API RP 53
Second Edition
May 25, 1984

API

RECOMMENDED PRACTICES

for

BLOWOUT PREVENTION EQUIPMENT SYSTEMS FOR DRILLING WELLS

OFFICIAL PUBLICATION

REG. U.S. PATENT OFFICE

AMERICAN PETROLEUM INSTITUTE
Washington, D.C.

Issued by
AMERICAN PETROLEUM INSTITUTE
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Dallas TX 75201

Users of this publication should become completely familiar with its scope and content. This document is intended to supplement rather t judgment.

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FOREWORD

a. These recommended practices were prepared by the API Subcommittee on Blowout Prevention Equipment Systems. They represent a composite of the practices employed by various operating and drilling companies in drilling operations. In some cases, a reconciled composite of the various practices employed by these companies was utilized. These recommended practices have been reviewed for content by the members of the Subcommittee and the Executive Committee on Drilling and Production Practice. This publication is under the jurisdiction of the American Petroleum Institute, Production Department's Executive Committee on Drilling and Production Practice.

b. RP 53, First Edition, February 1976, superseded and replaced *API Bulletin D13: Installation and Use of Blowout Preventer Stacks and Accessory Equipment*, February 1966. This Second Edition supersedes and replaces the First Edition.

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

d. This publication does not purport, however, to present all of the good operating practices for drilling blowout prevention equipment systems where equivalent alternatives may be available. Neither is it represented to be so comprehensive as to include all applicable good operating practices. Individuals and organizations using these recommended practices are cautioned that operations and equipment must comply with requirements of Federal, state, or local regulations. These requirements should be reviewed to determine whether or not violations may occur.

e. The Institute makes no representation, warranty, or guarantee in connection with publication of these recommended practices and hereby expressly disclaims any liability or responsibility for loss or damage from use or application hereunder or for any violation of Federal, state, or local regulation with which the contents may conflict.

f. The goal of these recommended practices is to assist the oil industry in promoting personnel safety, public safety, and preservation of the environment.

g. Members of the Subcommittee on Blowout Prevention Equipment Systems who devoted substantial time and effort in preparing this revised edition are as follows:

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API RECOMMENDED PRACTICES FOR BLOWOUT PREVENTION EQUIPMENT SYSTEMS FOR DRILLING WELLS

SECTION 1
SCOPE

1.1 The purpose of these recommended practices is to provide accurate information that can serve as a guide for installation of blowout prevention equipment systems on land and marine drilling rigs (barge, platform, bottom-supported, and floating). Blowout prevention equipment systems are composed of all systems required to operate the blowout preventers under varying rig and well conditions. These systems are namely — blowout preventers, kill line, choke manifold, closing unit, diverter, marine riser, and auxiliary equipment. 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 withdrawn from the wellbore.

1.2 Several new sections were added in developing the revised First Edition, February, 1976; namely, "Diverter Systems," "Inspection and Testing," "Sealing Components," "Blowout Preventer Modifications for Hydrogen Sulfide Service," "Pipe Stripping Arrangements," and "Marine Riser Systems." These topic areas were not addressed in the scope of *API Bulletin D13*. Although operations are being conducted in areas of extremely low temperatures, a section applicable to this service was not added since current practice generally results in protecting existing equipment from this environment. Procedures and techniques for well control have been omitted in this publication since they are beyond the scope of equipment systems contained herein.

1.3 Sections 2 through 10 of this publication have been prepared to contain a subsection pertaining to surface installations followed by a subsection for the equivalent subsea installation of blowout prevention equipment. A delineation was made between "surface" and "subsea" equipment installations so these recommended practices would also have utility in floating drilling operations. Unless stated otherwise, statements concerning surface equipment installations also apply to subsea equipment installations.

1.4 Recommended equipment arrangements as set forth in this publication are adequate to meet specified well conditions. It is recognized that other arrangements may be equally effective in meeting well requirements and promoting safety and efficiency.

SECTION 2-A
DIVERTER SYSTEMS — SURFACE INSTALLATIONS

PURPOSE

2.A.1 A diverter system may be employed as a means of well control during various stages of a drilling operation by directing well flows away from the rig and personnel. The system can provide a degree of protection prior to setting the casing string upon which the blowout preventer stack and choke manifold will be installed. The system is designed to pack-off around the kelly, drill string, or casing and direct flow to a safe location. Valves in the system direct the well flow when the diverter is actuated. A diverter is not designed to shut in or halt flow, but rather permits routing of the flow to a safe distance away from the rig.

INSTALLATION AND EQUIPMENT REQUIREMENTS

2.A.2 When commencing a well located in the water, a short string of large diameter casing or drive pipe is usually installed below the mud line. At land locations, a casing string is often set and cemented at a shallow depth. This drive pipe or casing should provide a seal capable of supporting the hydrostatic head of the fluid column from the base of the casing to the flow nipple outlet. The diverter system is installed on the drive pipe or casing. It consists of a low pressure diverter or an annular preventer of sufficient internal bore to pass the bit required for subsequent drilling. Vent line(s) of adequate size are attached to outlets below the diverter and extended to a location sufficiently distant from the well to permit safe venting and proper disposal of fluid flow from the well. Figs. 2.A.1, 2.A.2, and 2.A.3 illustrate example diverter systems.

2.A.3 Conventional annular blowout preventers or rotating heads are commonly used as diverters; however, various sizes of special low pressure "diverters" are available. The rated working pressure of the diverter and vent line(s) is not of prime importance, rather they are sized to permit diversion of well fluids while minimizing wellbore back pressure. Vent lines usually vary from 4″ to 12″ diameter.

2.A.4 If the diverter system incorporates a valve(s) on the vent line (refer to Figs. 2.A.2 and 2.A.3), this valve(s) should be full-opening and maintained in the