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PHMSA Proposes to Require Gas Pipelines to Implement Advanced Leak Detection Programs

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On May 5, 2023, the Pipeline and Hazardous Materials Safety Administration (PHMSA) released a pre-publication version of a Notice of Proposed Rulemaking (NPRM) that would amend the federal pipeline safety regulations to require that operators of gas pipeline facilities implement a number of measures to reduce emissions of methane and other flammable, toxic, or corrosive gas from new and existing pipelines. The proposed regulations are broad in scope and would apply to gas transmission pipelines, distribution pipelines, onshore and offshore gas gathering pipelines, hydrogen pipelines, and to a more limited extent, liquefied natural gas (LNG) facilities.

The NPRM responds to a congressional directive in section 113 of the Protecting Our Infrastructure of Pipelines and Enhancing Safety Act of 2020 (2020 PIPES Act) requiring that PHMSA adopt leak detection repair requirements for gas pipelines. The NPRM also implements Executive Orders 13990 and 14008, directing federal agencies to undertake efforts to reduce methane emissions from oil and gas facilities. PHMSA's proposal reflects an intentional shift toward reliance on pipeline safety regulations to address climate change risks associated with methane emissions.

Comments on the NPRM will be due 60 days after publication in the Federal Register.

The 2020 PIPES Act

Section 113 of the 2020 PIPES Act directed PHMSA to issue regulations requiring operators of regulated gathering lines in Class 2, Class 3, and Class 4 locations and operators of new and existing gas transmission and gas distribution pipelines to implement leak detection and repair programs that meet pipeline safety needs and protect the environment. Section 113 requires that the regulations (1) contain minimum performance standards that reflect capabilities of commercially available advanced technologies appropriate for a pipeline's type, location, pipe material and product transported, and that can identify, locate, and categorize leaks that are hazardous to human safety or the environment or could become explosive or otherwise hazardous to human safety; and (2) require the use of advanced leak detection technologies and practices that include continuous monitoring or periodic surveys with equipment that is handheld or mounted on mobile platforms. The regulations also must accommodate leak detection practices that rely on human senses and include a schedule for repairing or replacing leaking pipe.

The NPRM also is informed by section 118 of the 2020 PIPES Act which requires that PHMSA consider both safety and environmental benefits of proposed new safety standards. According to PHMSA, section 118 "elevate[s] consideration of environmental benefits on par with other (e.g., public safety anticipated benefits." PHMSA also relies on other provisions of the statute requiring consideration of environmental impacts when adopting new pipeline safety standards.

Overview of NPRM

Below is an overview of the proposed regulatory amendments, organized by new requirements and applicable facilities.

New and Increased Leakage Survey and Patrolling Requirements. The NPRM proposes new and enhanced requirements for leakage surveys and pipeline patrolling for operators of gas distribution, transmission, offshore gas gathering, and Type A, Type B, and Type C onshore gathering pipelines. Leakage surveys must be conducted using leak detection equipment and in accordance with new advanced leak detection program (ALDP) requirements proposed in § 192.763. Leaks must be remediated in accordance with leak grading and repair requirements proposed in new § 192.760.

Leakage Surveys – Distribution. The NPRM would require more frequent leakage surveys for distribution pipelines located outside of business districts, without cathodic protection, or known to leak based on their material, design, or operational and maintenance history. Leakage surveys also would be required

within 72 hours after an extreme weather event or land movement that is likely to damage affected pipeline segments. Operators would be required to investigate existing leaks when ground freezing and other changes in environmental conditions occur that could affect gas venting or migration to nearby buildings.

Leakage Surveys – Gas Transmission and Gathering. The NPRM would increase the frequency of leakage surveys on gas transmission and gas gathering pipelines located in high consequence areas (HCA) and aboveground offshore gas transmission and onshore gas gathering pipelines. Leak survey requirements would be extended to Type C onshore gas gathering pipelines. Reliance on human senses for leakage surveys would be limited to submerged offshore gas transmission and gathering pipelines, and, subject to notification and review by PHMSA, onshore gas transmission and regulated onshore gas gathering pipelines in Class 1 and Class 2 locations outside of HCAs.

Leakage Surveys – LNG Facilities. The NPRM proposes to require that LNG operators conduct quarterly methane leakage surveys on components and equipment within facilities containing methane or LNG in normal operations, but not on tanks.

Patrolling – Gas Transmission and Gathering. The NPRM would increase the patrolling frequency for gas transmission, offshore gathering and Type A onshore gas gathering and establish new patrolling requirements for Type B and Type C onshore gas gathering pipelines. The NPRM proposes a uniform frequency of 12 patrols along an entire pipeline each calendar year.

Operator Qualification. Proposed § 192.769 would clarify that leakage surveys and investigations are "covered tasks," which means that personnel performing these activities must be qualified under operator qualification regulations.

Hydrogen Pipelines, Underground Natural Gas Storage Facilities, and Type R Gathering. PHMSA invites comments on whether the new leakage survey and patrolling requirements should apply to hydrogen gas pipelines, underground natural gas storage facilities, and Type R (reporting regulated) onshore gas gathering pipelines.

