Subsurface Completion Isolation (Barrier) Valves and Related Equipment

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Errata 1

Section I.2.2: The third paragraph shall be replaced with the following:

When FEA has identified plastic strain in excess of 0.2 %, a ratcheting analysis shall be performed per ASME BPVC, Section VIII, Division 3, Article KD-234, or ASME BPVC, Section VIII, Division 2, Section 5.5.7. The material performance data shall be obtained via testing performed as defined in section I.2.4.

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Suggested revisions are invited and should be submitted to the Standards Department, API, 200 Massachusetts Avenue, Suite 1100, Washington, DC 20001, standards@api.org.

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Introduction

This specification has been developed by user/purchasers and supplier/manufacturers of SCIVs 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 specification addresses the minimum requirements with which the supplier/manufacturer is to comply so as to claim conformity with this specification.

This specification has been structured with six different types of SCIVs. 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 specification 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 for a specific application.

There are two quality levels: QL2 is the minimum grade of quality offered by this specification and QL1 is the highest grade provided. Additional quality requirements can be specified by the user/purchaser as supplemental requirements.

There are four design validation grades, which provide the user/purchaser with a choice of requirements to meet their preference or application. V3 is the minimum grade and V1 is the most stringent grade provided. V1H is for HPHT applications.

Annexes B, C, D, E, and I are normative, and Annexes A, F, G, H, and J are informative. Table 1 provides a summary of the applicability of the annexes included within this specification.

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

It is required that users of this specification be aware that requirements beyond those outlined in this specification can be needed for individual applications. This specification 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 specification and provide details.

Subsurface Completion Isolation (Barrier) Valves and Related Equipment

1 Scope

This specification provides the requirements for subsurface completion isolation (barrier) valves (SCIV) 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 grades, quality levels, manufacturing, functional evaluation, repair, redress, handling, and storage. SCIVs provide a means of isolating the formation or creating a blockage in the tubular to facilitate the performance of pre- and/or post-production/injection operational activities in the well.

Additional requirements for HPHT products are included in Annex I.

When closed, the SCIV provides an obstacle or impediment to flow and/or pressure from above and/or below and a means of isolating the formation within a conduit. The SCIV is not designed as an emergency or fail-safe flow-controlling safety device.

This specification does not cover installation and maintenance, control systems such as computer systems, and control conduits not integral to the SCIV. 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 specification does not cover the end 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.

API[1] Technical Report 5C3, *Calculating Performance Properties of Pipe Used as Casing or Tubing, Annex A*

API Specification 20A, *Carbon Steel, Alloy Steel, Stainless Steel, and Nickel Base Alloy Castings for Use in the Petroleum and Natural Gas Industry*

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

API Specification Q1, *Specification for Quality Management System Requirements for Manufacturing Organizations for the Petroleum and Natural Gas Industry*

ANSI/NACE MR0175-2015/ISO 15156, *Petroleum and natural gas industries – Materials for use in H_2S-containing environments in oil and gas production*

ASME[2] Boiler and Pressure Vessel Code (BPVC), Section II, *Materials Specification—Part D: Properties*

ASME. Boiler and Pressure Vessel Code (BPVC), Section VIII, *Rules for Construction of Pressure Vessels—Division 1, UW-40: Procedures for Post-weld Heat Treatment*

ASME. Boiler and Pressure Vessel Code (BPVC), Section VIII, *Rules for Construction of Pressure Vessels—Division 2, Part 5: Design by Analysis*

ASME. Boiler and Pressure Vessel Code (BPVC), Section VIII, *Rules for Construction of Pressure Vessels—Division 3: Alternative Rules for Construction of High Pressure Vessels*

[1] American Petroleum Institute, 200 Massachusetts Avenue, Washington, DC 20001, www.api.org.

[2] American Society for Mechanical Engineers, 2 Park Avenue, New York, New York 10016, www.asme.org.