PROCESS INDUSTRY PRACTICES

COMPLETE REVISION
May 2024

Pipeline Systems

PIP PLE00006
Cathodic Protection Systems for Pipelines

PURPOSE AND USE OF PROCESS INDUSTRY PRACTICES

This Practice has been prepared by harmonizing technical requirements from existing standards of major industrial operators, contractors, and standards development organizations. While this Practice is intended to incorporate the majority of requirements, individual applications may have requirements which take precedence over this Practice. Determinations concerning fitness for purpose or application of this Practice to specific project or engineering situations should not be made solely on information contained in this Practice. All Practices are intended to be consistent with applicable laws and regulations. Should this Practice conflict with 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 this Practice.

Use of trade names should not be viewed as an expression of preference. Other brands having the same specifications are equally correct and may be substituted for those named.

This Practice is subject to revision at any time. For more information refer to PIP ADG001, *Specification for Developing Practices*.

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Table of Contents

1. Scope

This document provides guidance for the design and installation of cathodic protection systems to control and minimize external and internal corrosion of metallic pipelines buried or immersed in an electrolyte (e.g., an aqueous or soil environment). Appendix A contains well construction information. Appendix B contains typical installation details.

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.

2.1 Industry Codes and Standards

- Department of Transportation (DOT)
  - DOT 49 CFR Part 192
  - DOT 49 CFR Part 195
- Institute of Electrical and Electronics Engineers (IEEE)
  - IEEE 81 - *Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Grounding System*
- International Organization for Standardization (ISO)
  - ISO 15589-1 - *Petroleum and Natural Gas Industries – Cathodic Protection of Pipeline Transportation Systems – Part 1: On-land Pipeline*
- National Association of Corrosion Engineers (NACE)
  - NACE SP0169 - *Control of External Corrosion on Underground or Submerged Metallic Piping Systems*
  - NACE SP0286 - *Electrical Isolation of Cathodically Protected Pipelines*
- National Fire Protection Association (NFPA)
  - NFPA 70 - National Electric Code (NEC)

2.2 Other References

- A. W. Peabody - *Control of Pipeline Corrosion*

3. Definitions

anode: Electrode through which current flows into the electrochemical cell and through which negatively charged electrons flow to the external circuit. As such, the location at which oxidation or corrosion of the component occurs.