Subsurface Barrier Valves and Related Equipment

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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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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 28781 was prepared by Technical Committee ISO/TC 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*, Subcommittee SC 4, *Drilling and production equipment*.

Introduction

This International Standard has been developed by users/purchasers and suppliers/manufacturers of subsurface barrier valves and related equipment as defined herein and is intended for use in the petroleum and natural gas industry worldwide to give requirements and information to both parties in the selection, manufacture, testing and use. Further, this International Standard addresses the minimum requirements with which the supplier/manufacturer is to comply so as to claim conformity with this International Standard.

This International Standard has been structured with six different types of barrier valves. This differentiation is due to the range of product functionality, such as the direction in which pressure is held and its use in pre- or post-production/injection operations.

This International Standard has been structured with grades of increased requirements in quality control and design validation. These grades allow the user/purchaser to select the level of requirements that are required for a specific application.

There are two quality grades: quality grade Q2 is the minimum grade of quality offered by this International Standard and quality grade Q1 is the highest grade provided. Additional quality requirements can be specified by the user/purchaser as supplemental requirements.

There are three design validation grades, which provide the user/purchaser with a choice of requirements to meet their preference or application. Design validation grade V2 is the minimum grade and V1 is the most stringent grade provided.

Annexes B, C, D and E are normative requirements, where Annexes A, F, G and H are informative. Table 4 provides a summary of the applicability of the annexes included within this Specification.

The International System of Units (SI) is used in this International Standard, however US Customary (USC) or other units are also shown for reference.

It is required that users of this International Standard be aware that requirements beyond those outlined in this International Standard can be needed for individual applications. This International Standard is not intended to inhibit a supplier/manufacturer from offering, or the user/purchaser from accepting, alternative equipment or engineering solutions. This can be particularly applicable where there is innovative or developing technology. Where an alternative is offered, it is the responsibility of the supplier/manufacturer to identify any variations from this International Standard and provide details.

Subsurface Barrier Valves and Related Equipment

1 Scope

This International Standard provides the requirements for subsurface barrier valves and related equipment as they are defined herein for use in the petroleum and natural gas industries. Included are the requirements for design, design validation, manufacturing, functional evaluation, repair, redress, handling and storage. Subsurface barrier valves provide a means of isolating the formation or creating a barrier in the tubular to facilitate the performance of pre- and/or post-production/injection operational activities in the well.

The subsurface barrier valve is not designed as an emergency or fail-safe flow controlling safety device.

This International Standard does not cover installation and maintenance, control systems such as computer systems, and control conduits not integral to the barrier valve. Also not included are products covered under ISO 17078, ISO 16070, ISO 14310, ISO 10432, ISO 10423 and the following products: downhole chokes, wellhead plugs, sliding sleeves, casing-mounted flow control valves, injection valves, well-condition-activated valves or drill-stem test tools. This International Standard does not cover the connections to the well conduit.

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.

ISO 2859-1, *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

ISO 3601-1, *Fluid power systems — O-rings — Part 1: Inside diameters, cross-sections, tolerances and designation codes*

ISO 3601-3, *Fluid power systems — O-rings — Part 3: Quality acceptance criteria*

ISO 6506 (all parts), *Metallic materials — Brinell hardness test*

ISO 6508 (all parts), *Metallic materials — Rockwell hardness test*

ISO 9000, *Quality management systems — Fundamentals and vocabulary*

ISO 9712, *Non-destructive testing — Qualification and certification of personnel*

ISO 10414-1, *Petroleum and natural gas industries — Field testing of drilling fluids — Part 1: Water-based fluids*

ISO 18265, *Metallic materials — Conversion of hardness values*