Timely and Accurate Assessment of Pipeline Integrity

2.01 Assessment Methods
- Methods Appropriate for Pipeline Specific Risk Factors
- Acceptable Method per 452 (c)
- ILI Tools that Detect Corrosion and Deformation Anomalies
- Methods for Low Freq ERW or Lap Welded Pipe Susceptible to Longitudinal Seam Defects
- Method Capable of Detecting Cracks for Pipeline with Known Crack Risk Factors
- Corrosion Control Effectiveness for Pressure Tested Segments

2.02 Prioritized Assessment Schedule
- All "Could Affect" Segments Scheduled
- 50% Progress Milestone
- 100% Completion Milestone
- Schedule Appears Reasonable & Achievable
- Higher Risk Segments Assessed First
- In Cases Where Assessment Sections Include Multiple "Could Affect" Segments: Explanation of Method to Aggregate Segments and Establish Priorities
- Data in Part K of the most recent Form PHMSA F 7000-1.1 appear valid and completed

2.03 Prior Assessments
- Prior Assessments Must Use Methods Acceptable Under 452 (c)
- Assessments Completed Before 1/1/96 (Category 1) or 2/18/97 (Category 2) are not Allowed

Baseline Assessment Plan
Additional Guidance Overview

Timely and Accurate Assessment of Pipeline Integrity

Inspection of Baseline Assessment Plans
- Review
  - Baseline Assessment Plan
  - Segment Listing
  - Risk Ranking
  - Risk Drivers
  - Capabilities of Tools Selected
  - Justification for Assessment Method Selection
  - Schedule Details
  - Completion Progress
  - Baseline Assessment Plan Revisions
4.01 Remedial Action Process

- Prioritized Remediation Schedule
- Documented Justification that Changes to Repair Schedule will Not Jeopardize Public Safety or the Environment
- Notification if Repair Schedule Can Not Be Met and Pressure is Not Reduced
- Pressure Reduction for Immediate Repair Conditions
- Limitation of Pressure Reduction to 365 Days
- Repairs Comply with 49 CFR 195.422
- Recordkeeping for Repairs

4.02 Remedial Action Implementation

- Prioritized Schedule Developed
- Repairs Accomplished per the Prioritized Schedule
- Any Schedule Changes Documented and Demonstrated not to Pose a Risk to Safety or the Environment
- Notifications and Justification
- Pressure Reduction or Shutdown for Immediate Repair Conditions
- Pressure Reduction Determined via ANSI B31.4 Section 451.7 or other Valid Engineering Basis
- Pressure Reduction Remained in Place No More Than 365 Days
- Repairs Made per 49 CFR 195.422
- Data in Part J of Form PHMSA F 7000-1.1 valid and complete

Remedial Action

Additional Guidance Overview

- Remedial Action Process Inspection
  - Review
    - IM Program Documentation
    - O&M Manual
    - Repair Procedures
    - Procedures for Determining Repair Schedule Priorities

- Inspection of Implementation for Remedial Action
  - Review
    - Repair Records
    - Excavation/Remediation Schedule
    - Documentation of Changes to Repair Schedule
    - Notifications
    - Operating Records (Pressure Reductions)
    - Calculations of Safe Operating Pressure
5.01 Comprehensiveness of Approach

5.02 Integration of Risk Information
- Input Data Needed to Characterize Risk Factors
- Justification for Analytical Tool, Model, or Algorithm
- Structured Process & Guidelines
- Justification for Weighting Factors
- Risk Integration Process that Emphasizes Safety & Environment
- Integration of Other Factors Not Included in Risk Model

5.03 Input Information
- Assessment Results
- Accuracy of Data
- Assurance of Completeness & Quality of Data
- Appropriate Use of Excessively Conservative Data
- Structured Process for Subjective Input Data
- Operator & Industry Operating Experience Data

5.04 Risk Analysis of Pipeline Could Affect HCA Segments

5.05 Meaningful Results
- Highest Risk Locations
- Important Risk Drivers
- Differentiation of Relative Risk Among Pipeline Segments
- All Modes of Operation
- Uncertainty Evaluation & Resolution

5.06 Facilities

Risk factors related to integrity threats and consequences, integration with "Could Affect" analysis, uniform risk characteristics, and approach for application of risk factors that vary across the pipeline unit being analyzed.

