

United States Department of Transportation
Pipeline and Hazardous Materials Safety Administration
Office of Pipeline Safety
Temporary Repair and Permanent Repair Frequently Asked Questions
November 2, 2022

These frequently asked questions (FAQs) are guidance provided to help the regulated community understand how to comply with existing temporary repair and permanent repair regulations. FAQs are not substantive rules, are not meant to bind the public in any way, and do not assign duties, create legally enforceable rights, or impose new obligations that are not otherwise contained in the existing regulations and standards. However, an operator who is able to demonstrate compliance with the FAQs is likely to be able to demonstrate compliance with the relevant regulations. If a different course of action is taken by a pipeline operator, the operator must be able to demonstrate that their conduct is in accordance with the regulations.

Q1. When must operators make permanent repairs on gas pipelines?

A1. Permanent repairs to onshore gas gathering and transmission pipelines in high consequence areas

49 Code of Federal Regulations (CFR) § 192.711(b) requires a pipeline operator to make permanent, non-integrity management repairs on gas gathering pipelines “as soon as feasible.”

When making repairs to transmission pipelines in high consequence areas (HCAs) that address anomalies discovered through integrity assessments, operators must comply with the requirements under § 192.933. Those requirements include taking prompt action to address all anomalies discovered and remediate those anomalous conditions that could reduce a pipeline’s integrity. The operator must be able to demonstrate that the repair will ensure that the condition is unlikely to pose a threat to the integrity of the pipeline until the next reassessment of the covered segment. In addition to the other part 192 remediation requirements, § 192.935 requires operators of pipelines in HCAs to take additional measures to prevent a pipeline failure and to mitigate consequences.

Section 192.933(d) delineates that certain conditions must be treated as “immediate repair conditions,” “one-year conditions,” or “monitored conditions” for remediation purposes. Section 192.933(d) details the special requirements for scheduling repairs for those conditions. For example, when an operator makes repairs to an “immediate repair condition,” the operator must evaluate and remediate that condition pursuant to the schedule in ASME/ANSI B31.8S, section 7 (incorporated by reference, see § 192.7) and must temporarily reduce operating pressure or shut down the pipeline until the immediate repair condition is remediated. If an operator is unable to respond within the time limits for remediation specified in § 192.933(d), the operator must temporarily reduce the operating pressure of the pipeline or take other action that ensures the safety of the covered segment. § 192.933(a)(1). In certain circumstances, the operator must also notify PHMSA. § 192.933(a)(1).

A2. Repairs to onshore gas transmission pipelines not in an HCA, and which do not operate under an alternative maximum allowable operating pressure (MAOP)¹

The regulations do not distinguish between the method in which a permanent and temporary repair is made when repairs are made to onshore gas transmission lines not in an HCA. Instead, when making repairs, operators must ensure that any repair made is in a manner which is safe, and is made to prevent damage to persons, property, and the environment. § 192.714(b).² Operators must use pipe and materials whose properties are documented with traceable, verifiable, and complete records. § 192.714(b).

If an operator is remediating certain conditions in accordance with § 192.714(d), the condition must be (1) removed by cutting out and replacing a cylindrical piece of pipe that will permanently restore the pipeline’s MAOP based on the use of § 192.105 and the design factors for the class location in which it is located; or (2) repaired by a method, shown by technically proven engineering tests and analyses that will permanently restore the pipeline’s MAOP based upon the determined predicted failure pressure times the design factor for the class location in which it is located. See § 192.714(c). Section 192.714(d) provides the timeframe within which operators must make such repairs.

¹ Pipelines operating under an alternative MAOP must comply with the repair requirements for § 192.620(d)(11).

² Section 192.714(b) will go into effect on May 24, 2023.

For repairs to conditions not listed under §192.714(d), operators must calculate the predicted failure pressure of the anomaly or defect and follow the schedule in ASME/ANSI B31.8S. § 192.714(c).

