Design, Construction, Operation, Maintenance, and Inspection of Terminal and Tank Facilities

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Suggested revisions are invited and should be submitted to the Standards Department, API, 1220 L Street, NW, Washington, DC 20005, standards@api.org.

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Introduction

This standard was developed to guide the management of terminals and tanks in a manner that protects the environment and the safety of workers and the public. This standard is intended for petroleum terminal and tank facilities associated with marketing, refining, pipeline, and other similar facilities. This standard may be used as a resource and management guide by those responsible for such facilities and by those working on their behalf. This standard is a compilation of industry knowledge, information, and management practices for all relevant aspects of terminal and tank operations aggregated into an overview document comprising best practices. In instances where greater detail or additional information may be helpful or needed, this standard references other API publications or similar industry guides and standards. It is intended to be consistent with, but is not a substitute for, any applicable federal, state, and local regulations.

The requirements of this standard represent minimum requirements applicable to all facilities within the scope of this document. Some provisions in this standard, as indicated by the use of the word shall, are mandatory and have to be followed to meet the intent of this standard. Some provisions are recommended, as denoted by the word should, but are not mandatory. These provisions will need to be considered based on site-specific factors. Still other provisions are optional, as denoted by the word may. Typically, these will be given where a range of good options exists.

To foster greater awareness and assist the industry in addressing environmental, health, and safety concerns, API has undertaken the development of this single document aggregating the various standards, specifications, and recommended practices on the design, construction, operation, inspection, and maintenance of petroleum terminals and tanks. API also has significant research underway to assist members in addressing issues of groundwater protection and remediation of soil contamination. This research includes the evaluation of improved leak detection technology and the evaluation of better methods to detect and remediate groundwater and soil contamination.

Design, Construction, Operation, Maintenance, and Inspection of Terminal and Tank Facilities

1 Scope and Purpose

1.1 Overview

This standard covers the design, construction, operation, inspection, and maintenance of petroleum terminal and tank facilities associated with marketing, refining, pipeline, and other similar activities as stipulated in 1.2 through 1.8. This standard covers site selection and spacing, pollution prevention and waste management, safe operation, fire prevention and protection, tanks, dikes and berms, mechanical systems, product transfer, corrosion protection, structures, utilities and yard, and removals and decommissioning.

The purpose of this standard is to consolidate a wide base of current industry experience, knowledge, information, and management practices into a cohesive standard comprising a range of best practices.

The values stated for this standard are in U.S. Customary units with the International System of Units (SI) provided in parentheses.

The petroleum industry is engaged in the manufacture, storage, transportation, blending, and distribution of crude oil and refined products. Individual terminal facilities and plants may perform one or more of these functions. These facilities represent diverse operations ranging from small distribution facilities (e.g. bulk plants and warehouses), to large storage and distribution facilities (e.g. pipeline and marine terminals and wholesale plants), to large integrated facilities (e.g. petroleum refineries and grease production, oil blending, and packaging plants). The specific application of this standard within those various types of operations is itemized in 1.2 through 1.8.

1.2 Petroleum Terminals

Petroleum terminals may include tank farms, loading and unloading areas, pipeline manifolds, storage areas, warehouses, docks, garages, product quality test rooms, and office buildings. Products may be received and distributed by pipeline, marine transport, rail, or truck. Bulk quantities of refined products are stored in aboveground tanks for distribution in smaller quantities to industrial customers, to commercial consumers, and to retail and wholesale marketing facilities. Petroleum terminals may also store petroleum products in consumer packaging, bulk containers, totes, and drums. See USCG 33 *CFR* Parts 154 and 156.

1.3 Pipeline Tankage Facilities

Pipeline tankage facilities consist of breakout tanks and tank farms used to receive and transport petroleum (crude oil and refined products) from pipelines and to provide surge relief from pipeline operations (see Office of Pipeline Safety regulation PHMSA 49 *CFR* Part 195).

1.4 Refinery Facilities

Provisions for loading and unloading areas, docks, blending and packaging facilities, warehouses, and some refinery tankage facilities are included in this standard. Refinery tankage covered by this standard does not include those aboveground tanks or groups of tanks as defined in 1.2 c) (e.g. process tanks).

Examples of covered refinery tankage include tanks that are used to accomplish the following.

a) Receive incoming crude oil.

b) Store intermediate products or components outside of the refinery process units.