Validation of Safety and Shutdown Valves for Sandy Service

API STANDARD 6AV1
THIRD EDITION, JULY 2018

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.

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 verbal forms used to express the provisions in this standard are as follows:

Shall: As used in a standard, “shall” denotes a minimum requirement in order to conform to the standard.

Should: As used in a standard, “should” denotes a recommendation or that which is advised but not required in order to conform to the standard.

May: As used in a standard, “may” denotes a course of action permissible within the limits of a standard.

Can: As used in a standard, “can” denotes a statement of possibility or capability.

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 5 years. A one-time extension of up to 2 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

Introduction

The validation of wellhead surface safety valves (SSVs), boarding shutdown valves (BSDVs), and underwater safety valves (USVs) is an important part of determining their fitness for service. In prior editions of API 6A and ISO 10423, the requirements for safety valve validation have been included as an annex in those documents. Recently, API Subcommittee 6 responsible for API 6A has determined that the industry is best served by having a separate specification for these validation tests to align with commercial practices. This separate document also allows regulators the possibility of referring to it without having to align with a specific edition of API 6A that might contain those requirements.

This edition of API 6AV1 contains the following major changes from prior editions:

— The title of the standard was changed from “Specification for Validation of Wellhead Surface Safety Valves and Underwater Safety Valve for Offshore Service” to “Validation of Safety and Shutdown Valves for Sandy Service.”

— The Scope was reworded to explain the intention of the tests for SSV, USV, and BSDV applications and to clarify that the validation of the actuator is outside the scope of this standard.

— The words “test valve” have replaced “SSV/USV valve” throughout the document to acknowledge the potential validation of BSDVs.

— For Class III, the wording “substantive change to the valve bonnet assembly” in the previous edition was clarified to read “substantive change to the valve stem seal.”

— The test agency is now required to conform to ISO 17025.

Annex A (API Monogram Program) was removed.

Validation of Safety and Shutdown Valves for Sandy Service

1 Scope

There are three service classes, Class I, Class II, and Class III, for API 6A surface safety valve (SSV), underwater safety valve (USV), or boarding shutdown valve (BSDV). This standard establishes sandy service design validation for valves to meet Class II and Class III. Class II is intended to validate the valve bore sealing mechanism if substances such as sand can be expected to cause safety or shutdown valve failure. Class III adds additional requirements and validation of the bonnet assembly inclusive of stem seals.

Validation of the actuator is outside the scope of this standard.

NOTE This standard does not contain the validation requirements for Class I safety valves.

2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

API *Manual of Petroleum Measurement Standards* (*MPMS*) Chapter 10.4, *Determination of Sediment and Water in Crude Oil by the Centrifuge Method (Field Procedure)*

API Specification 6A, *Specification for Wellhead and Christmas Tree Equipment*

API Recommended Practice 13B-1, *Recommended Practice for Field Testing Water-based Drilling Fluids*

ISO/IEC 17025 [1,2], *General requirements for the competence of testing and calibration laboratories*

3 Terms, Definitions, and Abbreviations

3.1 Terms and Definitions

For the purposes of this document, the following terms and definitions apply.

3.1.1
actuator
Device that causes the test valve to open when power is supplied and to automatically close when power is lost or released.

3.1.2
failure
Improper performance of a device or equipment item that prevents completion of its design function.

3.1.3
management system
Set of interrelated or interactive elements that establish policy and objectives and provide a means to achieve those objectives.

3.1.4
sandy service
Application where the retained fluid could contain particulates such as sand.

[1] International Organization for Standardization, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland, www.iso.org.
[2] International Electrotechnical Commission, 3 rue de Varembé, CH – 1211, Geneva, Switzerland, http://www.iec.ch.