



Transmission Rule 1: *Safety of Gas Transmission Pipelines: MAOP Reconfirmation, Expansion of Assessment Requirements and Other Related Amendments*



Summary

The rulemaking is part 1 of 3 of the original 2016 rulemaking: **Safety of Gas Transmission and Gas Gathering Lines** that has been called the “*Transmission mega rule*”. This rulemaking contains extensive records and material validation requirements and expands the integrity assessment concepts in response to legislative mandates. This rulemaking does not apply to gas gathering.

Rulemaking Topics

- ❖ Definitions of traceable, verifiable, and complete (TVC)
- ❖ Fracture Mechanics
- ❖ Spike Testing
- ❖ MAOP Reconfirmation
- ❖ MAOP Determination
- ❖ MAOP Records
- ❖ Material Verification
- ❖ Assessments outside of HCA’s
- ❖ Assessment Intervals
- ❖ Records
- ❖ Assessment Methods
- ❖ MAOP Exceedance Report
- ❖ Seismicity
- ❖ Moderate Consequence Areas

Expected Final Publication Q1 2019

Traceable, Verifiable, and Complete (TVC) Records Definition – PHMSA is seeking to create records quality criteria for MAOP records as defined by TVC. It was clarified during Gas Pipeline Advisory Committee (GPAC) meetings that:

- TVC criteria applies solely to records used to establish and reconfirm MAOP for transmission lines and not other records requirements
- TVC criteria can be fully met by single records to establish MAOP

Note: The definition of Traceable, Verifiable, and Complete is contained within 2012 PHMSA Advisory Bulletin (ADB-2012-06)

New Records Requirements – PHMSA is seeking to enhance records requirements throughout Part 192 for the design, construction, and operation of transmission pipe manufactured after effective date of the rulemaking. Specific records requirements included in this rulemaking are highlighted below.

- Materials Records §192.67 – “...acquire and retain for life of pipeline the original steel pipe manufacturing records that document tests, inspections, and attributes required by the manufacturing specifications...”
- Pipe Design Records §192.127 – “...retain for life of pipeline records documenting pipe design...”
- Pipeline Components Records §192.205 – “retain records documenting manufacturing standard and pressure rating...” applies to components greater than 2 inches in nominal diameter
- Welder Qualification §192.227
- Plastic Joint Qualification §192.285
- Material Verification §192.607
- MAOP §192.619, §192.624
- Class Location Records §192.5
- Testing Records §192.517



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- Proposed regulatory language that captures GPAC's intent in approved voting slides are highlighted in *red*
- Industry proposed regulatory language revisions are highlighted in *blue*

Moderate Consequence Area (MCA) Definition §192.3

Onshore area within PIR of *Pipe segment with MAOP ≥ 30% SMYS* and “contains five or more buildings intended for human occupancy, an occupied site, or *any portion of the paved surface, including shoulders, of a designated interstate, freeway, expressway, and other principal arterial roadway with four or more lanes...that does not meet the definition of high consequence area...*”

Note: PHMSA has committed to provide publicly available database for principal arterial roadways

Occupied Site Definition §192.3

“Occupied site means a small, well-defined area of congregation at any of the following outside public areas or open public structures that an operator identifies through a publicly available database or class location survey and that does not meet the definition of Identified Site in § 192.903: Beaches, playgrounds, recreational facilities, camping grounds, outdoor theaters, stadiums, recreational areas near a body of water, or areas outside of a religious facility.”

Assessment Outside HCAs - PHMSA is seeking to expand the concepts of integrity assessments and remediation to Transmission pipe outside of HCAs.

Scope / Applicability - §192.710(a) / §192.3

- Onshore Transmission Pipeline segments that *“have a MAOP that produces a hoop stress greater than or equal to 30% of SMYS”* in:
 - Class 3 or 4 not in HCAs
 - Moderate Consequence Areas (MCA) *“...if the pipe segment can accommodate inspection by means of **free-swimming, commercially available** instrumented in-line inspection tools... without permanent modifications to the pipe segment.”*

Timeline - §192.710(b)

- *“Initial assessment 14 years after effective date and periodic reassessments every 10 years thereafter”.*
- Assessments used for MAOP reconfirmation can count toward pipeline assessment

Methods - §192.710(c) – (e)

- Same as Assessments in HCA, §192.921(c), appropriate to threats identified
 - ILI
 - Pressure test
 - Spike test
 - Excavation and NDE
 - GWUT
 - Direct assessment
 - Other technology
- Discovery of condition within **240** days of assessment

Evaluation and Remediation - §192.710(f), §192.711, §192.713



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MAOP Verification §192.624 – PHMSA is seeking to require operators to verify the MAOP of Transmission pipe segments without TVC records in high population areas using 1 of 6 possible methods. The intent is to ensure transmission pipelines are operated at pressures below yield strength of pipe and accounting for safety factors.

