Safety of Gas Transmission and Gathering Pipelines

RIN: 2137-AE72
Docket: PHMSA - 2011 - 0023

December 7-8, 2016

Brief History of Gas Rule

- **September 9, 2010, incident at San Bruno, CA**, kills 8 people, injures many, causes several more to be evacuated, destroys 38 homes, and damages another 70 homes.
- **PHMSA issues Gas ANPRM on August 25, 2011**, seeking public comment on 15 topics (122 questions). PHMSA received 103 comments.
- **NTSB issues several recommendations** to several entities, including PHMSA, CPUC, PG&E, AGA, and INGAA, following the San Bruno incident through its investigation report adopted on August 30, 2011.
- **Pipeline Safety Act of 2011 issued on January 3, 2012;** includes several mandates related to gas pipeline regulation, many of which correlate to San Bruno investigation findings.
- **Incident near Sissonville, WV, on December 11, 2012**, destroys 3 homes, damages several other houses, and shuts down I-77 because of the fire and road surface damage.
- **NTSB issues new recommendations for IM of Gas Transmission Pipelines** in HCAs report adopted January 27, 2015.
- **PHMSA issues Gas NPRM on April 8, 2016.**

Congressional Mandates (2011 PSA)

- **5 (e)** – Allow extension (6 months) for an High Consequence Area (HCA) reassessment if operator submits sufficient justification
- **5 (f)** – Expanding Integrity Management (IM) requirements or principles beyond HCAs
- **21 -** Gathering line regulation
- **23** – Testing regulations to confirm the material strength of previously untested Gas Transmission (GT) pipelines; records verification
- **29** – Seismicity

NTSB / GAO Recommendations Relating to Gas Rule

- **P-11-14** – Amend Part 192 to repeal exemptions from pressure test requirements and require all GT pipelines constructed before 1970 be subjected to a hydrostatic test that incorporates a spike test
- **P-11-15** – Manufacturing and construction-related defects can only be considered stable if a pipeline has been subjected to a post-construction hydrotest ≥ 1.25 x Maximum Allowable Operating Pressure (MAOP)
- **P-14-1** – Add principal arterial roadways, including interstates, other freeways and expressways, and other principal arterial roadways as defined by Federal Highway Administration (FHA) to the list of "identified sites" that establish an HCA
- **P-15-18** – Require all GT pipelines to be piggable by either reconfiguring the pipeline to accommodate ILI tools or through using new technology that permits the inspection of previously un-inspectable pipelines; priority should be given to the highest-risk GT pipelines considering age, pressure, diameter, and class location (supersedes P-11-17)

NTSB / GAO Recommendations Relating to Gas Rule

- **P-15-20** – Identify all operational complications that limit the use of inline inspection (ILI) tools in piggable pipelines, develop methods to eliminate the operational complications, and require operators use these methods to increase the use of ILI tools
- **P-15-21** – Develop and implement a plan for eliminating the use of Direct Assessment (DA) as the sole integrity assessment method for GT pipelines
- **P-15-22** – Develop and implement a plan for all segments of the pipeline industry to improve data integration for IM through the use of GIS.
- **GAO-12-388** – Collect data on Federally unregulated hazardous liquid and gas gathering pipelines

Summary of Proposed Rule

PHMSA proposed rule changes in the following areas for gas transmission and gas gathering pipelines:

1. Require assessments for non-HCAs
2. Strengthen repair criteria for HCAs and non-HCAs
3. Strengthen requirements for assessment methods
4. Clarify requirements for validating & integrating pipeline data
5. Clarify functional requirements for risk assessments
6. Clarify requirement to apply knowledge gained through IM
7. Strengthen corrosion control requirements
8. Add requirements for selected preventative and mitigative (P&M) measures in HCAs to address internal corrosion and external corrosion

Summary of Proposed Rule

9. Management of change
10. Require pipeline inspection following extreme external events
11. Include 6-month grace period (w/notice) to 7 year reassessment interval (Act § 5(e))
12. Require reporting of MAOP exceedance (Act § 23)
13. Incorporate provisions to address seismicity (Act § 29)
14. Add requirement for safety features on launchers and receivers
15. Gathering lines- Require reporting for all & some regulatory requirements
16. Grandfather clause/Inadequate records - Integrity Verification Process (IVP)

