PROCESS INDUSTRY PRACTICES

April 2017

Pipeline Systems

PIP PLE00012
Piping Examination and Leak Testing Guide - B31.8 Pipelines

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1. Introduction

Scope

This Practice describes guidelines for specifying requirements for examination and leak testing of metallic pipeline systems designed in accordance with *ASME B31.8 Gas Transmission and Distribution Piping Systems.* This Practice provides guidelines for specifying requirements for examination of piping materials, components, fabrication, assembly, installation, and associated documentation. This Practice provides guidelines for the extent of examination, criteria for acceptance, and correction of defective work. This Practice describes the types of leak tests, basis for selecting the appropriate tests, and arrangements for testing piping.

2. References

Applicable parts of the following Practices and industry codes and standards, including codes referenced therein, shall be considered an integral part of this Practice. The edition in effect on the date of contract award shall be used, except as otherwise noted. Short titles are used herein where appropriate.

2.1 Process Industry Practices (PIP)

- PIP PLC00002 – *Abbreviated Pipeline Terms and Acronyms*
- PIP PLCM0001 – *Pipeline Systems Nomenclature*
- PIP PLSC0001 – *Fabrication and Examination of* ASME B31.8 *Metallic Piping*
- PIP PLSC0021 – *Leak Testing of Piping Systems*

2.2 Industry Codes and Standards

- American Petroleum Institute (API)
  - API 1110 – *Recommended Practice for the Pressure Testing of Steel Pipelines For the Transportation of Gas, Petroleum Gas, Hazardous Liquids, Highly Volatile Liquids, or Carbon Dioxide*
- American Society of Mechanical Engineers (ASME)
  - ASME B16.5 – *Pipe Flanges and Flanged Fittings*
  - ASME B31.8 – *Gas Transmission and Distribution Piping Systems*
  - ASME PCC-2 – *Repair of Pressure Equipment and Piping*
- Pipeline Research Council International (PRCI)
  - *Pipeline Repair Manual, Contract PR-186-0324*
- U.S. Department of Transportation
  - Code of Federal Regulations 49 Part 192 – *Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards Part J Test Requirements*

3. Definitions

For definitions of terms used in this Practice, see the *Code*, *PIP PLC00002*, and *PIP PLCM0001*.

4. General Requirements

All testing shall ensure the integrity of the piping, the wellbeing of the public and employees, and the protection of the environment.

4.1 An approved documented procedure is required for the pressure test.

4.2 All additional piping and equipment used during the pressure test shall be rated for the test pressure.

4.3 All piping shall be successfully retested after any required repairs.

5. Scope of Examination

5.1 The *Code* requires that each pipeline be examined to the extent specified using the methods specified.

5.2 The purpose of examining piping is to expose errors and defects in the work and to correct the defects before the piping is placed in service.

5.3 Piping systems should be examined for conformance with design drawings and project specifications prior to the pressure test. The following design and construction requirements should be verified, if applicable:

a. P&ID or Flow Diagram Conformance

(1) Line identification

(2) Line size(s)

(3) Terminals, nozzle connections

(4) Shut-off valves, other valves

(5) In-line equipment, instruments, blinds

(6) Vents and drains

(7) Conformance to all notes on drawings

b. Line Class Conformance

Pipe, fittings, flanges, valves, and piping specialties should be verified in regard to the following characteristics. Nipples, bolts, gaskets, and joining materials should be similarly verified, to the extent possible. All specialty items shall be evaluated for hydrotest pressure.

(1) Material (e.g., ASTM Standard and grade)

(2) Rating or wall thickness

(3) Type and end connection

(4) Standard if applicable (e.g., ASME, MSS, API)