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RAIL TRANSPORTATION

RP 3000

Classifying and Loading of Crude Oil into Rail Tank Cars

Provides guidance on the material characterization, transport classification, and quantity measurement for overflow prevention of petroleum crude oil, for the loading of rail tank cars.

This document applies only to petroleum crude oil classified as Hazard Class 3—Flammable Liquid under the U.S. *Code of Federal Regulations (CFR)* at the time of publication.

RP 3000 identifies criteria for determining the frequency of sampling and testing of petroleum crude oil for transport classification. It discusses how to establish a sampling and testing program and provides an example of such a program.

This document provides guidance on Packing Group (PG) assignment, including the potential effect of heel, and mixing of crude oils of differing PGs. The document provides guidance on initial testing and an ongoing sampling and testing for assignment of PG.

RP 3000 provides guidance on determining the loading target quantity (LTQ) of crude oil transported by rail tank car. This includes crude oil temperature and density determination, identification of sampling points based on loading scenarios, and measurement equipment and processes.

Guidance on the documentation of measurement results and record retention is also provided. Pages: 46

1st Edition | September 2014 | Reaffirmed: December 2022

Product Number: A30001 | Price: \$155.00

PIPELINE PUBLIC EDUCATION AND AWARENESS

API Guidelines for Right-of-Way Activities Brochure

The liquid petroleum pipeline industry has developed these guidelines to improve understanding and increase awareness of the nature of underground pipelines that transport oil, petroleum products, natural gas liquids, and other hazardous liquids and how to conduct land development and use activity near pipeline rights of way.

The guidelines are intended for use by anyone who is involved in land development, agriculture and excavation/construction activities near a pipeline. The industry's goal is to protect public safety of the people who live and work along pipeline rights of way, protect the environment along rights of way, and maintain the integrity of the pipeline so that petroleum products can be delivered to customers safely and without interruption.

A pipeline right-of-way (ROW) is property in which a pipeline company and a landowner both have a legal interest. Each has a right to be there, although each has a different type of use for the land. Pipeline companies are granted permission from private landowners to transport petroleum products across their private lands. That permission is documented in a written agreement called an easement, and it is obtained through purchase, license, or by agreement with the landowner. In cases where the land is owned by the government—whether local, state or federal—similar arrangements for easements, licenses or occupancy agreements are obtained.

A pipeline requires regular observation, integrity assessment and maintenance to maintain the safety of its operations. Part of that task is to ensure that the pipeline ROW is kept clear of trees, structures and other encroachments that might interfere with the safe operation of the pipeline and the pipeline company's access to the line.

The pipeline industry hopes that these guidelines will help both pipeline operators and people working and living along pipeline rights of way to better understand their respective responsibilities for maintaining the safety of this vital, but invisible, transportation system.

1st Edition | August 2018 | Product Number: DOGP04

Price: \$14.00 (\$68.00 for set of five brochures)

PIPELINE OPERATIONS PUBLICATIONS

RP 80

Definition of Onshore Gas Gathering Lines (includes Addendum 1 dated January 2023)

Developed by an industry coalition that included representatives from over 20 petroleum industry associations, this recommended practice provides a functional description of onshore gas gathering pipelines for the sole purpose of providing users with a practical guide for determining the application of the definition of gas gathering in the federal Gas Pipeline Safety Standards, 49 *CFR* Part 192, and state programs implementing these standards. Pages: 47

2nd Edition | March 2020 | Product Number: G80002 | Price: \$134.00

RP 1102

Steel Pipelines Crossing Railroads and Highways (includes Errata 1 dated November 2008, Errata 2 dated May 2010, Errata 3 dated September 2012, Errata 4 dated February 2014, and Errata 5 dated March 2014)

Covers the design, installation, inspection, and testing required to ensure safe crossings of steel pipelines under railroads and highways. The provisions apply to the design and construction of welded steel pipelines under railroads and highways. The provisions of this practice are formulated to protect the facility crossed by the pipeline, as well as to provide adequate design for safe installation and operation.

The provisions herein should be applicable to the construction of pipelines crossing under railroads and highways and to the adjustment of existing pipelines crossed by railroad or highway construction. This practice should not be applied retroactively. Neither should it apply to pipelines under contract for construction on or prior to the effective date of this edition. Neither should it be applied to directionally drilled crossings or to pipelines installed in utility tunnels. Pages: 64

7th Edition | December 2007 | Reaffirmed: June 2024

Product Number: D11021 | Price: \$144.00

Std 1104

Welding of Pipelines and Related Facilities (includes Errata 1 dated September 2023)

Covers the gas and arc welding of butt, fillet, and socket welds in carbon and low-alloy steel piping used in the compression, pumping, and transmission of crude petroleum, petroleum products, fuel gases, carbon dioxide, and nitrogen, and, where applicable, covers welding on distribution systems. It applies to both new construction and in-service welding. The welding may be done by a shielded metal-arc welding, submerged arc welding, gas tungsten-arc welding, gas metal-arc welding, flux-cored arc welding, plasma arc welding, oxyacetylene welding, or flash butt welding process, or by a combination of these processes using a manual, semiautomatic, mechanized, or automatic welding technique or a combination of these techniques. The welds may be produced by position or roll welding or by a combination of position and roll welding. This standard also covers the procedures for radiographic, magnetic particle, liquid penetrant, and ultrasonic testing, as well as the acceptance standards to be applied to production welds tested to destruction or inspected by radiographic, magnetic particle, liquid penetrant, ultrasonic, and visual testing methods. Pages: 174

22nd Edition | July 2021 | Product Number: D110422 | Price: \$470.00

Transportation

To purchase individual API standards, visit apiwebstore.org

Std 1104 *■

Welding of Pipelines and Related Facilities—Chinese
(includes Errata 1 dated September 2023)

Chinese translation of Std 1104.

