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***Pipeline Safety:
Safety of Gas Transmission Pipelines:
Repair Criteria, Integrity Management
Improvements, Cathodic Protection,
Management of Change, and Other
Related Amendments***

***Western Region Gas Conference
Scottsdale, AZ
August 24, 2022***



Rule Contents

- New Definitions
- New IBR documents
- MOC
- New Construction
- CP
- Surveillance
- Repairs
- IM / RA
- DA – ICDA / SCCDA / LS
- PM & M



Definitions

Distribution Center - means the **initial point** where gas enters piping used primarily to deliver gas to customers who purchase it for consumption, as opposed to customers who purchase it for resale, for example:

- (1) at a metering location;
- (2) a pressure reduction location; or
- (3) where there is a reduction in the volume of gas, such as a lateral off a transmission line.



Definitions (cont.)

Transmission line means a pipeline or connected series of pipelines, other than a gathering line, that:

- (1) Transports gas from a gathering pipeline or storage facility to a distribution center, storage facility, or large volume customer that is not down-stream from a distribution center;
- (2) has **an MAOP** of 20 percent or more of SMYS;
- (3) transports gas within a storage field; or
- (4) is voluntarily designated by the operator as a transmission pipeline.

Incorporated By Reference

As expected, PHMSA updated this code section to the following updated incorporated by reference standards:

- ASME/ANSI B31.8S-2004, *Managing System Integrity of Gas Pipelines*
- NACE SP0502-2010, *External Corrosion Direct Assessment*

The following standards were added to this Section:

- NACE SP0204-2008, *Stress Corrosion Cracking Direct Assessment Methodology*
- NACE SP0206-2006, *Internal Corrosion Direct Assessment Methodology*



Management of Change



- Technical
- Design
- Physical
- Environmental
- Procedural
- Operational
- Maintenance
- Organizational (pipeline or process)
(permanent or temporary)

Management of Change

The management of change process must include the following process elements:

- Reason for change
- Authority for approving changes
- Analysis of implications
- Acquisition of required work permits
- Documentation
- Communication of change to affected parties
- Time limitations
- Qualifications of staff



Feb 2024

Installation of Pipe in a Ditch

§§192.319(d) & .461(f)...operator must perform an assessment to assess any coating damage and ensure integrity of the coating using direct current voltage gradient (DCVG), alternating current voltage gradient (ACVG), or other technology that provides comparable information about the integrity of the coating. Coating surveys must be conducted, except in locations where effective coating surveys are precluded by geographical, technical, or safety reasons.



Corrosion Control: Monitoring and Remediation

§ 192.465(d) ... correct any deficiencies indicated by the inspection and testing ... must develop a remedial action plan and apply for any necessary permits within 6 months of completing the inspection or testing that identified the deficiency. ...

(f) ...determine the extent of the area with inadequate cathodic protection ... systemic areas ... conduct a CIS ... remediate areas with insufficient cathodic protection levels, or areas where protective current is found to be leaving the pipeline...



Continuing Surveillance

Following an extreme weather event or natural disaster:

- Named tropical storm or hurricane;
- Flood that exceeds the river, shoreline, or creek high-water banks in the area of the pipeline;
- Landslide in the area of the pipeline; or an earthquake

Inspect within 72 hrs.

Take action, e.g. pressure reduction, correct damages, address unsafe conditions, implement additional activities, activate ER, communication to communities



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Predicted Failure Pressure

§ 192.712(c) - New requirement to develop procedures for evaluate dents and other mechanical damage ...

- Including ground movement, external loading, fatigue, cracking, and corrosion ...
- High-resolution deformation, inertial mapping, and crack detection inline inspection data for damage in the dent area and any associated weld region ...
- Curvature-based strain analysis ...
- Compare the dent profile between the most recent and previous ...
- Identify and quantify all previous and present significant loads acting on the dent.
- Evaluate the strain level associated with the anomaly or defect and any nearby welds using Finite Element Analysis ...
- Crack growth rate assessment...
- Notification per 192.18 if using ECA

Repairs Outside of IM

§192.714 - General requirements are established under Paragraph (b) and require that operators must ensure repairs are made in a safe manner and are made to prevent damage to persons, property, and the environment. This paragraph also requires that:

- Pipelines operation pressure must be less than the predicated failure pressure
- Repairs are preformed must use pipe and material properties documented in traceable, verifiable, and complete records
- If documented data required is not available the operator must obtain the undocumented data per 192.607