NPRM Comment Summary

- PHMSA issues Gas NPRM on April 8, 2016.
- Comment period ended July 7, 2016.
- PHMSA received approx. 300 comments on the Gas NPRM.
  - Major entities include:
    - Industry Trade Associations (INGAA, API, AGA, APGA, others)
    - Pipeline Safety Trust (PST)
    - State Utility Commissions and regulators (NAPSR, NARUC, & CPUC)
    - Members of Congress
    - Public Interest Groups
    - Environmental Groups
      - (Sierra Club, Environmental Defense Fund (EDF))
    - Operators (including PG&E)

Topics for the First GPAC Meeting

Topic	Code Sections
Reassessment Period 6 Month Grace Period	§ 192.939
Safety Features for Pig Launchers/Receivers	§ 192.750
Provisions to Address Seismicity	§§ 192.917(a)(3); 192.917(b)(1); 192.935(b)(2)
Inspections Following Extreme Events	§ 192.913
Management of Change	§§ 192.911 & 192.13(d)
Records	§ 192.933 (a) & (d)
Corrosion Control	§§ 192.319; Subpart I: 192.451-491; App. D
Corrosion Preventative and Mitigation Measures	§§ 192.933 & 192.935
Integrity Management Clarification	§§ 192.613; 192.917 (a) – (c); 192.935(a)

Topics for the Second GPAC Meeting

Topic	Code Sections
Assessments Outside of HCAs	§§ 192.3 & 192.710
Strengthened Assessment Requirements	§§192.921(a); 192.923; 192.927; 192.929; 192.493; App. F
Integrity Verification Process (IVP) for Grandfathered Segments	§§ 192.150; 192.503; 192.607; 192.619; 192.624; 192.713
Reporting (Primarily Gathering)	§§ 191.1; 191.23; 191.25; 191.29
Gathering Lines	§§ 191.29; 192.3; 192.8; 192.9; 192.13 (a) & (b)
Repair Criteria Revisions	§§ 192.711 & 192.713
Gas Transmission (and Distribution Center) Definitions	§§ 192.3 & 192.8

Agenda for 12/7 & 12/8 Meetings

- 6-month Grace Period for 7-year Reassessment Intervals (with notice)
- Safety Features on ILI Launchers/Receivers
- Seismicity
- Pipeline Inspections Following Extreme Weather Events
- Management of Change
- Records
- Corrosion Control
- IM Clarifications

Include 6-month Grace Period to 7-Year Reassessment Interval

§ 192.939

- **ISSUE:** Subsection 5(e) of the Pipeline Safety Act of 2011 identifies a technical correction to Title 49 of the United States Code.

- **BASIS:** This codifies Act § 5(e) technical correction.

- **PHMSA PROPOSED to:** Allow operators to request an extension of the seven year reassessment interval for an additional 6 months if the operator submits written notice to the Secretary with sufficient justification of the need for the extension, in accordance with the Act § 5(e) technical correction.

Grace Period for Reassessment Interval: Comments

- Request for clarification that the six month extension begins after the close of the **seven <u>calendar</u> year** reassessment interval period

Add Requirements for Safety Features on Launchers and Receivers

§ 192.750

- **ISSUE:** Current regulations for liquid pipelines (Part 195) contain safety requirements for scraper and sphere facilities. Part 192 does not explicitly address this area.
- **BASIS:** Some incidents have occurred at launchers and receiver stations.
- **PHMSA PROPOSED to:**
  - Require launchers & receivers to be equipped with a device (safety valve) capable of safely relieving pressure in the barrel before insertion or removal of inline inspection tools, scrapers, or spheres.
  - Require use of a suitable device to indicate that pressure has been relieved in the barrel or must provide a means to prevent opening if pressure has not been relieved.

Safety Features on Inline Inspection Tool Launchers and Receivers: Comments

- Supported by citizen and government groups
- One commenter recommended a phase in period of 18 months to plan, budget, and complete the upgrades
- One commenter recommended the rule be effective prior to next use of the launcher or receiver

Incorporate Provisions to Address Seismicity

§§ 192.917(a)(3); 192.917(b)(1)(xxxv); 192.935(b)(2)

- **ISSUE:** Section 29 of the Act states that in identifying and evaluating all potential threats to each pipeline segment, an operator of a pipeline facility shall consider the seismicity of the area.
- **BASIS:** This codifies the specific requirement from Act § 29.
- **PHMSA PROPOSED to:**
  - Include seismicity in evaluating P&M measures for the threat of outside force damage.
  - Include seismicity of the area in the data gathering and integration of information about pipeline attributes and other relevant information.