Advanced Leak Detection Program (Proposed new §192.763). The NPRM would require that operators of gas distribution, transmission, offshore gathering, and Type A, Type B, and Type C gathering pipelines implement written ALDPs and establish performance standards for the sensitivity of leak detection equipment and the effectiveness of their ALDPs. An operator's ALDP would be required to have four elements:

Leak Detection Equipment. ALDPs must list the leak detection equipment used for leakage surveys, leak investigations, and pinpointing leaks. Leak detection equipment must have a minimum sensitivity of 5 parts per million (ppm) or less. Operators would select their leak detection equipment based on a documented analysis that considers the gas transported, the size, configuration, operating parameters, and operating environment of the system. An operator may seek PHMSA review of alternative leak detection technology. The NPRM seeks comment on whether and how it could implement a rule integrating requirements for technologies without specified sensitivities, such as fiber optic sensing, and the potential safety and environmental benefits and potential costs of particular approaches. The NPRM also seeks comments on the value of requirements for continuous monitoring systems, via stationary gas detection systems, pressure monitoring or other means.

Leak Detection Procedures. An ALDP must have procedures for performing compliant leakage surveys for the leak detection equipment included in the ALDP, including procedures for validating that a leak detection device meets the minimum sensitivity requirement and investigating and pinpointing the location of all leak indications.

Prescribed Leakage Surveys. An ALDP must state the frequency of leakage surveys and must meet minimum frequencies stated in § 192.723 for gas distribution pipelines and § 192.706 for gas transmission, offshore gathering, and Type A, Type B, and Type C gathering pipelines.

Program Evaluation and Improvement. At least annually, operators would be required to re-evaluate their ALDPs considering, at a minimum, the performance of leak detection equipment, the adequacy of leakage

survey procedures, advances in leak detection technologies and practices, the number of leaks initially detected by third parties, the number of leaks and incidents on the pipeline, and estimated emissions from detected leaks.

No ALDPs for LNG Facilities. Because LNG facilities are subject to continuous gas monitoring requirements of the National Fire Protection Association Standard 59A and to the standards for gas production and transmission systems in 40 C.F.R. Part 60, the NPRM does not propose a comprehensive ALDP requirement for LNG facilities. The NPRM also states that PHMSA is developing a rulemaking that will more holistically consider leak monitoring, surveying, and patrolling requirements for LNG facilities.

Leak Grading and Repair Requirements (Proposed new §192.760 and revised § 192.3). The NPRM would require that operators of gas distribution, transmission, offshore gathering, and Type A, Type B, and Type C gathering pipelines develop written procedures to implement proposed new and enhanced requirements for grading and repairing any leak detected on all pipeline components. Leak repair requirements would no longer apply only to leaks "hazardous" to public safety. The NPRM also would codify the requirement in § 114 of the 2020 PIPES Act that operators update their procedures to provide for minimizing releases of natural gas, eliminate hazardous leaks of natural gas and any other flammable, toxic, or corrosive gas; and replace or remediate pipelines known to leak.

Definition of Leak or Hazardous Leak (revised § 192.3). For purposes of all subparts of Part 192, except Integrity Management regulations (*i.e.*, § 192.12(d) and subparts O and P), the NPRM proposes to define a "leak or hazardous leak" as "any release of gas from a pipeline that is uncontrolled at the time of discovery and is an existing, probable, or future hazard to persons (including operating personnel), property, or the environment, or any uncontrolled release of gas from a pipeline that is detectable via equipment, sight, sound, smell, or touch."

The NPRM proposes a new leak grading framework that is informed by the existing criteria developed by the Gas Piping Technology Committee (GPTC) and applied by operators.

Grade 1 Leaks. "Grade 1" leaks present an urgent or emergency situation requiring that the operator take "immediate and continuous" action to eliminate the hazards to people or the environment. The NPRM proposes to characterize a Grade 1 leak to include leaks with "grave" environmental harms. In this respect, the NPRM distinguishes between public safety risks which can be "existing or contingent" under existing GPTC guidance, and the "certain" environmental harms caused by leaks of methane and other gas. The NPRM classifies the following as a Grade 1 leak: (1) any reading of 80% lower explosive limit (LEL) or higher in a substructure from which gas would likely migrate to the outside wall of a building; (2) any leak that can be seen, heard, or felt; and (3) any leak reportable as an incident under Part 191 of the pipeline safety regulations.

Grade 2 Leaks. The NPRM proposes to define a "Grade 2" leak as a leak presenting a probable future hazard to public safety or a significant hazard to the environment. Grade 2 is the minimum priority grade for leaks of gaseous hydrogen and for any leak on a gas transmission pipeline or a Type A or Type C onshore gas gathering pipeline. A Grade 2 leak also includes any leak other than a Grade 1 leak with a leakage rate of 10 CFH or more. An operator would be required to repair a Grade 2 leak within six months of detection, unless the leak is from a gas transmission or Type A gathering pipeline lying in an HCA or in a Class 3 or Class 4 location, in which case it would have to be repaired within 30 days of detection. An operator's procedure must contain a methodology for prioritizing Grade 2 leak repairs.