22nd Edition | July 2021 | Product Number: D110422C | Price: \$470.00

Std 1104 *

Welding of Pipelines and Related Facilities—Russian
(includes Errata 1 dated September 2023)

Russian translation of Std 1104.

22nd Edition | July 2021 | Product Number: D110422R | Price: \$470.00

RP 1109

Line Markers and Signage for Hazardous Liquid Pipelines and Facilities

Addresses the permanent marking of liquid petroleum pipeline transportation facilities. It covers the design, message, installation, placement, inspection, and maintenance of markers and signs on pipeline facilities located onshore and at inland waterway crossings. Markers and signs indicate the presence of a pipeline facility and warn of the potential hazards associated with its presence and operation. The markers and signs may contain information to be used by the public when reporting emergencies and seeking assistance in determining the precise location of a buried pipeline.

The provisions of this recommended practice cover the minimum marker and sign requirements for liquid petroleum pipeline facilities. Alternative markers, which are recommended for some locations under certain circumstances, are also discussed. The pipeline operator is responsible for determining the extent of pipeline marking. Consideration should be given to the consequences of pipeline failure or damage; hazardous characteristics of the commodity being transported; and the pipeline's proximity to industrial, commercial, residential, and environmentally sensitive areas. The pipeline marking programs are also integral parts of the pipeline operator's maintenance and emergency plans.

This recommended practice is not intended to be applied retroactively. Its recommendations are for new construction and for normal marker maintenance programs subsequent to the effective date of this edition. Pages: 24

5th Edition | October 2017 | Product Number: D11095 | Price: \$122.00

RP 1110

Pressure Testing of Steel Pipelines for the Transportation of Gas, Petroleum Gas, Hazardous Liquids, Highly Volatile Liquids, or Carbon Dioxide

Applies to all parts of a pipeline or pipeline facility including line pipe, pump station piping, terminal piping, compressor station piping, metering station piping, delivery station piping, regulator station piping, appurtenances connected to line pipe, appurtenances connected to facility piping, fabricated assemblies, valves, tees, elbows, reducers, flanges, and any other pipeline equipment or appurtenances. This RP does not apply to pumping units, compressor units, breakout tanks, pressure vessels, control piping, sample piping, instrument piping/tubing, or any component or piping system for which other codes specify pressure testing requirements (i.e. ASME *Boiler and Pressure Vessel Code*, piping systems covered by building codes). Pages: 37

7th Edition | December 2022

Product Number: D111007 | Price: \$118.00

RP 1111

Design, Construction, Operation, and Maintenance of Offshore Hydrocarbon Pipelines (Limit State Design)

Sets criteria for the design, construction, testing, operation, and maintenance of offshore steel pipelines used in the production, production support, or transportation of hydrocarbons from the outlet flange of a production facility. The criteria applies to transportation piping facilities located on production platforms after separation and treatment, including meter facilities, gas compression facilities, liquid pumps, and associated piping and appurtenances. This document may also be used for water injection pipelines offshore.

Limit state design has been incorporated into the document to provide a uniform factor of safety with respect to rupture or burst failure as the primary design condition independent of the pipe diameter, wall thickness, and grade. The criteria contained in this document are intended to permit the economical transportation of hydrocarbons while providing for the safety of life and property and the protection of the environment. The general adoption of these criteria should assure that offshore hydrocarbon pipelines possess the requisite structural integrity for their safe and efficient operation. Pages: 78

5th Edition | September 2015 | Reaffirmed: January 2021

Product Number: D11115 | Price: \$175.00

RP 1115

Design and Operation of Solution-Mined Salt Caverns Used for Liquid Hydrocarbon Storage

Provides guidance on the design and operation of solution-mined underground hydrocarbon liquid or liquefied petroleum gas storage facilities. It is intended for cavern engineers, supervisors, and all persons involved in liquid cavern operations. This recommended practice is based on the accumulated knowledge and experience of geologists, engineers, and other personnel in the petroleum industry. All aspects of solution-mined liquid hydrocarbon underground storage design and operation are covered, including site selection, cavern development, cavern hydraulics, brine facilities, wellhead and hanging strings, cavern testing, and cavern abandonment. A section on risk management is included. Pages: 112

2nd Edition | November 2018 | Product Number: D11152 | Price: \$195.00

RP 1117

Recommended Practice for Movement in In-Service Pipelines

(includes Errata 1 dated December 2008 and Errata 2 dated August 2009)

Covers the design, execution, inspection, and safety of a pipeline-lowering or other movement operation conducted while the pipeline is in service. (In this document, the terms lowering and movement can be used interchangeably.) This recommended practice presents general guidelines for conducting a pipeline-movement operation without taking the pipeline out of service. It also presents equations for estimating the induced stresses. To promote the safety of the movement operation, it describes stress limits and procedures. Additionally, it outlines recommendations to protect the pipeline against damage. The practicality and safety of trench types, support systems, and lowering or other methods are considered. Inspection procedures and limitations are presented. Pages: 46