Seismicity: Comments

- Support
- One commenter recommended adding requirements to analyze any significant localized threat, considering the pipeline operating conditions, that could impact integrity
- PHMSA should define seismic event for the purposes of compliance
- PHMSA should clarify whether seismic risk investigations are a one-time requirement or if there is an expected timetable for re-investigation

Require Pipeline Inspection Following Extreme Events

§ 192.613

- **ISSUE:** Current rules do not address extreme events that can damage pipelines or disrupt pipeline operations.
- **BASIS:** Recent example of extreme event (Yellowstone River scouring caused by flooding) that resulted in pipeline incident.
- **PHMSA PROPOSED to:**
  - Clarify that inspection of pipeline and right-of-way for "other factors affecting safety and operation" includes extreme weather events, man-made, and natural disasters, and similar events.
  - Specify the timeframe for performing inspections & remedial actions.

Inspections Following Extreme Events: Comments

- Most supported, if certain expectations were clarified
  - Define inspection requirements
  - Define extreme weather event
  - Clarify “other events”
- Duplicative with requirement for “prompt and effective response” to emergency situations
- Change timeline “as soon as practicable” or permit exceptions as inspections within 72 hours may not always be possible

Management of Change
§§ 192.911 & 192.13(d)

- **ISSUE:** Codifying the specific attributes of the Management of Change process will enhance the visibility and emphasis on these important program elements.
- **BASIS:** Address lessons learned from San Bruno and Marshall, MI with respect to operational and other decision-making that affects risk.
- **PHMSA PROPOSED to:**
  - Codify the specific attributes of the Management of Change process from ASME/ANSI B31.8S, Section 11 (already incorporated by reference).
  - Require operators to develop and follow a Management of Change process and address risk as part of the general requirements of Part 192.

Management of Change: Comments

- Support
- Requirements are unnecessary, too broad, and would apply to routine activities that already have established procedures in line with industry standards
- PHMSA underestimated the costs of implementing requirements for changes beyond those in ASME B31.8S
- Operators should have 1-5 years to implement the proposed changes
- Commenters were concerned that the proposed changes appeared retroactive

Records

§ 192.933 (a) & (d)

- **ISSUE:** Immediately after the San Bruno accident, NTSB issued 3 urgent recommendations to PG&E. Those involved and immediate search for missing records, the use of verifiable records to determine a valid MAOP, and if a valid MAOP cannot be determined, conduct pressure tests to re-establish a valid MAOP.
- **BASIS:** San Bruno incident showed that operators lack records to verify MAOP of lines they operate in HCAs. Operators reported ~5K miles of pipe in Class 3 & 4 locations and HCAs had inadequate records to confirm MAOP (13% of 37,500 miles).
- **PHMSA PROPOSED to:** Require pipe and material properties used in remaining strength calculations to be documented in reliable, traceable, verifiable, and complete records. If such records are not available, pipe and material properties used in the remaining strength calculations would be required to be based on properties determined and documented in accordance with § 192.607.

Records (continued)

- **PHMSA Proposed:**
  - Class Location determination records must be kept for life of pipeline (192.5)
  - Each operator must make and retain records that demonstrate compliance with this part (192.13 (e))
  - Each operator of GT pipelines must acquire/retain records for:
    - Materials (192.67)
    - Pipe Design (192.127)
    - Pipeline Components (192.205)
    - Welder Qualification (192.227)
    - Plastic Pipe Joining Qualification (192.285)
    - Tests under §§ 192.505, 192.506, & 192.507 (strength tests/spike tests)
  - Appendix A

Records: Comments

- Support
- § 192.13(e) applies an unfeasible standard that appears to be retroactive
- "Reliable, traceable, verifiable and complete"
  - Oppose inclusion
  - Eliminate reliable
  - Require "verifiable" in accordance with 2012 ADB only if any single record is not traceable or complete

Records: Comments (Cont.)

