditions);
        – Geo-technical hazards; and
        – Physical support of the segment such as by a cable suspension bridge.
    - All information analysis (risk analysis) results required by paragraph 452 (g); and
    - Prior and pending decisions about preventive and mitigative actions.
3. Each segment is re-assessed on a schedule not to exceed five years.

An effective program should exhibit the following additional characteristics:

1. The Integrity Management (IM) Program contains requirements to conduct periodic integrity evaluations that are technically rigorous and adequate for making integrity related decisions.
2. The IM Program includes a process for capturing and evaluating new information to determine if changes to the assessment schedule might be necessary.

Rule Requirement	§195.452 (f) An operator must include, at minimum, each of the following elements in its written integrity management program: (5) A continual process of assessment and evaluation to maintain a pipeline's integrity (see paragraph (j) of this section); §195.452 (j) *What is a continual process of evaluation and assessment to maintain a pipeline's integrity?* (2*) Evaluation.* An operator must conduct a periodic evaluation as frequently as needed to assure pipeline integrity. An operator must base the frequency of evaluation on risk factors specific to its pipeline, including the factors specified in paragraph (e) of this section. The evaluation must consider the results of the baseline and periodic integrity assessments, information analysis (paragraph (g) of this section), and decisions about remediation, and preventive and mitigative actions (paragraphs (h) and (i) of this section). (3) *Assessment Intervals.* An operator must establish intervals not to exceed five (5) years for continually assessing the line pipe's integrity. An operator must base the assessment intervals on the risk the line pipe poses to the high consequence area to determine the priority for assessing the pipeline segments. An operator must establish the assessment intervals based on the factors specified in paragraph (e) of this section, the analysis of the results from the last integrity assessment, and the information analysis required by paragraph (g) of this section.

<table>
<tr><td rowspan="2">Inspection Summary</td><td>Process</td><td></td></tr>
<tr><td>Implementation</td><td></td></tr>
</table>

Protocol 7.01 Inspection Results		**No Issues Identified**
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

7.01 Inspection Notes:

Protocol # 7.02	Continual Process of Evaluation and Assessment: Assessment Methods
Protocol Question	Do the assessment methods shown in the continual assessment plan appear to be appropriate for the pipeline specific conditions and risk factors being evaluated?

The rule requires that the selected assessment method allow the operator to adequately assess the integrity of the pipeline. The operator's assessment method selection process must exhibit the following characteristics:

1. The assessment methods selected for each segment are appropriate for the specific integrity issues and risks identified for the segment.
2. The process for assessment method selection includes consideration of completed assessment results.
3. If ILI tools are used, they are capable of detecting corrosion and deformation anomalies.
4. The assessment methods selected for all low-frequency ERW pipe or lap-welded pipe susceptible to longitudinal seam failure are capable of assessing seam integrity and of detecting corrosion and deformation anomalies.
5. If technology other than pressure testing or in-line inspection is planned for use, the operator submits a notification to OPS at least 90 days before conducting the assessment.

An effective operator program would be expected to have the following characteristics:

1. For line segments that are being hydrostatically tested, the operator performs a comprehensive review of corrosion control program effectiveness for these locations.
2. If the operator has reason to suspect a pipeline segment is susceptible to cracks or has exhibited crack-like features, the re-assessment method selection process should address assessment of cracks.
3. If the operator has reason to suspect a pipeline segment is susceptible to internal corrosion, the re-assessment method selection and subsequent data integration should address this threat.
4. The methods used to conduct re-assessments are periodically reviewed and modified if necessary based on new insights from baseline assessments, the results of information integration and risk analysis, and to allow use of new, improved assessment technologies.

Rule Requirement	§195.452 (f) An operator must include, at minimum, each of the following elements in its written integrity management program: (5) A continual process of assessment and evaluation to maintain a pipeline's integrity (see paragraph (j) of this section); §195.452 (j) (5) *Assessment methods.* An operator must assess the integrity of the line pipe by any of the following methods. The methods an operator selects to assess low frequency electric resistance welded pipe or lap welded pipe susceptible to longitudinal seam failure must be capable of assessing seam integrity and of detecting corrosion and deformation anomalies. (i) Internal inspection tool or tools capable of detecting corrosion and deformation anomalies including dents, gouges and grooves; (ii) Pressure test conducted in accordance with subpart E of this part; or (iii) Other technology that the operator demonstrates can provide an equivalent understanding of the condition of the line pipe. An operator choosing this option must notify OPS 90 days before conduction the assessment, by sending a notice to the address or facsimile number specified in paragraph (m) of this section.