Risk Analysis
Additional Guidance Overview

Risk Analysis Process Inspection
- IM Program Documentation
- Policy Documents
- Implementing Procedures
- Selection of Risk Factors to Analyze
- Software Documentation
- Risk Model Descriptions
- Algorithms/Formulae
- Justification for Weighting Factors
- Input Data Sources
**Additional Preventive & Mitigative Actions**

**Additional Guidance Overview**

**6.01 Actions Considered**
- Significant Causes & Risk Drivers
- Broad Spectrum of Potential Actions, Incl. Those Listed in 452(i)(1)
- Effectiveness of Current Programs
- Consider Spectrum of Actions
- Consider Both Physical Mods and Procedural Changes
- Actions for Facilities
- Required Factors in 452(i)(3) or Justification for Exclusion
- Additional Evaluation Factors, e.g.,
  - Use of SCADA
  - Leak Detection Thresholds
  - Flow & Pressure Measures
  - Testing of Leak Detection
- Evaluate Spectrum of Leak Scenarios to Determine Overall Effectiveness
- All Modes of Operation
- Use of API-1130 for CPM Systems
- LDS Availability & Reliability
- Consideration of Enhancements to Existing LDS

**6.02 Application of Risk Analysis**
- Analysis of All Risk Factors in 451(i)(2) - Exceptions Must Be Justified
- Analysis of All Other Risk Factors That Could Pose a Threat
- Address Consequences of Failures
- Assurance of Up-to-date Analysis Prior to Use
- Documented Basis for All Operator Actions Credited in LDS Evaluation
- Controller Performance to Engage/Activate and Mute/Disable LDS Features
- Integration of Emergency Response Procedures with LDS Indications
- Controller Authority & Responsibility to Respond to Leak Indicators, Including Shutdown
- Supervisor Availability for Shutdown Decisions

**6.03 Decision Basis**
- Systematic Decision-Making Process
- Priority on Highest Risk Lines & Facilities
- Risk Basis for Decision-Making
- Documentation of All Candidate Actions Considered
- Implementation of Approved Preventive & Mitigative Actions as Planned/Scheduled
- Required Factors in 452(i)(4) or Justification for Exclusion
- Additional Evaluation Factors
- Consideration of Risk Analysis Results
- Factors Affecting the Swiftness of Pipeline Shutdown Capability
- Response to Transient Conditions
- Potential Effects of EFRD Additions, Including:
  - Valve Sequencing
  - Inadvertent Actuation
  - Pressure Transients During Valve Actuation

**6.04 Leak Detection: Evaluation Factors**
- Evaluation of Leakage Detection System
- Operating Procedures
- Maintenance
- Calibration
- Testing

**6.05 Leak Detection: Operator Actions/Reactions**
- Controller Actions
- Field Operators
- Supervisors
- Management

**6.06 Leak Detection: Operator Actions/Reactions**
- Systematic Decision-Making Process
- Priority on Highest Risk Lines & Facilities
- Risk Basis for Decision-Making
- Documentation of All Candidate Actions Considered
- Implementation of Approved Preventive & Mitigative Actions as Planned/Scheduled
- Required Factors in 452(i)(4) or Justification for Exclusion
- Additional Evaluation Factors
- Consideration of Risk Analysis Results
- Factors Affecting the Swiftness of Pipeline Shutdown Capability
- Response to Transient Conditions
- Potential Effects of EFRD Additions, Including:
  - Valve Sequencing
  - Inadvertent Actuation
  - Pressure Transients During Valve Actuation

**6.07 EFRD: Evaluation Factors**
- Consideration of Risk Analysis Results
- Factors Affecting the Swiftness of Pipeline Shutdown Capability
- Response to Transient Conditions
- Potential Effects of EFRD Additions, Including:
  - Valve Sequencing
  - Inadvertent Actuation
  - Pressure Transients During Valve Actuation

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Note: LDS - Leak Detection System
Continual Evaluation & Assessment