Repairs Outside of IM

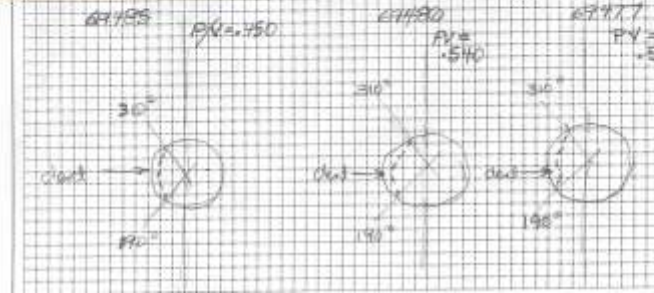
Immediate

Two-year conditions

Monitored

Pressure reductions

- 80% OP @ discovery
- PFP/F
- PFP/1.1



Integrity Management

§ 192.917(b) – Updated to specifically include data elements that operators must integrate for their risk assessment. Integration of the required elements must begin 18 months from the effective date of the rule.

- Pipe diameter, wall thickness, seam type, and joint factor;
- Manufacturer and manufacturing date, including manufacturing data and records;
- Material properties including, but not limited to, grade, specified minimum yield strength (SMYS), and ultimate tensile strength;
- Equipment properties;
- Year of installation;
- Bending method;
- Joining method, including process and inspection results;
- Depth of cover;
- Crossings, casings (including if shorted), and locations of foreign line crossings and nearby high voltage power lines
- Class location;
- Hydrostatic or other pressure test history, including test pressures and test leaks or failures, failure causes, and repairs;
- Pipe coating methods (both manufactured and field applied), including the method or process used to apply girth weld coating, inspection reports, and coating repairs;
- Soil, backfill;
- Construction inspection reports, including but not limited to:
 - Post backfill coating surveys;
 - Coating inspection (“jeeping” or “holiday inspection”) reports;
- Cathodic protection installed, including, but not limited to, type and location;
- Coating type;
- Gas quality;
- Flow rate;



IM Data List (cont.)

- Leak and failure history, including any in-service ruptures or leaks from incident reports, abnormal operations, safety-related conditions (both reported and unreported) and failure investigations required by § 192.617, and their identified causes and consequences;
- Coating condition;
- Cathodic protection (CP) system performance;
- Pipe wall temperature;
- External and internal corrosion monitoring;
- Operating pressure history and pressure fluctuations, including an analysis of effects of pressure cycling and instances of exceeding MAOP by any amount;
- Performance of regulators, relief valves, pressure control devices, or any other device to control or limit operating pressure to less than MAOP;
- Encroachments;
- Repairs;
- Vandalism
- External forces;
- Audits and reviews
- Industry experience for incident, leak, and failure history;
- Aerial photography (imagery)
- Exospore to natural forces in the area of the pipeline including seismicity, geology, and soil stability of the area
- Pipe **operational and maintenance inspection reports**, including, but not limited to:
 - Data gathered through integrity assessments required under this part, including, but not limited to, in-line inspections, pressure tests, direct assessments, guided wave ultrasonic testing, or other methods;
 - Close interval survey (CIS) and electrical survey results;
 - CP rectifier readings;
 - CP test point survey readings and locations;
 - Alternating current, direct current, and foreign structure interference surveys;
 - Pipe coating surveys, including surveys to detect coating damage, disbanded coatings, or other conditions that compromise the effectiveness of corrosion protection, including, but not limited to, direct current voltage gradient or alternating current voltage gradient inspections;
 - Results of examinations of exposed portions of buried pipelines (e.g., pipe and pipe coating condition, see § 192.459), including the results of any non-destructive examinations of the pipe, seam, or girth weld (i.e. bell hole inspections);
 - Stress corrosion cracking excavations and findings;
 - Selective seam weld corrosion excavations and findings;
 - Any indication of seam cracking;
 - Gas stream sampling and internal corrosion monitoring results, including cleaning pig sampling results;



IM Risk Analysis

Also consistent with the 2019 hazardous liquids integrity management updates, this Section is updated to require that operators:

- *Identify and analyze spatial relationships among anomalous information (e.g., corrosion coincident with foreign line crossings or evidence of pipeline damage where overhead imaging shows evidence of encroachment); and*
- *Analyze the data for interrelationships among pipeline integrity threats, including combinations of applicable risk factors that increase the likelihood of incidents or increase the potential consequences of incidents.*



IM Repair Criteria

§ 192.933 – Adjusted some criteria, added some criteria



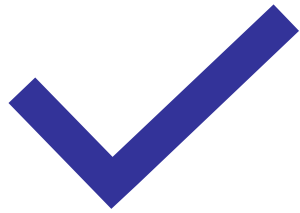
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IM PM & M

§192.935 – Added a number of specific additional preventative and mitigative measures



Any Questions?



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