Additionally, when an operator discovers a condition considered to be an “immediate repair condition” as defined by 192.714(d)(1) or a “two-year condition” as defined under 192.714(d)(2), the operator must reduce the operating pressure of the affected pipeline pursuant to § 192.714(e).

Q2. When must an operator make an immediate temporary repair on a gas pipeline?

If it is not feasible at the time of discovery to make a permanent repair, operators must make immediate temporary repairs to protect the public. § 192.711(a). Section 192.711(a) *Temporary Repairs* requires immediate, temporary measures be taken for pipelines operating at or above 40% of the specified minimum yield strength (SMYS), and permanent repairs of specific conditions must be made at time of discovery, when feasible. These conditions consist of leaks, imperfections, or damage that impair the serviceability. When it is not feasible to make a permanent repair at the time of discovery, section 192.711(a) requires immediate, temporary measures be taken.

A temporary repair must be replaced with a permanent repair as soon as it feasible to do so.

Q3. How is a temporary repair different from a permanent repair for gas pipelines?

Two important distinguishing factors between a temporary repair and a permanent repair are (1) the circumstances in which the repair type may be utilized and (2) the length of time such a repair type may remain in effect. ASME/ANSI B31.8S-2004, para. 7.2.4 (incorporated by reference, see § 192.7) states “If the analysis shows that the time to failure is too short in relation to the time scheduled for the repair, the operator shall apply temporary measures...until a permanent repair is completed.” A temporary repair has a limited effective life and must be replaced with a permanent repair as soon as feasible, but not beyond the limited effective life of the temporary repair. The timing of the replacement is based on an

operator's evaluation of all relevant factors. Relevant factors an operator should consider when making an evaluation include, but are not limited to, operational, design, integrity, and environmental factors (§ 192.933(a), (c)-(d)).

A pipeline operator cannot operate a pipeline using unsafe repair methods, whether temporary or permanent. As required by part 192, all repairs must restore serviceability and safe operation of pipelines. For example, § 192.713(a) requires steel gas transmission (and applicable gathering) pipelines to be repaired either "by cutting out and replacing a cylindrical piece of pipe," or "by a method, shown by technically proven engineering tests and analyses, that will permanently restore the pipeline's MAOP." Permanent and temporary repairs must restore safe operation of the pipeline. Temporary repairs are those that have limited effective life and must be replaced by a repair that can restore permanent serviceability and safe operation. § 192.711. A pressure reduction may be required after a temporary repair of a gas pipeline is completed to ensure serviceability and safe operation of a pipeline. §§ 192.713(b), 192.933(a). Requirements for carrying out repairs to restore permanent serviceability and safe operation in gas pipelines are set forth in part 192. See, e.g., §§ 192.713-192.720.

ASME B31.4-2006, table 451.6.2.9-1 (incorporated by reference, see § 195.3), provides examples of permanent repair methods to address pipeline anomalies. While the table specifically addresses acceptable repair methods of liquid pipeline anomalies, the examples therein are informative for gas pipelines as well. In the event the time to failure is too short in relation to the time scheduled for the repair, and it is not feasible to make a permanent repair at the time of anomaly discovery, methods documented in operations and maintenance procedures and proven by test, investigation, or experience that are outside of the examples listed in ASME B31.4-2006, table 451.6.2.9-1, may be used and considered a temporary repair.

Regardless of whether a repair is permanent or temporary, it must restore serviceability and safe operation of the pipeline. A pipeline operator cannot operate a pipeline using unsafe repair methods.

Q4. How is a temporary repair different from a permanent repair for hazardous liquid pipelines?

Part 195 does not explicitly distinguish between temporary repairs and permanent repairs to conditions affecting the serviceability and safe operation of hazardous liquid pipelines. However, as with gas pipeline operators, hazardous liquid pipeline operators, in repairing their pipelines, must ensure that all repairs are made using safe repair methods and are made to prevent damage to persons and property. § 195.422(a). Part 195 requires all repairs to restore serviceability and safe operation of pipelines. For example, § 195.422(b) states, “No operator [of a hazardous liquid pipeline] may use any pipe, valve, or fitting, for replacement in repairing pipeline facilities, unless it is designed and constructed as required by this part.”

A pressure reduction may also be required under certain circumstances for hazardous liquid pipelines that could affect an HCA. § 195.452(h)(1)(i)-(ii). Requirements for carrying out repairs to restore permanent serviceability and safe operation for hazardous liquid pipelines are set forth in part 195. §§ 195.401(b), 195.452(h).

ASME B31.4-2006, table 451.6.2.9-1 (incorporated by reference, see 195.3), provides examples of permanent repair methods to address liquid pipeline anomalies. In the event the time to failure is too short in relation to the time scheduled for the repair, and it is not feasible to make a permanent repair at the time of anomaly discovery, methods documented in operations and maintenance procedures and proven by test, investigation, or experience that are outside of the examples listed in ASME B31.4-2006, table 451.6.2.9-1, may be used and considered a temporary repair.

Q5. What steps must an operator take when implementing a temporary or permanent repair of a gas or hazardous liquid pipeline?

Pipeline operators must prepare and follow written procedures for making any repair, whether temporary or permanent. This requirement applies to gas pipelines in both HCAs and non-HCAs. §§ 192.605, 192.907. It also applies to hazardous liquid pipelines in both HCAs and non-HCAs. §§ 195.402, 195.452.

For gas pipelines in non-HCAs, operators must include procedures for operating, maintaining, and repairing the pipeline in accordance with each of the requirements of Subparts I, L, and M. §§ 192.451-491, 192.601-623, 192.701-756. For gas pipelines in HCAs, operators must develop procedures for operating pipelines in compliance with Subpart O and ASME/ANSI B31.8S-2004.

§ 192.907. When time-dependent anomalies are being evaluated, an analysis utilizing appropriate assumptions about growth rates must be used to assure that the defect will not attain critical dimensions prior to the scheduled permanent repair. ASME/ANSI B31.8S-2004, para. 7.2.4. The procedures for repair of gas pipelines must clearly identify all repair methods used and be in accordance with each of the requirements of Subpart M. §§ 192.605, 192.711, 192.713-717, 192.720.

For gas pipelines in HCAs, if an operator is unable to “meet the schedule for evaluation and remediation” prescribed by the regulations and “cannot provide safety through a temporary reduction in operating pressure or other action,” the operator must notify PHMSA of the circumstances for the pressure reduction following a temporary repair, and the process for it. § 192.933(a), (b). Additionally, operators must address the factors noted in Subpart M, Subpart O, and ASME/ANSI B31.8S-2004, section 7, related to the timing of replacement of the temporary repair, including, but not limited to, operational, design, integrity, and environmental elements of the pipeline. §§ 192.711, 192.714, 192.933(a)-(e).

For hazardous liquid pipelines, an operator’s repair procedures must consider all relevant repair factors, including, but not limited to, whether the pipeline is in, or could affect an HCA. §§ 195.401-402, 195.452. Hazardous liquid pipeline repair procedures must also consider whether a pressure reduction is required before or after a temporary repair; factors related to the timing of replacement of the temporary repair, including, but not limited to operational, integrity, and environmental elements of the pipeline (§ 195.452(h)(1)); and whether the deficiency is related to corrosion control (§§ 195.573(e), 195.585).

For a repair schedule of a hazardous liquid pipeline to be considered adequate when it is in or could affect an HCA, it must: provide for immediate repair conditions; complete repairs “according to a schedule prioritizing the conditions for evaluation and remediation;” have specified repair timelines for certain integrity conditions; and demonstrate that remediation will ensure that the condition is unlikely to pose a long-term threat to the integrity of the pipeline. § 195.452(h).