Additional Guidance Overview

7.01 Periodic Evaluation

- Periodic Evaluation of Pipeline Integrity Based On All Risk Factors, including:
  - Risk Factors Listed in 452(e)
  - Information Analysis Results per 452(g)
  - Decisions About Additional Preventive and Mitigative Actions
  - Consideration of Remedial Actions Taken
  - Consideration of all Integrity Assessments

- Reassessment Schedule Not to Exceed Five Years

7.02 Re-assessment Intervals

- Reassessment Intervals Based on all Risk Factors and Information, including:
  - Risk Factors Listed in 452(e)
  - Results of Last Integrity Assessment
  - Information Analysis Results per 452(g)

7.03 Assessment Methods

- Methods Appropriate for Pipeline Specific Risk Issues
- Consideration of Completed Assessment Results
- ILI Tools Detect Corrosion & Deformation Anomalies
- Method for Low Freq. ERW and Lap Welded Pipe Susceptible to Seam integrity Issues
- Detect Cracks if Known Crack Risk Factors
- 90-Day Notification to Use Other Technology
- Corrosion Control Effectiveness for Pressure Tested Segments

7.04 Assessment Interval Variance

- Notification to Exceed Five Year Reassessment Interval
- Engineering Justifications
  - 270-Day Advance Notification
  - Other Methods for Equivalent Understanding of P/L Condition
  - Alternative Interval
  - Technically Rigorous
  - Justification

- Unavailable Technology
  - 180-Day Advance Notification
  - Interim Actions to Evaluate Integrity
  - Estimate of Completion Date
  - Adequate Justification

- Pro-active ID of Issues that Impact Schedule

7.05 ECDA Pre-Assessment

- Indirect Inspection Measurements Conducted in Accordance with NACE RP0502-2002, Section 4.2
- Severity of Indications and Urgency for Direct Examination are Characterized in Accordance with NACE RP0502-2002 Sections 4.3 and 5.2
- Additional Criteria Developed if Root Cause Analysis Reveals Conditions for Which ECDA is Unsuitable
- Mitigation/Preclusion of Future External Corrosion Resulting from Significant Root Causes
- Comprehensive Data Evaluation with Regard to Categorizing Repairs and Classifying Indications
- Criteria to Address Reclassification and Reprioritization of Indications
- Criteria for Internal Notification Procedures
- Alternate Methods to Assess Defects Other than External Corrosion
- Application of More Restrictive Criteria When Conducting Initial ECDA Indirect Inspection

7.06 ECDA Indirect Inspection

- Excavations and Data Collection
  - Corrosion Defect Criteria
  - Root Cause Identified
- Additional Criteria Developed if Root Cause Analysis Reveals Conditions for Which ECDA is Unsuitable
- Mitigation/Preclusion of Future External Corrosion Resulting from Significant Root Causes
- Comprehensive Data Evaluation with Regard to Categorizing Repairs and Classifying Indications
- Criteria to Address Reclassification and Reprioritization of Indications
- Criteria for Internal Notification Procedures
- Alternate Methods to Assess Defects Other than External Corrosion
- Application of More Restrictive Criteria When Conducting Initial ECDA Direct Inspection

7.07 ECDA Direct Examination

- Determination of Reassessment Intervals
- Performance Measures for Evaluating Long-term Effectiveness of ECDA
- Incorporation of Feedback to Demonstrate Continuous Improvement
- Adjustment of Reassessment Intervals if Required in Accordance with 452 (j) (3)

7.08 ECDA Post-Assessment

- Inspection of Implementation for Continual Evaluation & Assessments
  - Review
    - Reassessment Plan (Methods & Schedules)
    - Risk Factors
    - Previous Assessment Results
    - Analysis Supporting Assessment Interval Selection
    - Justification for Assumptions
    - Notifications and Related Documentation and Justifications

Continuing Assessment of Pipeline Integrity

- ECDA Plan/Implementation
- Continual Evaluation & Assessment Process Inspection
  - Review
    - IM Program Documentation
    - Policy Documents
    - Implementing Procedures
    - Baseline Assessment Plan
    - Continual Assessment Plan
    - Risk Analysis
    - Technical Methods for Assessment Interval Determination (e.g., corrosion or crack growth models)
    - ECDA Plan/Implementation