3rd Edition | July 2008 | Reaffirmed: March 2024

Product Number: D11173 | Price: \$164.00

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RP 1130

Computational Pipeline Monitoring for Liquids

Focuses on the design, implementation, testing, and operation of CPM systems that use an algorithmic approach to detect hydraulic anomalies in liquid pipelines. These systems provide tools that assist controllers in detecting commodity releases that are within the sensitivity of an algorithm. CPM systems provide an alarm and display other related data to the controllers to aid in decision-making. The controllers would undertake an immediate investigation, confirm the reason for the alarm, and initiate an operational response to the hydraulic anomaly when the alarm represents an irregular operating condition, abnormal operating condition, or a commodity release. This RP is intended for controllers and operators, CPM system developers and engineers, and others interested in CPM system design, implementation, and operation. Pages: 44

2nd Edition | April 2022 | Product Number: D011302 | Price: \$140.00

RP 1133

Managing Hydrate Hazards for Pipelines Located Onshore or Within Coastal Areas

Sets out criteria for the design, construction, operation, maintenance, and abandonment of onshore pipelines that could affect high consequence floodplains and associated commercially navigable waterways. This document applies only to steel pipelines that transport gas, hazardous liquids, alcohols or carbon dioxide. The design, construction, inspection, and testing provisions of this document should not apply to pipelines that were designed or installed prior to the latest revision of this publication. The operation and maintenance provisions of this document should apply to existing facilities. The contents in this document should not be considered a fixed rule for application without regard to sound engineering judgment. Pages: 94

2nd Edition | December 2017 | Product Number: D11332 | Price: \$201.00

TR 1149

Pipeline Variable Uncertainties and Their Effects on Leak Detectability

Describes procedures for predicting uncertainties in the detection of leaks in pipelines using computational methods based upon physical hydraulic state measurements. This class of pipeline leak detection methods is commonly called Computational Pipeline Monitoring (CPM). Pages: 160

2nd Edition | September 2015 | Product Number: D11492 | Price: \$204.00

RP 1160

Managing System Integrity for Hazardous Liquid Pipelines

Outlines a process that an operator of a pipeline system can use to assess risks and make decisions about risks in order to reduce incidents and the adverse effects of errors and incidents.

An integrity management program provides a means to improve the safety of pipeline systems and to allocate operator resources effectively to: identify and analyze actual and potential precursor events that can result in incidents; examine the likelihood and potential severity of incidents; provide a comprehensive and integrated means for examining and comparing the spectrum of risks and risk reduction activities available; provide a structured, easily communicated means for selecting and implementing risk reduction activities; and establish and track system performance with the goal of improving that performance.

This recommended practice (RP) is specifically designed to provide the operator with a description of industry-proven practices in pipeline integrity management.

The RP is largely targeted to onshore pipelines along the right-of-way, but the process and approach can be applied to pipeline facilities, including pipeline stations, terminals, and delivery facilities associated with pipeline systems. Pages: 137

3rd Edition | February 2019 | Reaffirmed: March 2024

Product Number: D116003 | Price: \$259.00

RP 1161

Pipeline Operator Qualification (OQ)

Provides guidance for developing and maintaining an operator qualification (OQ) program. This document is comprised of the RP along with normative and non-mandatory, informative annexes. This RP is applicable for all pipelines, both onshore and offshore, subject to 49 CFR Part 192 and/or Part 195. References to 49 CFR Part 192 are applicable to gas-transmission-only tasks, and references to 49 CFR Part 195 are applicable to liquid-only tasks. Operators may choose to use all, part, or none of this document as applicable to their operations. Pages: 284

5th Edition | November 2021 | Product Number: D11615 | Price: \$247.00

RP 1162

Public Awareness Programs for Pipeline Operators (includes Errata 1 dated February 2023)

Addresses the development, implementation, evaluation, and documentation of pipeline public awareness programs associated with systems in the United States for distribution, regulated transmission, gathering pipelines, and underground storage that are required under federal or state pipeline safety regulations to have a public awareness program. It provides minimum requirements and offers guidance to operators to develop public awareness programs that take into account the similarities and differences in pipeline types, release characteristics, stakeholder audiences, operator activities, and other factors that can influence the program's development and implementation. This document provides operators with public awareness program elements and illustrates the process for establishing, implementing, measuring, and adjusting a program, in alignment with the Plan-Do-Check-Act (PDCA) process for managing programs. This recommended practice addresses certain operational changes requiring additional communication based on the introduction of new hazards. Pages: 108

3rd Edition | August 2022 | Product Number: D116203 | Price: \$165.00

Std 1163

In-Line Inspection Systems Qualification

Covers the qualification, selection, reporting, verification, validation, and use of in-line inspection (ILI) systems for onshore and offshore steel gas and hazardous liquid pipelines. This includes, but is not limited to, tethered, self-propelled, or free-flowing systems for detecting metal loss, cracks, mechanical damage, pipeline geometries, and pipeline location or mapping. The standard applies to both existing and developing technologies. This standard is an umbrella document that provides performance-based requirements for ILI systems, including procedures, personnel, equipment, and associated software. Pages: 113