Inspection Summary	

Protocol 7.02 Inspection Results		
		No Issues Identified
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

7.02 Inspection Notes:

Protocol # 7.03	Continual Process of Evaluation and Assessment: Assessment Interval Variance
Protocol Question	Does the operator's IM Program include provisions for submitting variance notifications to OPS for assessment intervals longer than the 5-year maximum assessment interval?

The Rule contains provisions for exceeding a 5 year re-assessment interval under certain circumstances. If an operator desires a variance from the 5 year interval, it must notify OPS of its intentions. The variance must be based upon an engineering analysis or the unavailability of the technology to be used for the assessment. The operator's notification to OPS must contain the following characteristics:

1. Engineering Justification Requirements
   - Notification time frame - 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.
2. Unavailable Technology Requirements
   - Notification time frame - 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.

An effective operator program would be expected to have the following characteristics:

1. The operator's IM Program contains requirements for technically rigorous and documented engineering justifications for extending assessment intervals.
2. Evaluation of historical and current integrity information is performed to determine a new assessment interval period.
3. The operator pro-actively identifies and addresses issues that could adversely impact meeting assessment schedules.
4. The operator's IM Program adequately documents justifications for extending assessment intervals due to unavailable technology.

Rule Requirement	§195.452 (f) An operator must include, at minimum, each of the following elements in its written integrity management program: (5) A continual process of assessment and evaluation to maintain a pipeline's integrity (see paragraph (j) of this section); §195.452 (j) *What is a continual process of evaluation and assessment to maintain a pipeline's integrity?* (4) *Variance from the 5-year intervals in limited situations* - (i) *Engineering basis.* An operator may be able to justify an engineering basis for a longer assessment interval on a segment of line pipe. The justification must be supported by a reliable engineering evaluation combined with the use of other technology, such as external monitoring technology, that provides an understanding of the condition of the line pipe equivalent to that which can be obtained from the assessment methods allowed in paragraph (j) (5) of this section. An operator must notify OPS 270 days before the end of the five-year (or less) interval of the justification for a longer interval and propose an alternative interval. An operator must send the notice to the address specified in paragraph (m) of this section. (ii) *Unavailable technology*. An operator may require a longer assessment period for a segment of line pipe (for example, because sophisticated internal inspection technology is not available). An operator must justify the reasons why it cannot comply with the required assessment period and must also demonstrate the actions it is taking to evaluate the integrity of the pipeline segment in the interim. An operator must notify OPS 180 days before the end of the five-year (or less) interval that the operator may require a longer assessment interval, and provide an estimate of when the assessment can be completed. An operator must send a notice to the address specified in paragraph (m) of this section.

Inspection Summary	Process	
	Implementation	

Protocol 7.03 Inspection Results		
		No Issues Identified
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

7.03 Inspection Notes:

Protocol # 7.04	Continual Process of Evaluation and Assessment: Process Formality
Protocol Question	Does the operator have documented guidance or procedures that adequately describe the process steps required to provide continual evaluation and assessment of pipeline integrity?

The operator is expected to instill sufficient formality of operations and procedural controls to assure periodic evaluation of the integrity of the pipeline and to determine future integrity assessment plans. An effective operator program would be expected to have the following characteristics:

1. Guidance or procedures for conducting periodic integrity evaluations such that qualified persons are able to effectively implement the process.
2. Documented roles and responsibilities, by organizational group or title, for the implementation of required actions.
3. Documentation that specifies the information to be used in determining integrity assessment methods and assessment intervals, and the sources of this information.
4. Guidance or procedures that specify records required to be generated in the process of determining integrity assessment methods and assessment intervals and in preparing notifications.
5. Records retention and distribution requirements.

Rule Requirement	§452 (f) An operator must include, at minimum, each of the following elements in its written integrity management program: (8) A process for review of integrity assessment results and information analysis by a person qualified to evaluate the results and information (see paragraph (h)(2) of this section).