Grade 3 leaks. The NPRM proposes that any leak that is not a Grade 1 or a Grade 2 leak be classified as a Grade 3 leak. All Grade 3 leaks must be repaired within 24 months of detection and be re-evaluated once every six months until repair is complete. In order to accommodate ongoing pipe replacement programs, the NPRM would provide that a Grade 3 leak may be monitored rather than repaired if the pipeline on which the leak is detected is scheduled for replacement or abandonment within five years of the date the leak is detected.

Post repair inspection. The NPRM proposes that a leak repair may be classified as complete only if the operator obtains a gas concentration reading of 0% gas by volume at the leak location during a post-repair inspection.

Compressor stations. Because existing and proposed regulations of the Environmental Protection Agency (EPA) apply to compressor stations, the NPRM proposes to exempt them from requirements pertaining to leak repair, leakage survey and patrol, leak grading and repair, ALDPs, and qualification of leak detection personnel. Operators would, however, be required to retain records associated with leak repairs to ensure documentation of change and trend analysis on those facilities and for compliance purposes. Should EPA's regulations not apply, the exception for compressor stations would not apply.

Reporting and the National Pipeline Mapping System. The NPRM proposes new and revised reporting requirements.

Large-Volume Gas Release Reports – All Jurisdictional Pipelines. The NPRM proposes to amend Part 191 to require that operators all jurisdictional gas pipeline facilities, including underground natural gas storage facilities, LNG facilities and Type R gas gathering pipelines, report large volume releases, including intentional releases (*e.g.*, blowdowns, maintenance-related venting, pressure relief device actuation) and unintentional releases (*e.g.*, leaks, fugitive emissions) of 1 MMCF or greater. This requirement would not apply to certain events that are reported as incidents.

Annual Reports – Distribution, Transmission, and Offshore Gathering and Type A, B, and C Gathering. The NPRM would require operators of distribution, gas transmission, offshore gathering, and Type A, Type B, and Type C gathering (but not Type R gathering) to report the number of leaks detected and repaired by grade, the number (by grade) of unrepaired leaks, and the estimated aggregate emissions from leaks by grade and other emissions by source category. The NPRM proposes to remove language in the annual report form instructions that suggests that releases that can be eliminated by routine maintenance need not be reported as leaks.

National Pipeline Mapping System – Onshore and Offshore Gathering. The NPRM proposes to require offshore gas gathering and Types A, B, and C gas gathering pipelines to submit geospatial pipeline location data to the National Pipeline Mapping System.

Minimizing Vented Gas Emissions (Proposed new § 192.770). The NPRM proposes to require that gas transmission, offshore gathering, and Type A onshore gas gathering pipelines minimize intentional venting of natural gas and flammable, toxic, or corrosive gas emissions. Proposed new § 192.770 would list examples of approved methods to mitigate or prevent such vented releases. An operator would not be required to comply with these measures during an event that that requires activation of the operator's emergency plan if such minimization would delay emergency response or result in a safety risk during pipeline assessments or maintenance. An operator may request use of an alternative approach to mitigating intentional venting that reduces emissions by at least 50% compared with venting without mitigative action. The NPRM invites comment on whether gas distribution or Type B and Type C gathering pipelines should be required to implement some of these measures and whether restricting the use of flaring to instances where other mitigation measures are impractical is appropriate.

Design, Configuration, and Maintenance of Pressure Relief Devices (Revised § 192.199 and proposed § 192.773). The NPRM proposes to revise § 192.199 to require that new and replaced, relocated, or otherwise changed gas transmission, distribution, and part 192-regulated gathering pipelines be designed and configured, as demonstrated by documented engineering analysis, to minimize unnecessary releases of gas. Proposed § 192.773 would require that these operators develop procedures to assess the proper function of pressure relief devices on their facilities and remediate or replace any malfunctioning devices. Proposed § 192.773 also identifies specific actions operators would be required to take in response to a malfunctioning pressure relief device, including immediate repair or replacement in certain circumstances.

Investigation of Failures. Under existing § 192.617, an operator is required to investigate and analyze failures and incidents. The NPRM would revise § 192.617 to define the term "failure" as "when any portion of a pipeline becomes inoperable, is incapable of safely performing its intended function, or has become unreliable or unsafe for continued use." The NPRM states that *any* leaking gas pipeline is considered to have failed to perform its intended function and under the NPRM would be subject to the investigation requirement.

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Hydrogen Pipelines. The NPRM stated that all of the NPRM's proposals apply to hydrogen gas pipelines unless otherwise specified and invites comments on whether to adopt provisions specific to hydrogen gas pipelines, in lieu of or in addition to the provisions proposed in the NPRM.

For More Information

Van Ness Feldman counsels clients on pipeline safety compliance, enforcement, and litigation under the Pipeline Safety Laws and Regulations and related statutes. If you are interested in additional information regarding PHMSA's NPRM or would like assistance on pipeline safety issues, contact Susan Olenchuk at (202) 298-1896 or sam@vnf.com.

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