3rd Edition | September 2021 | Product Number: D11632 | Price: \$163.00

Std 1164

Pipeline Control Systems Cybersecurity (includes Errata 1 dated August 2021)

Provides requirements and guidance for managing cyber risk associated with industrial automation and control (IAC) environments to achieve security, integrity, and resiliency objectives. This is accomplished through proper isolation of IAC environments from non-IAC environments to help IAC operational continuity. This standard is tailored for the oil and natural gas (ONG) pipeline industry, which includes, but is not limited to, natural gas and hazardous liquid transmission pipeline systems, natural gas distribution pipeline systems, liquefied natural gas (LNG) facilities, propane air facilities, and others involved in these industries. This standard was developed to provide an actionable approach to protect IAC essential functions by managing cybersecurity risk to IAC environments. IAC environments can include, but are not limited to, supervisory control and data acquisition (SCADA), local control, and industrial internet of things (IIoT) solutions. This standard should be used in the context of developing, implementing, maintaining, and improving an IAC cybersecurity program, which includes the policies, processes, and procedural and technical controls for IAC cyber environments. Pages: 142

3rd Edition | August 2021 | Product Number: D11043 | Price: \$227.00

Transportation

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RP 1165

Pipeline SCADA Displays

Focuses on the design and implementation of displays used for the display, monitoring, and control of information on pipeline supervisory control and data acquisition (SCADA) systems. The primary purpose is to promote the success of the controller to safely operate pipeline systems and to document industry practices that provide guidance to a pipeline company or operator who wants to select a new SCADA system, or update or expand an existing SCADA system, and for guidance throughout the SCADA system display lifecycle. The pipeline industry and stakeholders have determined that well-designed displays can contribute to safe operations and prevent or mitigate pipeline incidents. Using established human factors considerations in display design can promote the safety performance of a pipeline operator. Pages: 148

2nd Edition | December 2022

Product Number: D116502 | Price: \$158.00

TR 1166

Excavation Monitoring and Observation for Damage Prevention

Provides a consistently applied decision making process for monitoring and observing of excavation and other activities on or near pipeline Rights-of-Way for "hazardous liquid" and "natural and other gas" transmission pipelines. (NOTE: One call provisions and laws vary by state, and it is the operator's responsibility to be familiar with and comply with all applicable one-call laws.) This document's purpose is to protect the public, excavation employees, and the environment by preventing damage to pipeline assets from excavation activities. Pages: 16

2nd Edition | October 2015 | Product Number: D11662 | Price: \$131.00

RP 1167

Pipeline SCADA Alarm Management

Provides pipeline operators with recommended industry practices in the development, implementation, and maintenance of a SCADA alarm management program. It provides guidance on elements that include, but are not limited to, alarm definition, philosophy, documentation, management of change, and auditing. This document is not intended to be a step-by-step set of instructions on how to build an alarm management system. Each pipeline operator has a unique operating philosophy and will therefore have a unique alarm philosophy. This document is intended to outline key elements for review when building an alarm management system. SCADA systems used within the pipeline industry vary in their alarm-related capabilities, and there are many different software systems available to aid in alarm management. It is the responsibility of the pipeline operator to determine the best method to achieve their alarm management goals.

This document uses industry best practices to help to illustrate aspects of alarm management. The scope is intended to be broad. Pages: 48

2nd Edition | June 2016 | Reaffirmed: October 2021

Product Number: D116702 | Price: \$155.00

RP 1168

Pipeline Control Room Management

Provides pipeline operators and controllers with guidance on control room management best practices to consider when developing or enhancing practices and procedures. This document was written for operators with continuous and non-continuous operations, as applicable. This document addresses four pipeline safety elements for hazardous liquid and natural gas pipelines in both the transportation and distribution sectors: pipeline control room personnel roles, authorities, and responsibilities; guidelines for shift turnover; pipeline control room fatigue management; and pipeline control room management of change. Pages: 28

2nd Edition | February 2015 | Reaffirmed: October 2021

Product Number: D11682 | Price: \$113.00

RP 1168 *

Pipeline Control Room Management—Portuguese

Portuguese translation of RP 1168.

2nd Edition | February 2015 | Reaffirmed: October 2021

Product Number: D11682P | Price: \$113.00

RP 1169

Pipeline Construction Inspection

Covers the basic requirements and their associated references needed to effectively and safely perform inspection activities during construction of new onshore pipelines. Use of this document will provide the basis for what construction inspectors need to know and where to find detailed information related to each facet of new pipeline construction inspection activities.

The requirements are organized into the following major sections:

- inspector responsibilities,
- personnel and general pipeline safety,
- environmental and pollution control,
- general pipeline construction inspection.

Users of this document include those individuals either engaged in pipeline construction inspection or seeking to become certified inspectors. Pipeline owner/operators and pipeline inspection service companies may also use this document to aid and enhance their inspector training programs. Pages: 149

2nd Edition | March 2020 | Product Number: D11692 | Price: \$225.00

RP 1169 *

Pipeline Construction Inspection—Chinese

Chinese translation of RP 1169.

