Classification of Locations for Electrical Installations at Petroleum Facilities Classified as Class I, Division 1, and Division 2

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Introduction

This recommended practice (RP) is under the jurisdiction of the Committee on Refinery Equipment (CRE). It is based upon a level of knowledge gained through experience and through the successful application of this practice in the refining, drilling and producing, and pipeline segments of the petroleum industry. The first edition of this recommended practice was issued June 1, 1991, under the joint jurisdiction of the API Production, Refining, and Transportation departments. The second edition was issued in November 1997 and reaffirmed in November 2002. The third edition was issued in December 2012.

The first edition of Recommended Practice 500A was published in February 1955 as API 500, *Recommended Practice for Classification of Areas for Electrical Installations in Petroleum Refineries*. The second edition was published in January 1957. The third edition was published as API 500A in April 1966. The third edition was reaffirmed in 1973. The fourth edition was published in January 1982 as API 500A, with a new title, *Classification of Locations for Electrical Installations in Petroleum Refineries*. The fourth edition was reaffirmed in December 1987.

API 500B was originally issued in January 1961 as API 11J, *Recommended Practice for Placement of Electrical Equipment on Production Leases*. The first edition of API 500B was issued in January 1966 with the title *Recommended Practice for Classification in Areas for Electrical Installations at Production Facilities*. The title was changed in the second edition, July 1973, to *Recommended Practice for Classification of Areas for Electrical Installations at Drilling Rigs and Production Facilities on Land and on Marine Fixed and Mobile Platforms*. The third edition of API 500B, *Recommended Practice for Classification of Locations for Electrical Installations at Drilling Rigs and Production Facilities on Land and on Marine Fixed and Mobile Platforms,* was issued October 1, 1987.

The first edition of API 500C was published in September 1966, under the title *Recommended Practice for Classification of Areas for Electrical Installations at Petroleum and Gas Pipeline Transportation Facilities*. The first edition was reaffirmed in 1974. The title was changed in the second edition (July 1984) to *Classification of Locations for Electrical Installations at Pipeline Transportation Facilities*. The second edition was reaffirmed in March 1990.

Classification of Locations for Electrical Installations at Petroleum Facilities Classified as Class I, Division 1 and Division 2

1 Scope

1.1 Purpose

1.1.1 The purpose of this recommended practice is to provide guidelines for classifying locations Class I, Division 1 and Class I, Division 2 at petroleum facilities for the selection and installation of electrical equipment. Basic definitions given in the 2023 edition of NFPA 70, *National Electrical Code* (*NEC*), have been followed in developing this recommended practice. This publication is only a guide and requires the application of sound engineering judgment.

NOTE Recommendations for determining the degree and extent of locations classified Class I, Zone 0, Zone 1, and Zone 2 are addressed in API 505, *Recommended Practice for Classification of Locations for Electrical Installations at Petroleum Facilities Classified as Class I, Zone 0, Zone 1, and Zone 2*.

1.1.2 Electrical installations in areas where flammable liquids, flammable gases or vapors, or combustible liquids are produced, processed, stored, or otherwise handled can be suitably designed if the locations of potential sources of release and accumulation are clearly defined. Once a location has been classified, requirements for electrical equipment and associated wiring should be determined from applicable publications. Applicable publications may include NFPA 70 (NEC), CSA C22.1 (Canadian Electrical Code), or API 14F.

NOTE Recommendations for electrical installations for locations classified Class I, Zone 0, Zone 1, and Zone 2 are addressed in API 14FZ, *Recommended Practice for Design, Installation, and Maintenance of Electrical Systems for Fixed and Floating Offshore Petroleum Facilities for Unclassified and Class I, Zone 0, Zone 1, and Zone 2 Locations*.

1.2 Application

1.2.1 This RP applies to the classification of locations for both temporarily and permanently installed electrical equipment. It is intended to be applied where there may be a risk of ignition due to the presence of flammable gases, flammable liquid-produced vapors, or combustible liquid-produced vapors, mixed with air, under normal atmospheric conditions. Normal atmospheric conditions are defined as conditions that vary above and below reference levels of 101.3 kPa (14.7 psia) and 20 °C (68 °F), provided that the variations have a negligible effect on the explosion properties of the flammable materials.

The following items are beyond the scope of this RP:

a) piping systems used for odorized natural gas used as fuel for cooking, heating, air conditioning, laundry, and similar appliances;

b) catastrophes such as well blowouts or process vessel ruptures (such extreme events are not predictable and require emergency measures at the time of occurrence);

c) suitability of locations for the placement of non-electrical incendiary equipment;

d) classification of locations containing combustible dust, ignitable fibers, or flyings;

e) installations underground in mines;