Inspection Summary	

Protocol 7.04 Inspection Results		
	☐	No Issues Identified
	☐	Potential Issues Identified (explain in summary)
	☐	Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

7.04 Inspection Notes:

Protocol # 7.05	Continual Process of Evaluation and Assessment: Process Implementation
Protocol Question	Inspect to determine if periodic integrity evaluations and the determination of future assessment methods and intervals are being performed as required by the rule, and are consistent with the operator's program documentation.
Inspection should include a review of operator documentation and records for the following: 1. Results of periodic integrity evaluations specifying the integrity assessment methods and intervals for segments that have received baseline assessments. 2. Adequate technical justification for the selection of assessment methods and intervals, including evidence that previous assessment results and other relevant information was used. 3. Timely determination of future assessment methods and intervals. 4. Documentation indicating that re-assessments scheduled for completion were, in fact, completed. 5. Technical justification and other records to support any operator notifications for variance from the 5 year re-assessment interval.	
Rule Requirement	§195.452 (j) *What is a continual process of evaluation and assessment to maintain a pipeline's integrity?*

Inspection Summary	**Process**	
	Implementation	

Protocol 7.05 Inspection Results		**No Issues Identified**
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

7.05 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.

Protocol # 8.01	Program Evaluation: Process Approach
Protocol Question	Inspect the operator's IM Program to verify that it includes a process for performing IM Program evaluations as required in §195.452 (f) (7).

An operator's Integrity Management (IM) Program must include a process to measure whether the program is effective in assessing and evaluating pipeline integrity and in protecting the high consequence areas. The purpose of this protocol is to perform an inspection of the operator's approach to evaluate the effectiveness of its IM Program processes and methods used to perform each IM Program element in 195.452 (f). An effective operator program would be expected to have the following basic characteristics:

1. The use of periodic self assessments, internal/external audits, management reviews, or other self critical evaluations to assess program effectiveness.
2. A description of the scope, objectives, and frequency of periodic evaluations.
3. Clear performance goals and objectives to measure the effectiveness of key integrity activities.
4. Clear assignment of responsibility, by organizational group or title, for implementing required actions.
5. A description of specific records to be generated in the process of implementing IM Program Evaluation, including but not limited to records from completed audits and other program reviews, and records documenting dispositioned recommendations.
6. Review and follow-up of program evaluation results, findings, and recommendations, etc., by appropriate company managers.
7. A means to update the performance measures (if needed) to assure they are providing useful information about the effectiveness of IM Program activities.

The adequacy of specific performance metrics is the subject of Protocol 8.02.

Rule Requirement	§195.452 (f) An operator must include, at minimum, each of the following elements in its written integrity management program: (7) Methods to measure the program's effectiveness (see paragraph (k) of this section); §195.452 (k) *What methods to measure program effectiveness must be used?* An operator's program must include methods to measure whether the program is effective in assessing and evaluating the integrity of each pipeline segment and in protecting the high consequence areas. See Appendix C of this part for guidance on methods that can be used to evaluate a program's effectiveness.

Inspection Summary	

Protocol 8.01 Inspection Results		**No Issues Identified**
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

8.01 Inspection Notes:

Protocol # 8.02	Program Evaluation: Performance Metrics
Protocol Question	Inspect the operator's IM Program to determine if the operator has selected an adequate set of performance metrics to provide meaningful measure of the IM Program performance and effectiveness in reducing risk.

The purpose of this protocol is to review the specific IM Program performance metrics to determine if they can reasonably be expected to effectively assess and evaluate the IM Program. An effective process for evaluating IM Program performance would be expected to include the following characteristics:

1. A description in the IM Program document of the type and frequency of performance metrics to be used.
2. Overall program metrics including (a) overall measures of program effectiveness such as number of leaks, volume released, etc, and (b) measures 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.
3. 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.
4. Defined performance goals that address IM Program areas as well as segments specific issues related to the operator's unique operating environment.
5. Bench-marking company performance using data from outside the company (e.g., PPTS).
6. Trending of equipment or material failures 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 (i.e., significant enough to warrant corrective action).
7. Trending of "near-misses" (such as inadvertent over-pressurization, right-of-way encroachments without one-call notification, SCADA outages, relief valve operation, etc.).

Rule Requirement	§195.452 (f) An operator must include, at minimum, each of the following elements in its written integrity management program: (7) Methods to measure the program's effectiveness (see paragraph (k) of this section); §195.452 (k) *What methods to measure program effectiveness must be used?* An operator's program must include methods to measure whether the program is effective in assessing and evaluating the integrity of each pipeline segment and in protecting the high consequence areas. See Appendix C of this part for guidance on methods that can be used to evaluate a program's effectiveness.

Inspection Summary	

Protocol 8.02 Inspection Results		
		No Issues Identified
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

8.02 Inspection Notes:

Protocol # 8.03	Program Evaluation: Communication of Evaluation Results
Protocol Question	Does the Program Evaluation process require communication of goals and results of the IM Program effectiveness to managers and workers involved with IM Program implementation?