- Appendix A
  - Appears to introduce new recording and retention requirements
  - Should be non-retroactive
  - PHMSA needs to clarify what applicability to pipelines other than transmission lines
- Specific Concerns
  - Pipeline Components (§ 192.205)- should be removed or exclude components smaller than 2” diameter
  - Welders and joiner qualification records (§§ 192.227 and 192.285) should not need to be retained for the life of the pipe
  - PHMSA should clarify that some records only apply to transmission pipelines

Strengthen Corrosion Control

§§ 192.319; Subpart I: 192.451-491; Appendix D

- **ISSUE:** Current rules for external & internal corrosion need strengthening.
- **BASIS:** Disbonded coating and corrosion were significant contributing factors in the Marshall, MI & Sissonville, WV incidents.
- **PHMSA PROPOSED to require:**
  - Expansion of corrosion controls required in Subpart I.
  - Specific Preventive and Mitigative measures for HCAs to address both external and internal corrosion.
    - Similar to measures required for pipe segments operating under the alternate MAOP rule per 192.619.

Corrosion Control: Comments

- Support proposal or more stringent requirements
- Oppose exemption for certain gathering lines
- Oppose expanding corrosion control requirements
  - Proposal is burdensome and existing practices are sufficient
  - Does not align with current NACE standards
- Applicability to transmission, distribution and gathering is unclear
- Coating surveys are not always feasible and PHMSA should not limit the tools for performing those surveys (i.e. close interval surveys or ILI)

Corrosion Control: Comments (cont.)

- Direct Current Voltage Gradient (DCVG) and Alternating Current Voltage Gradient (ACVG) may not address issues related to coatings impeding cathodic protection and PHMSA should not set specific thresholds in the CFR
- Increase the timeline from 3 months to 1 year to match requirement to install cathodic protection
- Interference surveys
  - May not be feasible depending on what information operators can get from electricity transmission companies
  - Should only be required for lines subject to stray current risk
  - Phase in compliance over 12-18 months

Corrosion Control: Comments (cont.)

- Internal Corrosion
  - Already addressed by existing regulations in Subparts I and O
  - Monitoring timeline is unreasonable
  - Should only be required for lines carrying corrosive gas
- Appendix D
  - Criteria for determining adequacy of cathodic protection is too narrow
  - PHMSA should follow the standard set in NACE SP0169 and be consistent with §195.571. Impact to distribution was not justified or analyzed and therefore distribution lines should be excluded

Add P&M Requirements to Address Ext. Corrosion and Int. Corrosion in HCAs

§§ 192.933 & 192.935

- **ISSUE:** Prescriptive preventive and mitigative measures are needed to assure that public safety is enhanced in HCAs and affords greater protections for HCAs.
- **BASIS:**
  - Disbonded coating and corrosion were significant contributing factors in the Marshall, MI & Sissonville, WV incidents.
  - Implement Act § 29 (seismicity).
- **PHMSA PROPOSED to:**
  - Enhance internal & external corrosion control programs in HCAs to provide additional protection from corrosion commensurate with Alt MAOP pipelines.
  - Consider other measures, such as additional right-of-way patrols and hydrostatic tests in areas where material has quality issues or lost records.
  - Address seismicity in evaluating P&M measures for outside force damage.

P&M Requirements: Internal and External Corrosion Comments

- Support
- Requirements proposed for § 192.935(f) and (g) are too broad and prescriptive
- PHMSA should either reference ASME standards for P&M measures and ensure they are consistent with NACE standards
- Specific objections to §192.935
  - Continuous gas quality monitoring should only apply if internal corrosion is a risk and should not have to be real time (f)
  - Periodic indirect inspections should only be required if there is a history of corrosion (g)
- PHMSA should assure that the requirements in §§ 192.933 and 192.713 align with ASME and other standards

Integrity Management Clarifications

§§ 192.917 (b) – (e); 192.935(a)

- **ISSUE:** Address weaknesses in operator data integration and risk analysis, and the usage of those analyses.
- **BASIS:**
  - Address NTSB Recommendations following San Bruno and in response to NTSB Safety Study.
- **PHMSA PROPOSED to enhance:**
  - § 192.917(b) by including specific data analysis requirements in the body of the rule instead of by reference to B31.8S.
  - § 192.917(c) by clearly stating the functions and requirements of the risk assessment, such as validation of risk model, and accounting for interactive threats and uncertainty.
  - § 192.917(d) to add more detail regarding threats specific to plastic pipe.
  - § 192.917(e) to address threats of cyclic fatigue, manufacturing and construction defects, and ERW pipe.
  - § 192.935(a) to more clearly specify P&M measures and how risk assessment and data integration required in 192.917 must be used to identify P&M measures to be taken to reduce risk.

