PROCESS INDUSTRY PRACTICES

November 2017

Pipeline Systems

PIP PLSC0019
Specification for Pressure Testing HDPE Plastic Pipeline Systems

PURPOSE AND USE OF PROCESS INDUSTRY PRACTICES

In an effort to minimize the cost of process industry facilities, this Practice has been prepared from the technical requirements in the existing standards of major industrial users, contractors, or standards organizations. By harmonizing these technical requirements into a single set of Practices, administrative, application, and engineering costs to both the purchaser and the manufacturer should be reduced. While this Practice is expected to incorporate the majority of requirements of most users, individual applications may involve requirements that will be appended to and take precedence over this Practice. Determinations concerning fitness for purpose and particular matters or application of the Practice to particular project or engineering situations should not be made solely on information contained in these materials. The use of trade names from time to time should not be viewed as an expression of preference but rather recognized as normal usage in the trade. Other brands having the same specifications are equally correct and may be substituted for those named. All Practices or guidelines are intended to be consistent with applicable laws and regulations including OSHA requirements. To the extent these Practices or guidelines should conflict with OSHA or other applicable laws or regulations, such laws or regulations must be followed. Consult an appropriate professional before applying or acting on any material contained in or suggested by the Practice.

This Practice is subject to revision at any time.

PUBLISHING HISTORY

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Table of Contents

1. Scope

This standard provides minimum requirements for performing pressure tests using a liquid medium on non-reinforced HDPE plastic pipe intended for all service types (e.g., hydrocarbon, produced water).

2. References

Applicable parts of the following industry codes and standards 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. Code section references below are specific to the code editions in effect at the issuance of this Practice.

Industry Codes and Standards

- American Society of Mechanical Engineers (ASME)
  - ASME B16.5 - *Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24 Metric/Inch Standard*
- American Petroleum Institute (API)
  - API Standard 1104 - *Welding of Pipelines and Related Facilities*

3. Definitions

owner: The party who owns the facility or pipeline wherein the piping will be used

purchaser: The party who awards the contract to the supplier. The purchaser may be the owner or the owner's authorized agent.

supplier: The party responsible for providing the testing services

4. Requirements

4.1 Safety

4.1.1 Testing shall be performed in accordance with owner and local regulatory requirements.

4.1.2 The test area shall be clearly identified by using safety barriers and posted signs.

4.1.3 Only personnel involved with the pressure test (e.g., inspecting the equipment, taking the necessary readings) shall be permitted within the test area.

4.1.4 All personnel and equipment not actively involved in the test shall maintain a minimum distance of 15.2 m (50 feet) from any pressurized pipe or fitting.

4.1.5 Owner shall notify people who live or work within 30.4 m (100 feet) of a pipeline segment to be tested about the testing activities before pressurization of the pipe is started.

4.1.6 If the distances specified in Sections 4.1.4 and 4.1.5 are not possible, owner shall ensure that people and equipment not actively involved in the test are maintained as far away from the test area as possible.

4.1.7 If testing is to be performed in high traffic areas, consideration should be given to providing additional signage and/or providing public notice of the testing activities.

4.1.8 Before the start of testing, a Job Safety Analysis shall be conducted for all personnel within the vicinity of the test.

4.1.9 Except if used for instrumentation lines, hoses sized 25 mm (1 inch) and greater and pressurized to greater than 0.68barg (10 psig) shall be staked at a minimum of every 7.6 m (25 feet).

4.1.10 Mechanical connections (e.g., hose connections, instrument lines, hammer unions) shall be protected with whip checks or equivalent.

4.1.11 All components (e.g., piping, hoses, fittings) shall be inspected for proper pressure rating.

4.1.12 All mechanical connections shall be exposed for leak examination.

4.1.13 For underground connections, joints, and seals exposed for observation during the test, sufficient backfill material shall be placed between the joints and over the pipe to prevent movement because of thrust forces.

Comment: Large amounts of exposed piping can result in large temperature related pressure changes, making a stable test difficult to achieve.

4.1.14 Personnel responsible for the tests shall have relevant and adequate training and experience in pipeline hydrostatic and/or pneumatic testing.

4.1.15 For preventing over pressurization, a Pressure Relief Device (PRD) shall be installed with the set point equal to the maximum allowable test pressure plus 1.4 barg (20 psig). The PRD shall be tested before conducting the pressure test.

4.1.16 Direct heating of any pipe contained within the test section shall not be permitted during the test.

4.1.17 If a leak is discovered, the test section shall be depressurized before repairing the leak.

4.1.18 Because leakage at a butt fusion joint can indicate imminent catastrophic rupture, if butt fusion leakage is discovered, the test section shall be depressurized immediately.

4.1.19 Appropriate environmental, health, and safety (EHS) protocols shall be specified and followed including but not limited to the following:

a. Energy isolation (i.e., Lock Out – Tag Out)

b. Hazard Assessment & Personal Protective Equipment (PPE)

c. Hot work

d. Excavation and trenching

e. Pre-Job Planning