The purpose of this protocol is to ensure that the operator adequately communicates the results of the program evaluations to the proper areas/personnel in the company that may need to utilize the information. An effective program would be expected to have the following characteristics:

1. Periodic reports on the IM Program performance that are prepared and distributed to responsible field and headquarters managers.
2. Communications of performance evaluation results that provide an accurate and thorough summary and trending of IM Program performance, as well as information on the most important integrity issues and actions taken to address these issues.
3. Management follow-up of significant integrity issues and actions taken to address these issues.

Rule Requirement	§195.452 (f) An operator must include, at minimum, each of the following elements in its written integrity management program: (7) Methods to measure the program's effectiveness (see paragraph (k) of this section); §195.452 (k) *What methods to measure program effectiveness must be used?* An operator's program must include methods to measure whether the program is effective in assessing and evaluating the integrity of each pipeline segment and in protecting the high consequence areas. See Appendix C of this part for guidance on methods that can be used to evaluate a program's effectiveness.

Inspection Summary	

Protocol 8.03 Inspection Results		**No Issues Identified**
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

8.03 Inspection Notes:

Protocol # 8.04	Program Evaluation: Root Cause Analysis Process
Protocol Question	Does the operator have an effective root cause analysis and a lessons learned program? Is the process being effectively implemented?

The insights obtained from root cause analysis of incidents, leaks, and near-misses can be important to improving performance. The purpose of this protocol is to review the use of root cause analysis and to evaluate how lessons learned are communicated in the organization. The following characteristics would be expected to be included in an effective root cause analysis process:

1. Rigorous and complete analyses of problems affecting risk that address the identification of human factors issues, management systems problems, generic component or process failures, positive trends, and system wide implementation of good practices.
2. Rigorous and complete identification of recommendations and corrective actions; and thorough tracking and follow-up of these actions to ensure completion.
3. Lessons learned from root cause analysis of incidents developed and distributed to appropriate company employees.

Review examples involving significant problems and determine the adequacy of the analysis and proposed corrective actions. Select several proposed corrective actions from the root cause analysis that was reviewed and determine if the actions have been completed, or are scheduled for completion in a timely manner.

Rule Requirement	§195.452 (f) An operator must include, at minimum, each of the following elements in its written integrity management program: (7) Methods to measure the program's effectiveness (see paragraph (k) of this section); §195.452 (k) *What methods to measure program effectiveness must be used?* An operator's program must include methods to measure whether the program is effective in assessing and evaluating the integrity of each pipeline segment and in protecting the high consequence areas. See Appendix C of this part for guidance on methods that can be used to evaluate a program's effectiveness.

Inspection Summary	

Protocol 8.04 Inspection Results		**No Issues Identified**
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

8.04 Inspection Notes:

Protocol # 8.05	Program Evaluation: Process Implementation
Protocol Question	Is the process for evaluating IM Program performance being implemented as specified by the program documents?

The purpose of this protocol is to ensure that the program evaluation process is being implemented in accordance with the company's approved guidance/procedures. The inspection should review sufficient records to ensure that:

1. Data collection and analyses have been implemented as described in the operator's program.
2. Trends and/or insights are being identified.
3. Rigorous self assessments and/or management audits of IM Program performance have been completed.
4. Performance problems, positive trends, and improvements have been identified.
5. Specified actions have been implemented or scheduled for implementation.
6. Management reviews of the program evaluation results have been performed routinely to ascertain the effectiveness of risk control decisions.
7. The level of documentation is sufficient to demonstrate satisfactory implementation of the program including adequate documentation of data sources, assumptions, results, and recommended actions.
8. Adequate documentation has been generated to demonstrate that the communications specified in the process document have in fact been prepared and distributed to company personnel responsible for IM Program implementation.

Rule Requirement	§195.452 (f) An operator must include, at minimum, each of the following elements in its written integrity management program: (7) Methods to measure the program's effectiveness (see paragraph (k) of this section); §195.452 (k) *What methods to measure program effectiveness must be used?* An operator's program must include methods to measure whether the program is effective in assessing and evaluating the integrity of each pipeline segment and in protecting the high consequence areas. See Appendix C of this part for guidance on methods that can be used to evaluate a program's effectiveness.

Inspection Summary	

Protocol 8.05 Inspection Results		**No Issues Identified**
		Potential Issues Identified (explain in summary)
		Not Applicable (explain in summary)

Documents Reviewed:

Document Number	Rev.	Date	Document Title

8.05 Inspection Notes: