



Pipeline Test Requirements

Summary

This Utility Standard establishes requirements for testing pipeline facilities in accordance with the United States Government Code of Federal Regulations (CFR), the California Public Utilities Commission (CPUC), and Pacific Gas & Electric Company (Company).

The requirements of this Utility Standard apply to all Company-owned or Company-operated gas gathering, transmission and distribution pipelines and station facilities.

Target Audience

Gas operations and maintenance personnel responsible for the design and construction of Company's gas gathering, transmission and distribution pipelines and station facilities.

Safety

Potential hazards impacting the requirements governed by this standard include, but are not limited to, the following conditions:

- High energy level of nitrogen and water contained in pumping equipment, pipes, and hoses at high pressure
- Use of nitrogen as a super dry vapor or as a testing medium—requires adequate ventilation at the exhaust and sampling points
- Heavy pigs saturated with water and contaminants

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Requirements

1 Gas Transmission and Distribution Pipeline Facilities

1.1 Gas gathering, transmission and distribution pipelines and station facilities must be tested to substantiate the maximum allowable operating pressure in accordance with the following:

- 49 CFR §192.3, "Definitions."
- 49 CFR §192.503, "General requirements."
- 49 CFR §192.505, "Strength test requirements for steel pipeline to operate at a hoop stress of 30 percent or more of SMYS."
- 49 CFR §192.507, "Test requirements for pipelines to operate at a hoop stress less than 30 percent of SMYS and at or above 100 p.s.i. gage."
- 49 CFR §192.555, "Upgrading to a pressure that will produce a hoop stress of 30 percent or more of SMYS in steel pipelines."
- 49 CFR §192.619, "What is the maximum allowable operating pressure for steel or plastic pipelines."
- CPUC directive issued September 12, 2011 for conducting spike test on existing pipelines.
- CPUC General Order No. 112-E, "State of California Rules Governing Design Construction, Testing, Operation, and Maintenance of Gas Gathering, Transmission, and Distribution Piping Systems," Sections 125 and 126.

1.2 Processes to comply with the above-mentioned requirements are established in the following procedures:

- Utility Procedure TD-4137P-01, "Test Procedure for New Pipelines."
- Utility Procedure TD-4137P-02, "Test Procedure for Existing Pipelines."
- Utility Procedure TD-4137P-03, "Drying Procedure for Pipelines."
- Utility Procedure TD-4137P-04, "Test Procedure for Pipelines Using Air, Inert, or Natural Gas."

2 CPUC Notification

2.1 Report to CPUC in writing 30 days before construction for a piping project costing more than \$2,500,000 and designed to operate at more than 20% of specified minimum yield strength (SMYS). See Numbered Document A-34.1, "General Requirements Work Reportable to the California Public Utilities Commission" for reporting details.



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- 2.2 CPUC at its discretion may witness the hydrostatic test accompanied by a member of the Company.
- 2.3 Report test failures of pipelines to be operated at a hoop stress of 20% or more of SMYS to CPUC through Gas Control at **800 811-4111** within 1 hour of the failure if media are on site; and within 2 hours if media are not present. See Utility Standard TD-4413S, "Gas Event Reporting Requirements" for details.
- 2.4 Complete Form TD-4137P-01-F01, "CPUC Pressure Test Failure Report Form," and send it to Regulatory Compliance for submission to CPUC. Describe the nature of the fault that caused the failure (for example, failed girth weld, failed pipe seam, loss of metal due to corrosion, mechanical damage, etc.); and the resolution of the fault that then enabled re-testing of the pipeline.
- 2.5 When a failed length of pipe and its appurtenances are replaced, the failed pipe and its appurtenances must be saved for further investigation for supplementary reporting to the CPUC.
- 2.6 The supplementary report of the failure must be sent to Regulatory Compliance for submission to the CPUC.
- 2.7 For any applicable pressure test where a spike hydrostatic test will not be performed, Company must provide advance notice in writing to CPUC's Consumer Protection and safety Division (CPSD) regarding the specific pipeline facility, or component, which Company believes would preclude the spike hydrostatic test from being performed to a minimum level of 5% above that required to establish the MAOP.

