

Primary Reference	GMA G 192-9 and G-192–9A, 3.4
Purpose	To address specific regulatory requirements for conducting spike tests as a result of PHMSA amendment 192-125
Origin/Rationale	To address a negative ballot from TR 2019-48 The amended regulatory language imposes requirements of when pressures must be elevated during a pressure test, minimum duration for holding the elevated pressure, and the minimum pressure requirements which must be met to qualify as a successful pressure test to satisfy a regulatory requirement.
Assigned to	Design

Note: Revisions are shown in **yellow highlight** and **red font**.

GMA G-192-1

1.14 OTHER DOCUMENTS

PRCI PR-277-144507	Installation of Pipelines Using Horizontal Directional Drilling – An Engineering Design Guide	GMA G-192-15A GMA G-192-15B
<u>PRCI PR-430-153706-R01</u>	<u>Hydrostatic Test Guidelines for Integrity Management</u>	<u>GMA G-192-9A</u>

GMA G-192-9A

[Editorial note: Existing guide material is shown in black font, and guide material approved to publication by TR 20-18 is shown in green font – TR 20-18 to ANSI Public Review in June 2023.]

GUIDE MATERIAL APPENDIX G-192-9A

(See guide material under §§192.503, 192.505, 192.506, 192.507, 192.513, 192.517, 192.619, 192.921, and Guide Material Appendix G-192-9)

PRESSURE TESTING GUIDELINES FOR TRANSMISSION INTEGRITY ASSESSMENTS

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3 PRESSURE TESTING OF STEEL TRANSMISSION PIPELINES

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3.4 Spike hydrostatic test.

- (a) A spike hydrostatic test, which is an increase in the test pressure to a higher pre-determined level for a brief duration, is an accepted assessment method in conjunction with the Subpart J test to provide greater assurance of the pipe integrity for the segment being tested. It is useful in mitigating both manufacturing and construction flaws in the test segment and the occurrence of a subsequent pressure reversal (see 3.2(d) above). The spike test must be conducted in accordance with the requirements of §192.506. when performed in accordance with §192.506, is an appropriate integrity assessment method for addressing time-dependent threats such as stress corrosion cracking, selective seam weld corrosion, manufacturing and related defects, including defective pipe and pipe seams, and other forms of defect or damage involving cracks or crack-like defects.

- (b) A spike hydrostatic test must be designed to hold pressure at the lower of the following pressures for a minimum of 15 minutes (§192.506).
 - (1) 1.5 times MAOP.
 - (2) 100% SMYS.
- (c) For example, to determine the minimum spike hydrostatic test pressure for a 24" O.D., 0.312 w.t., X52, EFW, class 1 location segment, the following will apply.
 - (1) Design pressure = 1,352 psi.
 - (2) MAOP = 973 psi (72% SMYS).
 - (3) Minimum hydrostatic test pressure: $1.25 \times 973 \text{ psi} = 1,216 \text{ psi}$ (90% SMYS).
 - (4) Hydrostatic spike test pressure is lesser of the following:
 - (i) $1.5 \times 973 \text{ psi} = 1,460 \text{ psi}$ (108% SMYS).
 - (ii) 100% SMYS = 1,352 psi.
- (d) A spike hydrostatic test must be performed for a minimum of 15 minutes and occur during the first 2 hours of a pressure test conducted per §192.505 (§192.506(a)(4)). The spike hydrotest duration can be credited for the time duration for the pressure test. For example, during a pressure test with an 8-hour duration, once the segment has reached and stabilized at or above the designated minimum hydrostatic test pressure, the test time can begin. Within the first 2 hours of the test, the pressure is increased (spiked) to the designated minimum spike hydrostatic test pressure, stabilized, and held for a minimum of 15 minutes. Once the 15-minute period has passed, the test pressure may be reduced to the designated minimum test pressure (or higher) and held for the duration of the 8-hour test. The time required to get up to spike hydrostatic test pressure, hold for 15 minutes, and depressurize to the designated minimum test pressure can be included within the 8-hour test duration.
- (e) For additional guidance on the use of spike testing for pipeline integrity purposes, refer to the Pipeline Research Council International (PRCI) report: "Hydrostatic Test Guidelines for Integrity Management".
- (~~b~~-f) See guide material under §192.517 for guidance on records.

- 4 **PRESSURE TESTING PLASTIC TRANSMISSION PIPELINES**
- 5 **SAFETY**
- 6 **REFERENCES**