2nd Edition | March 2020 | Product Number: D11692 | Price: \$225.00

RP 1170

Design and Operation of Solution-Mined Salt Caverns Used for Natural Gas Storage

Provides the functional recommendations for salt cavern facilities used for natural gas storage service and covers facility geomechanical assessments, cavern well design and drilling, risk management, solution mining techniques and operations, including monitoring and maintenance practices, site security and safety, procedures, training, and abandonment. It provides a comprehensive set of design guidelines, recognizing the nature of subsurface geological diversity, and stresses the need for in-depth, site specific geomechanical assessments with a goal of long-term facility integrity and safety. This RP includes the cavern well system (wellhead, wellbore, and cavern) from the emergency shutdown (ESD) valve down to the cavern and facilities having significant impact to safety and integrity of the cavern system. Pages: 118

2nd Edition | November 2022

Product Number: D117002 | Price: \$225.00

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RP 1171

Functional Integrity of Natural Gas Storage in Depleted Hydrocarbon Reservoirs and Aquifer Reservoirs

(includes Errata 1 dated September 2023)

Applies to natural gas storage in depleted oil and gas reservoirs and aquifer reservoirs, and focuses on storage well, reservoir, and fluid management for functional integrity in design, construction, operation, monitoring, maintenance, and documentation practices. Storage design, construction, operation, and maintenance include activities in risk management, site security, safety, emergency preparedness, and procedural documentation and training to embed human and organizational competence in the management of storage facilities. This RP embodies historical knowledge and experience and emphasizes the need for case-by-case and site-specific conditional assessments. This RP applies to both existing and newly constructed facilities. Applicable distinctions for aquifer facilities are identified, as necessary. "Replacement," as used in this document, refers to the complete replacement of a facility unit, as, for example, when an existing well is abandoned and replaced with a new well. Pages: 72

2nd Edition | November 2022

Product Number: D117102 | Price: \$225.00

RP 1172

Recommended Practice for Construction Parallel to Existing Underground Transmission Pipelines

Emphasis of these guidelines is on the interaction between existing transmission pipeline operators and those planning to construct in a parallel fashion. These activities may involve many different parties. Contractors working on behalf of the constructing party, including environmental and survey professionals, design engineers, construction contractors, and operators of excavation and earth moving equipment, should engage in work practices that are in conformance with these guidelines and apply vigilance in identifying unanticipated circumstances that may indicate a problem. This RP refers to all of these entities as the "constructing party." These guidelines have been developed such that they can be incorporated into contract documents executed with contractors and subcontractors by whichever party is involved in or responsible for construction activities. Pages: 30

1st Edition | April 2014 | Reaffirmed: April 2000

Product Number: D11721 | Price: \$107.00

RP 1173

Pipeline Safety Management Systems (ANSI/API RP 1173)

Establishes a pipeline safety management systems (PSMS) framework for organizations that operate hazardous liquids and gas pipelines jurisdictional to the U.S. Department of Transportation. Operators of other pipelines may find this document applicable useful in operating to their systems.

This recommended practice (RP) provides pipeline operators with safety management system requirements that when applied provide a framework to reveal and manage risk, promote a learning environment, and continuously improve pipeline safety and integrity. At the foundation of a PSMS is the operator's existing pipeline safety system, including the operator's pipeline safety processes and procedures. This RP provides a comprehensive framework and defines the elements needed to identify and address safety for a pipeline's life cycle. These safety management system requirements identify what is to be done, and leaves the details associated with implementation and maintenance of the requirements to the individual pipeline operators. The document does not explicitly address personnel safety, environmental protection, and security, but the elements herein can be applied to those aspects of an operation. Pages: 42

1st Edition | July 2015 | Reaffirmed: April 2023

Product Number: D117301 | Price: \$107.00

RP 1174

Recommended Practice for Onshore Hazardous Liquid Pipeline Emergency Preparedness and Response

Provides operators of onshore hazardous liquid pipelines a framework that promotes the continual improvement of emergency planning and response processes, including identification and mitigation of associated risks and implementation of changes from lessons learned. This recommended practice (RP) assists the operator in preparing for a safe, timely, and effective response to a pipeline emergency.

This RP applies to assets under the jurisdiction of the U.S. Department of Transportation (DOT), specifically U.S. Title 49 *Code of Federal Regulations (CFR)* Parts 194 and 195. Operators of non-DOT jurisdictional pipelines or tank assets may also make voluntary use of this document. Pages: 48

1st Edition | December 2015 | Product Number: D11741 | Price: \$116.00

RP 1175

Pipeline Leak Detection—Program Management

Establishes a framework for Leak Detection Program (LDP) management for hazardous liquid pipelines that are jurisdictional to the U.S. Department of Transportation. This RP is an industry consensus document revised by hazardous liquid pipeline operators, leak detection manufacturers, consultants, and others. RP 1175 focuses on using a risk-based approach to each operator's LDP. Reviewing the main body of this document and following the guidance set forth assists in creating an inherently risk mitigating LDP management system. RP 1175 represents industry best practices in managing an LDP. All leak detection systems (LDSs) used by a pipeline operator should be managed in a coordinated manner. The goal of the LDP is to detect leaks quickly and with certainty, thus facilitating quicker shutdown and therefore minimizing negative consequences. This RP focuses on management of LDPs, not the design of LDSs, and therefore contains relatively little technical detail. As with RP 1130, RP 1175 is intended for single-phase pipelines only; however, the approach may be applicable to pipelines that are not single phase. Pages: 86

2nd Edition | April 2022 | Product Number: D11752 | Price: \$199.00

RP 1176

Recommended Practice for Assessment and Management of Cracking in Pipelines

(includes Errata 1 dated February 2021)

Applies to any pipeline system used to transport hazardous liquid or natural gas, including those defined in U.S. Title 49 *Code of Federal Regulations (CFR)* Parts 192 and 195. This RP is designed to provide the operator with a description of industry-proven practices in the integrity management of cracks and threats that give rise to cracking mechanisms. The guidance is largely targeted to the line pipe along the right-of-way (ROW), but some of the processes and approaches can be applied to pipeline facilities, including pipeline stations, terminals, and delivery facilities associated with pipeline systems. Defects associated with lap-welded (LW) pipe and selective seam weld corrosion (SSWC) are not covered within this RP.

This RP presents the pipeline industry's understanding of pipeline cracking. Mechanisms that cause cracking are discussed, methods to estimate the failure pressure of cracks are reviewed, and methods to estimate crack growth are presented. Selection of the appropriate integrity assessment method for various types of cracking, operating conditions, and pipeline characteristics is discussed. This RP also reviews current knowledge about in-line inspection (ILI) technology and in-the-ditch (ITD) nondestructive evaluation technology. A methodology for responding to ILI indications and specific criteria for when to respond to certain results is presented. Applicable repair techniques are reviewed. Sections are included for the discussion of reassessment interval determination and the consideration of appropriate preventive and mitigative measures. Some performance metrics for measuring the effectiveness of a crack management program are discussed. The technical discussion about crack formation, growth, and failure is to provide the knowledge needed by operators to effectively make integrity decisions about managing cracking on their pipeline systems. Pages: 144

1st Edition | July 2016 | Reaffirmed: March 2024

Product Number: D117601 | Price: \$208.00

Transportation

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RP 1177

Recommended Practice for Steel Pipeline Construction Quality Management Systems

Establishes minimum Quality Management System (QMS) processes for organizations that own, operate, construct, or provide construction-related services for onshore carbon and low-alloy steel pipelines used in the transportation of hazardous liquids, carbon dioxide, and gas.

This recommended practice specifies the elements of a QMS to manage the construction process systematically from design verification, materials manufacturing, procurement, construction, inspection, and testing to initiation of operations. Pages: 68

1st Edition | November 2017 | Product Number: D110701 | Price: \$147.00

Bull 1178 ■

Integrity Data Management and Integration

Provides a compendium of methodologies and considerations for integrating the underlying data used to support integrity management. Any one approach, let alone the entirety of the document, may not be appropriate or applicable in all circumstances. The document reviews possible approaches for consideration by operators in the context of their specific circumstances. The primary focus of this bulletin is the methodologies and processes used to spatially integrate and normalize the data to support the application of comparative techniques used in interpreting integrity data, with particular emphasis on in-line inspection (ILI) data. Pages: 71

2nd Edition | November 2024 | Product Number: D11782 | Price: \$129.00

TR 1179

Hydrostatic Testing as an Integrity Management Tool

Provides guidelines related to hydrostatic testing as a tool for integrity management in gas and liquids pipelines. It specifically focuses on program design and key parameters for consideration in hydrostatic test programs, as well as potential detrimental effects of hydrostatic testing. Several case studies supplement the guidelines provided. Pages: 64

1st Edition | May 2019 | Product Number: D11791 | Price: \$142.00

RP 1181

Pipeline Operational Status Determination

Provides guidance for operations, inspection, and maintenance activities based on the operational status of a pipeline. This establishes:

- four statuses: precommissioned, active/in-service, idled, and abandoned;
- operations, inspections, and maintenance recommendations for various pipeline operational statuses;
- pipeline status documentation requirements;
- recommendations regarding safe transition between pipeline statuses.

For the purposes of this document, the word "pipeline" refers to transmission and regulated gathering pipelines and pipeline systems, although the principles may be applied to nonregulated gathering and flow lines. Pages: 17

1st Edition | October 2019 | Product Number: D11811 | Price: \$79.00

RP 1182

Construction, Operation, and Maintenance of Large Diameter Rural Gas Gathering Lines

Contains provisions relating to the design, construction, testing, corrosion control, operation, and maintenance of onshore gas gathering lines as defined in API 80. The requirements in the RP are applicable to pipeline > 12.75 in. outside diameter in Class 1 locations (3.1.4) or Class 2 locations (3.1.5) that are not regulated onshore gas gathering lines as defined in 49 CFR 192.8. Pages: 30

1st Edition | March 2020 | Product Number: D11821 | Price: \$79.00

RP 1183

Assessment and Management of Pipeline Dents (includes Errata 1 dated January 2021 and Addendum 1 dated May 2024)

Applicable to any pipeline system used to transport hazardous liquid or natural gas. This RP includes detailed technical discussion on dent formation, strain and fatigue, and failure modes and mechanisms. These details are provided to give pipeline operators the information and knowledge necessary to make informed integrity management decisions regarding the management of dents on their systems. This RP describes preventive and mitigative measures that pipeline operators can apply to manage dents after detection. The in-service response of dents to a range of loading conditions is discussed in detail. Pages: 138