Improving Requirements for Collecting, Validating, & Integrating Pipeline Data

§§ 192.917 (b) – (e)

- **ISSUE:** Operators are collecting much information but an integrated and documented analysis is often lacking.
- **BASIS:**
  - San Bruno highlighted weaknesses in this area.
  - 2011 Act mandate.
- **PHMSA PROPOSED to:**
  - Clarify that data be verified and validated.
  - Clarify Requirements for integrated analysis of data and information.
  - Establish minimum pipeline attributes that must be included.
  - Require use of validated, objective data whenever practical.
  - Address requirements for use of SME input.

Improving Requirements for Collecting, Validating, & Integrating Pipeline Data: Comments

- Supported by the NTSB, while others acknowledged the importance of verified and validated data but had other concerns
- Codification of B31.8S attributes
  - Supported by one operator
  - These are not burdensome but may not always be possible to collect in practice
  - A more limited list of attributes would be more useful
  - Trade associations noted that the proposed language may be more prescriptive than the ASME standard and could introduce confusion
- SME Input
  - PHMSA should delete references to SME bias and replace the text with general language to include peer review and verification
  - One operator commented that this would add unnecessary cost
  - A trade association commented that the proposals are common industry practice and don't need to be incorporated into the regulations
- Requirement to identify spatial relationships is unclear and potentially burdensome
- Remove requirement for fracture mechanics modeling to address cyclic fatigue and defect weld seams such as Low Frequency Electric Resistance Weld (ERW) seams
- Extend frequency to reevaluate cyclic fatigue

Add Specific Functional Requirements for Risk Models

§§ 192.917 (b) – (e)

- **ISSUE:** More specificity is needed for the nature and application of risk models to improve the usefulness of these analyses to control risks from pipelines.
- **BASIS:**
  - Addresses NTSB recommendations and lessons learned from the San Bruno incident investigation.
  - Addresses input from the July 2011 Risk Management workshop.
- **PHMSA PROPOSED to:**
  - Add a new definition of "quantitative risk assessment" that adequately evaluates the effects of interacting threats, contribution of individual risks, and the effects of uncertainty.
  - Require validation of risk models in light of incident, leak, and failure history and other historical information [NTSB P-11-29 to PG&E].

Add Specific Functional Requirements for Risk Models: Comments

- Supported by PST and other citizen groups while industry entities acknowledged the importance of risk assessments
- Industry groups commented that prescriptive regulations are unnecessary and a regulatory commission proposed a performance based alternative
- Operators commented that they should have discretion to select which datasets to incorporate as they are best able to identify which threats are applicable
- PHMSA should define “validate” and “verify”
- It may not be feasible to collect and integrate all data points without pipeline upgrades
- Industry groups commented that the regulations would require expensive quantitative or probabilistic risk models
- Requirements deviate from industry consensus standards
- Commenters recommended a phase-in period for operators to incorporate these requirements into their IM programs ranging from two to five years

Strengthen Requirements for Applying Knowledge Gained Through IM

§§ 192.917 (b) – (e)

- **ISSUE:** Strengthening requirements related to operators' use of insights gained from its IM program is prudent to ensure effective risk management.
- **PHMSA PROPOSED to:**
  - Clarify the expectation that operators use knowledge from risk assessments to establish and implement adequate Preventative & Mitigative measures.
  - Provide <u>more explicit examples of the types of P&M measures</u> to be evaluated.

Strengthen Requirements for Applying Knowledge Gained Through IM: Comments

- Vaguely phrased risk assessment requirements should be removed or defined
- An operator requested clarification regarding which elements need to be included in the risk model versus those which only need to be included in the general IM plan
- Several commenters requested removing the requirement to perform all the listed preventative and mitigative measures from § 192.935(a)