END of Requirements

Definitions

Pressure recording device: A mechanical or electronic tool that records (gas) pressure automatically on an analog chart. The recording device can also be an electronic device that either produces a printed log of the pressure, or records it on storage media.

Spike test: A test used at the beginning of a pressure test on pipelines (uprates, confirming MAOPs, etc.) to verify the structural integrity of the pipelines with potential time-dependent anomalies. The spike test involves subjecting the piping system to a maximum pressure level that is held for a short duration at the beginning of the test followed by a longer duration hold period at a reduced pressure strength test: A pressure test to prove the mechanical strength of the system.



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**Implementation
Responsibilities**

The director of gas operations, codes and standards, is responsible for approvals, reviews, and distribution of this standard.

All maintenance and construction (M&C) directors, division and transmission superintendents, and field supervisors ensure that personnel are trained and comply with the requirements of this standard. In addition, they are responsible for providing sufficient resources to achieve the requirements of this standard.

All personnel involved in the design and construction of Company gas transmission and distribution pipeline facilities must follow the requirements of this standard and its associated procedures.

For personal safety and the safety of the general public, personnel are responsible for carrying out only those assigned tasks for which they are trained or qualified.

Personnel must notify a supervisor of any additional training, equipment, or resources needed to perform assigned tasks.

**Governing
Document**

NA



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**Compliance
Requirement/
Regulatory
Commitment**

49 CFR §192.3 “Definitions.”

49 CFR §192.503, “General requirements.”

49 CFR §192.505, “Strength test requirements for steel pipeline to operate at a hoop stress of 30 percent or more of SMYS.”

49 CFR §192.507, “Test requirements for pipelines to operate at a hoop stress less than 30 percent of SMYS and at or above 100 p.s.i. gage.”

49 CFR §192.555, “Upgrading to a pressure that will produce a hoop stress of 30 percent or more of SMYS in steel pipelines.”

49 CFR §192.619, “What is the maximum allowable operating pressure for steel or plastic pipelines.”

CPUC’s directive dated September 12, 2011, for conducting of spike test on existing pipelines.

CPUC General Order No. 112-E, “State of California Rules Governing Design, Construction, Testing, Operation, and Maintenance of Gas Gathering, Transmission, and Distribution Piping Systems’, Sections 125 and 126.



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Reference Documents

Developmental References:

Form TD-4137P-01-F01, "CPUC Pressure Test Failure Report Form."

Numbered Document A-34.1, "General Requirements Work Reportable to California Public Utility Commission."

Utility Procedure TD-4137P-01, "Test Procedure for New Pipelines."

Utility Procedure TD-4137P-02, "Test Procedure for Existing Pipelines."

Utility Procedure TD-4137P-03, "Drying Procedure for Pipelines."

Utility Procedure TD-4137P-04, "Test Procedure for Pipelines Using Air, Inert, or Natural Gas."

Utility Standard TD-4413S, "Gas Event Reporting Requirements."

Supplemental References:

Gas Rule 21, "Transportation of Natural Gas," Section C.6, *Water Vapor*.

Numbered Document N-93, "Equilibrium Moisture Content of Natural Gas."

Utility Standard TD-4580S, "Natural Gas Quality."

Appendices

NA

Attachments

NA



Pipeline Test Requirements

Document Recision This document supersedes and cancels Numbered Document A-37 "Hydrostatic Testing Procedures," Revision 0, issued on November 22, 2004. This procedure includes procedural steps previously included in Numbered Document A-37.

Approved By William Raymundo, Director

Document Owner Redacted Principal Gas Engineer

Document Contact Redacted Supervisor

Revision Notes

Where?	What Changed?
NA	This is a new standard.