1st Edition | November 2020 | Product Number: D11831 | Price: \$214.00

RP 1184

Pipeline Facilities Construction Inspection

Covers the basic requirements needed to perform inspection activities safely and effectively during onshore transmission pipeline facility construction. Areas of specialty inspection are noted and are beyond the scope of this document. This content can be applied to construction associated with existing facilities. This recommended practice is not intended to be fully comprehensive of all systems that may be located within a pipeline transportation facility. Users of this recommended practice include operators and those individuals either engaged in facility construction inspection or seeking to become certified inspectors. Operators and facility pipeline inspection service companies may also use this document to develop their inspection processes and responsibilities for inspectors, and to develop and enhance their inspector training programs. This recommended practice was based on *The Practical Guide for Facilities Construction Inspectors*, developed in partnership by the INGAA Foundation and the CEPA Foundation, and supports United Nations Sustainable Development Goal 9 for resilient infrastructure. Pages: 183

1st Edition | October 2021 | Product Number: D11841 | Price: \$165.00

RP 1185 ■

Pipeline Public Engagement

Provides guidance to hazardous liquids and gas transmission and gathering pipeline operators, the general public, stakeholders, governments, and rights holders for effective stakeholder engagement. The goal of this document is to provide pipeline operators with a scalable and flexible framework to review an existing engagement program or develop and implement a new one. Developing or improving a program can enhance the effectiveness of engagement. The RP also provides guidance on operationalizing environmental justice in pipeline public engagement practices. Pages: 65

1st Edition | March 2024 | Product Number: D118501 | Price: \$144.00

RP 1187 ■

Pipeline Integrity Management of Landslide Hazards

Provides recommendations for the management of landslide hazards for operating onshore welded steel pipelines. Landslide hazard management may include both consideration of active features and anticipating or avoiding features such as in design processes, route selection, and/or planning of mitigative measures. Pages: 127

1st Edition | August 2024 | Product Number: G118701 | Price: \$160.00

Transportation

To purchase individual API standards, visit apiwebstore.org

RP 1188

Hazardous Liquid Pipeline Facilities Integrity Management
(includes Addendum 1 dated December 2023)

Covers the integrity management of hazardous liquid pipeline facilities. This RP provides guidance on high-consequence area impact determinations; data integration; threat identification; risk assessment; inspection and reinspection; preventive and mitigative measures (P&MM); and performance measures. Facilities include terminal and pipeline station piping systems within terminal and pipeline facility boundaries and includes off-plot piping. Off-plot piping includes, but is not limited to, piping between facilities, piping that comes from or goes to a refinery or other type facility, or piping that may cross a road, ditch, or other property outside the confines of a terminal facility. This RP covers the integrity management of all pressure-containing components directly used in the transport or storage of hazardous liquids within a liquids pipeline facility. Piping for transportation of hazardous liquids, such as but not limited to crude oil, highly volatile liquids (HVLs), gasoline, diesel, biofuels, lubricating oils, jet fuel, and aviation fuel are covered by the scope of this document. Pages: 51

1st Edition | January 2022 | Product Number: D11881 | Price: \$119.00

TR 1190 ■

Crack ILI Response: Maximum Depth and Failure Pressure Ratio

Justifies the failure pressure ratio (FPR) and depth elements of reasonable and prudent crack ILI response criteria, to be applied in combination with other best practices of API 1176 and consideration of advancements in ultrasonic crack ILI technologies and performance. Pages: 19

1st Edition | February 2024 | Product Number: D11901 | Price: \$69.00

PIPELINE MAINTENANCE WELDING

Investigation and Prediction of Cooling Rates During Pipeline Maintenance Welding, and User's Manual for Battelle's Hot-Tap Thermal-Analysis Models

Investigated and improved the methods of predicting cooling rates during pipeline maintenance welding. The scope of this study included

- a review of three previous research efforts to develop satisfactory methods for welding appurtenances to in-service pipelines;
- a survey of pipeline leak and rupture incidents associated with appurtenances;
- the enhancement of existing analytical models for predicting cooling rates and temperatures during welding on an in-service pipeline; and
- a validation of the thermal-analysis models that was achieved by performing welds on pipeline carrying three different liquid-petroleum products.

May 2002 | Product Number: | Version 4.2 | May 2002

Please order this document from PRCI: <https://www.prci.org>

Std 1104

Welding of Pipelines and Related Facilities
(includes Errata 1 dated September 2023)

Covers the gas and arc welding of butt, fillet, and socket welds in carbon and low-alloy steel piping used in the compression, pumping, and transmission of crude petroleum, petroleum products, fuel gases, carbon dioxide, and nitrogen, and, where applicable, covers welding on distribution systems. It applies to both new construction and in-service welding. The welding may be done by a shielded metal-arc welding, submerged arc welding, gas tungsten-arc welding, gas metal-arc welding, flux-cored arc welding, plasma arc welding, oxyacetylene welding, or flash butt welding process, or by a combination of these processes using a manual, semiautomatic, mechanized, or automatic welding technique or a combination of these techniques. The welds may be produced by position or roll welding or by a combination of position and roll welding. This standard also covers the procedures for radiographic, magnetic particle, liquid penetrant, and ultrasonic testing, as well as the acceptance standards to be applied to production welds tested to destruction or inspected by radiographic, magnetic particle, liquid penetrant, ultrasonic, and visual testing methods. Pages: 174

2nd Edition | July 2021 | Product Number: D110422 | Price: \$470.00

Std 1104 *■

Welding of Pipelines and Related Facilities—Chinese
(includes Errata 1 dated September 2023)

Chinese translation of Std 1104.