Scope - §192.624(a)

- HCA segments w/o TVC Records
- Class 3 & 4 segments w/o TVC Records
- Grandfathered lines with **MAOP > 30% SMYS** that are in HCA, or Class 3 or 4, or MCAs able to accommodate ILL

Timeline - §192.624(b)

- 50% of scope within 8 years of effective date
- 100% of scope within 15 years or within 4 years of segment first meeting scope condition

Methods - §192.624(c)

1. Pressure Test
2. Pressure Reduction
3. Engineering Critical Assessment (ECA)
4. Pipe Replacement
5. Pressure reduction for segments with small PIR
6. Other technology or processes

Material Verification §192.607 – Establishes process for verifying material properties.

PHMSA clarified during GPAC meetings that Material Verification is 1) a tool, not a stand-alone program, 2) can utilize destructive or non-destructive techniques, and 3) only required as referenced within the following Part 192 sections:

- §192.485 Corrosion remedial measures
- §192.619 MAOP
- §192.624 MAOP reconfirmation
- §192.712 Fracture Mechanics
- §192.713 Repair Criteria outside of HCAs
- §192.929 SCCDA
- §192.933 Repair Criteria in HCAs

§192.607(b) Records

- Keep TVC records *“for pipe properties verified using paragraph §192.607(c) of this section.”*

§192.607(c) Procedure

- 150 excavations, or
- # of excavations equal to segment mileage, or
- Alternative sampling process that meets *“a minimum 90% confidence level”*



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Spike Tests §192.506 – PHMSA is seeking to codify procedure for conducting pressure spike tests as an integrity assessment methods for time-dependent cracking threats on:

§192.506(a) - *“Steel pipelines operating at a hoop stress level of 30% SMYS or more and has been found to have time-dependent cracking threats, including stress corrosion cracking...unless the operator addresses the integrity threat by other means, such as in-line inspection or direct assessment.”*

Testing Procedure - §192506(b) – (g)

- Maintain baseline pressure, specified by §192.619(a)(2) or §192.620(a)(2), must be held for at least 8 hours
- Minimum spike test pressure is the lesser of 1.50 times MAOP or **100%** SMYS.
- Spike test pressure *“must be held for at least 15 minutes.”*

Fracture Mechanics §192.712 – Incorporates well-established engineering analysis methods for material failure that are capable of predicting remaining material strength and failure pressure of crack-like defects.

- Where allowed by Part 192; Currently referenced in:
 - MAOP Verification (ECA) (§192.624)
 - HCA and non-HCA anomaly evaluation (§192.713, §192.933)

§192.712(b) Model types allowed *“Technically proven fracture mechanics model appropriate to the failure mode...”*

§192.712(c) Growth analysis, *“If the operator determines that the pipeline segment is susceptible to cyclic fatigue or other loading conditions that could lead to fatigue crack growth, fatigue analysis must be performed... The operator must re-evaluate the remaining life...before 50% of the remaining life calculated by this analysis has expired.”*

Analysis results must be *“...reviewed and confirmed by a SME.”*

§192.712(e) Records

- After effective date of rule, operator must keep analysis records for life of the pipeline

Other Technology or Process Notification §192.633, §192.635 – Allows operators to submit a notification to PHMSA to consider other technology or process outside of those specified with Part 192.

- Aligns with directive to utilize state of the art technologies
- Notification must occur at least 90 days in advance of operator using other technology or process
- If operator does not receive an objection letter from PHMSA within 90 days of notification, operator can proceed with other technology or process

Notification process referenced in following code sections: §192.506, §192.607, §192.624, §192.712, §192.921, §192.937, §192.939

Please visit the following link to read the complete set of proposed rulemaking language based on GPAC voting slides: <https://www.aga.org/research/policy/safety-of-gas-transmission--gathering-lines-rule/>

For more information, please contact Sonal Patni spatni@aga.org or Wen Tu wtu@aga.org