Blowout Prevention Equipment Systems for Drilling Wells

API STANDARD 53
FOURTH EDITION, NOVEMBER 2012

AMERICAN PETROLEUM INSTITUTE

Blowout Prevention Equipment Systems for Drilling Wells

Upstream Segment

API STANDARD 53
FOURTH EDITION, NOVEMBER 2012

AMERICAN PETROLEUM INSTITUTE

Special Notes

API publications necessarily address problems of a general nature. With respect to particular circumstances, local, state, and federal laws and regulations should be reviewed.

Neither API nor any of API's employees, subcontractors, consultants, committees, or other assignees make any warranty or representation, either express or implied, with respect to the accuracy, completeness, or usefulness of the information contained herein, or assume any liability or responsibility for any use, or the results of such use, of any information or process disclosed in this publication. Neither API nor any of API's employees, subcontractors, consultants, or other assignees represent that use of this publication would not infringe upon privately owned rights.

API publications may be used by anyone desiring to do so. Every effort has been made by the Institute to assure the accuracy and reliability of the data contained in them; however, the Institute makes no representation, warranty, or guarantee in connection with this publication and hereby expressly disclaims any liability or responsibility for loss or damage resulting from its use or for the violation of any authorities having jurisdiction with which this publication may conflict.

API publications are published to facilitate the broad availability of proven, sound engineering and operating practices. These publications are not intended to obviate the need for applying sound engineering judgment regarding when and where these publications should be utilized. The formulation and publication of API publications is not intended in any way to inhibit anyone from using any other practices.

Any manufacturer marking equipment or materials in conformance with the marking requirements of an API standard is solely responsible for complying with all the applicable requirements of that standard. API does not represent, warrant, or guarantee that such products do in fact conform to the applicable API standard.

Users of this standard should not rely exclusively on the information contained in this document. Sound business, scientific, engineering, and safety judgment should be used in employing the information contained herein.

Foreword

Nothing contained in any API publication is to be construed as granting any right, by implication or otherwise, for the manufacture, sale, or use of any method, apparatus, or product covered by letters patent. Neither should anything contained in the publication be construed as insuring anyone against liability for infringement of letters patent.

The term “shall,” as used in this standard, denotes a minimum requirement in order to conform to the specification.

The term “should,” as used in this standard, denotes a recommendation or that which is advised but not required in order to conform to the specification.

This document was produced under API standardization procedures that ensure appropriate notification and participation in the developmental process and is designated as an API standard. Questions concerning the interpretation of the content of this publication or comments and questions concerning the procedures under which this publication was developed should be directed in writing to the Director of Standards, American Petroleum Institute, 1220 L Street, NW, Washington, DC 20005. Requests for permission to reproduce or translate all or any part of the material published herein should also be addressed to the director.

Generally, API standards are reviewed and revised, reaffirmed, or withdrawn at least every five years. A one-time extension of up to two years may be added to this review cycle. Status of the publication can be ascertained from the API Standards Department, telephone (202) 682-8000. A catalog of API publications and materials is published annually by API, 1220 L Street, NW, Washington, DC 20005.

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

Contents

Contents

Introduction

This standard represents a composite of the practices employed by various operating and drilling companies in drilling operations.This standard is under the jurisdiction of the API Drilling and Production Operations Subcommittee.

The objective of this standard and the recommendations within is to assist the oil and gas industry in promoting personnel safety, public safety, integrity of the drilling equipment, and preservation of the environment for land and marine drilling operations. In the context of blowout prevention systems, this objective is best attained through a combination of equipment reliability and management of risk. This standard is published to facilitate the broad availability of proven, sound engineering and operating practices that meet the stated objective through practices that improve reliability and reduce risk to acceptable levels. This standard does not present all of the operating practices that can be employed to successfully install and operate blowout preventer systems in drilling, completions, and well testing operations. Practices set forth herein are considered acceptable for accomplishing the jobs as described; however, equivalent alternative installations and practices can be used to accomplish the same objectives. Individuals and organizations using this standard are cautioned that operations must comply with requirements of federal, state, or local regulations. These requirements should be reviewed to determine whether violations will occur.

The First Edition of API 53, published in February 1976, superseded API Bulletin D13, *Installation and Use of Blowout Preventer Stacks and Accessory Equipment*, February 1966. The Second Edition of API 53 was issued in May 1984 and the Third Edition of API 53 was issued in March 1997. This edition supersedes all previous editions of this standard.

Drilling operations are being conducted with full regard for personnel safety, public safety, and preservation of the environment in such diverse conditions as metropolitan sites, wilderness areas, ocean platforms, deepwater sites, barren deserts, wildlife refuges, and arctic ice packs. The information presented in this standard is based on this extensive and wide-ranging industry experience.

Blowout Prevention Equipment Systems for Drilling Wells

1 Scope

1.1 Purpose

1.1.1 The purpose of this standard is to provide requirements on the installation and testing of blowout prevention equipment systems on land and marine drilling rigs (barge, platform, bottom-supported, and floating).

1.1.2 Blowout preventer equipment systems are comprised of a combination of various components. The following components are required for operation under varying rig and well conditions:

a) blowout preventers (BOPs);

b) choke and kill lines;

c) choke manifolds;

d) control systems;

e) auxiliary equipment.

1.1.3 The primary functions of these systems are to confine well fluids to the wellbore, provide means to add fluid to the wellbore, and allow controlled volumes to be removed from the wellbore.

1.1.4 Diverters, shut-in devices, and rotating head systems (rotating control devices) are not addressed in this standard (see API 64 and API 16RCD, respectively); their primary purpose is to safely divert or direct flow rather than to confine fluids to the wellbore.

1.2 Well Control

Procedures and techniques for well control are not included in this standard since they are beyond the scope of equipment systems contained herein.

1.3 BOP Installations

This standard contains a section pertaining to surface BOP installations followed by a section on subsea BOP installations.

1.4 Equipment Arrangements

Recommended equipment arrangements as set forth in this publication are adequate to meet specified well conditions. It is recognized that other arrangements can be equally effective in addressing well requirements and achieving safety and operational efficiency.

1.5 Extreme High- and Low-temperature Operations

1.5.1 Although operations are being conducted in areas of extreme high and low temperatures, a section specifically applicable to these service conditions is not included since current practice generally results in protecting the existing BOP equipment from these environments.

1.5.2 High and low temperature values are identified in API 16A for metallic and nonmetallic parts. The use of metallic and nonmetallic components shall be verified for use in temperatures above or below those identified in API 16A.