2nd Edition | July 2021 | Product Number: D110422C | Price: \$470.00

Std 1104 *

Welding of Pipelines and Related Facilities—Russian
(includes Errata 1 dated September 2023)

Russian translation of Std 1104.

2nd Edition | July 2021 | Product Number: D110422R | Price: \$470.00

TANK TRUCK OPERATIONS

RP 1004

Bottom Loading and Vapor Recovery for MC-306 & DOT-406 Tank Motor Vehicles

Provides an industry standard for bottom loading and vapor recovery of proprietary and hired carrier DOT MC-306 tank vehicles at terminals operated by more than one supplier. Guides the manufacturer and operator of a tank vehicle as to the uniform features that should be provided to permit loading of a tank vehicle with a standard 4-in. adapter. This edition of RP 1004 requires an independent secondary control system and maximum requirements for outage in the tank to allow the secondary control system to function. Pages: 21

8th Edition | January 2003 | Reaffirmed: February 2011

2-Year Extension: January 2018

Product Number: A10048 | Price: \$138.00

* These translated versions are provided for the convenience of our customers and are not officially endorsed by API. The translated versions shall neither replace nor supersede the English-language versions, which remain the official standards. API shall not be responsible for any discrepancies or interpretations of these translations. Translations may not include any addenda or errata to the document. Please check the English-language versions for any updates to the documents.

Transportation

To purchase individual API standards, visit apiwebstore.org

RP 1007

Loading and Unloading of MC 306/DOT 406 Cargo Tank Motor Vehicles

Ensuring the safe and efficient loading and delivery of petroleum products to retail service stations and bulk facilities is the primary goal for all companies that transport product. This document is a guideline for use by the truck driver and persons responsible for loading and unloading of MC306/DOT406 cargo tanks. It identifies specific steps to ensure that product can be loaded into tank trucks and unloaded into both underground and aboveground storage tanks in a safe and efficient manner that protects the environment. It is intended to be used in conjunction with existing driver training programs and procedures. Pages: 24

1st Edition | March 2001 | Reaffirmed: February 2011

2-Year Extension: January 2018

Product Number: A10071 | Price: \$42.00

RP 1112

Developing a Highway Emergency Response Plan for Incidents Involving Hazardous Materials

Provides minimum guidelines for developing an emergency response plan for incidents involving hazardous liquid hydrocarbons, such as gasoline and crude oil, transported in MC 306/DOT 406 and MC 307/DOT 407 aluminum cargo tanks, and for coordinating and cooperating with local, state, and federal officials. Covers response plan priorities, personnel training, special equipment, media relations, environmental relations, and post-response activities. The appendixes outline a highway emergency response plan and suggest a procedure for removing liquid hydrocarbons from overturned cargo tanks and righting the tank vehicles. Pages: 21

3rd Edition | November 1997 | Reaffirmed: February 2011

2-Year Extension: January 2018

Product Number: A11123 | Price: \$82.00

SECURITY

Std 780

Security Risk Assessment Methodology for the Petroleum and Petrochemical Industries

Prepared by a Security Risk Assessment (SRA) Committee of the American Petroleum Institute (API) to assist the petroleum and petrochemical industries in understanding security risk assessment and in conducting SRAs. The standard describes the recommended approach for assessing security risk widely applicable to the types of facilities operated by the industry and the security issues the industry faces. The standard is intended for those responsible for conducting security risk assessments and managing security at these facilities. The method described in this standard is widely applicable to a full spectrum of security issues from theft to insider sabotage to terrorism. The API SRA Methodology was developed for the petroleum and petrochemical industry, for a broad variety of both fixed and mobile applications. This recommended practice describes a single methodology, rather than a general framework for SRAs, but the methodology is flexible and adaptable to the needs of the user. This methodology constitutes one approach for assessing security vulnerabilities at petroleum and petrochemical industry facilities. However, there are other risk assessment techniques and methods available to industry, all of which share common risk assessment elements. Pages: 113

1st Edition | May 2013 | Reaffirmed: February 2022

Product Number: K78001 | Price: \$236.00

RP 781

Facility Security Plan Methodology for the Oil and Natural Gas Industries

Provides the framework to establish a secure workplace. The plan provides an overview of the threats facing the facility and describes the security measures and procedures designed to mitigate risk and protect people, assets, operations, and company reputation. This API standard was prepared with guidance and direction from the API Security Committee, to assist the petroleum and petrochemical industries in the preparation of a Facility Security Plan (FSP). This standard specifies the requirements for preparing an FSP as well as a discussion of the typical elements included in an FSP.

This standard is intended to be flexible and adaptable to the needs of the user. It is noted that the content of an FSP can vary depending on circumstances such as facility size, location, and operations. This methodology is one approach for preparing an FSP at petroleum and petrochemical facilities. There are other security plan formats available for the industry. It is the responsibility of the user to choose the format and content of the FSP that best meets the needs of a specific facility. The format and content of some FSPs should be dictated by government regulations for covered facilities. This standard is not intended to supersede the requirements of any regulated facility but may be used as a reference document. Pages: 82

1st Edition | September 2016 | Product Number: K78101 | Price: \$180.00