Design and Manufacture of Subsea Well Intervention Equipment

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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 edition of API 17G has been updated and upgraded from a recommended practice to a standard. Its focus continues to be on through-BOP intervention riser system (TBIRS) and open-water intervention riser system (OWIRS). Its scope has been expanded to include the design and manufacture of components and equipment and the use of new technology. It also covers verification and validation, not only of components and equipment but also of subsea well intervention systems previously unrecognized by a specific standard.

This standard has been restructured to serve as the foundation for supplemental documents, so that similar hardware or practices may be recognized and referenced rather than repeating the information. To that end some of the equipment nomenclature mentioned in earlier editions of 17G has been changed to be more universal across more intervention methods. The supplemental documents that specifically address new subject areas of subsea well intervention will carry the 17G designation plus a numeric suffix (17G1, 17G2, etc.).

With the publishing of this document, the acronyms C/WO and CWOR have been discontinued. These terms have been replaced with through-BOP intervention riser system (TBIRS) and open-water intervention riser system (OWIRS), which are defined herein. Additionally, throughout the document, the term “riser or landing string” and “riser and landing string” are used and refer to OWIRS and TBIRS, respectively.

The overall objective of API 17G is to define auditable requirements that facilitate international standardization to enable safe and economic development of offshore oil and gas. It is intended for worldwide application in the petroleum industry. It is not intended to replace sound engineering judgment.

Users of API 17G should be aware that additional or different requirements may better suit the demands of a particular service environment, the regulations of a local authority, or other scenarios not specifically addressed here.

This standard is not intended to inhibit a manufacturer from offering, or the end user from accepting, alternative equipment or engineering solutions for the individual application. Where an alternative is offered, it is the responsibility of the manufacturer to identify any variations from this standard and provide details.

Finally, this standard is not intended to restrict or deter the development of new technology. Rather, it is intended to become the base standard from which new subsea well intervention technology can develop.

API 17G is an equipment/component-based standard. The supplemental documents to 17G will define system level requirements. It is important to note that manufacturers and integrators can design, manufacture, and supply individual equipment independent of overall system requirements. The end user or system integrator (on behalf of end user) is responsible for system engineering and for the system design and operation. System engineering should be conducted to ensure that subsea well intervention systems and their components are designed, manufactured, fabricated, operated, and maintained for their intended use, throughout their intended life.

The first of the supplement documents, API 17G1, defines system performance requirements and provides operational guidance for API 17G equipment. Operational guidance specifically includes barrier implementation and testing, equipment readiness and inspection, system monitoring and maintenance, and management of change.

Design and Manufacturing of Subsea Well Intervention Equipment

1 Scope

API 17G defines a minimum set of requirements for performance, design, materials, testing and inspection, hot forming, welding, marking, handling, storing, and shipping of new build subsea well intervention equipment [through-BOP intervention riser system (TBIRS) and open-water intervention riser system (OWIRS)] as defined herein.

The requirements in this standard apply to equipment whose rated working pressure (RWP) is less than or equal to 103.4 MPa (15,000 psi) or whose rated temperature is less than or equal to 177 °C (350 °F). Equipment ratings that exceed these limits are covered by this document and API 17TR8. For equipment whose ratings exceed the RWP of 103.4 MPa (15,000 psi) or the rated temperature of 177 °C (350 °F), API 17TR8 will take precedence in the event of conflicting requirements with this document.

Structural design methods and criteria given in API 17G are limited to components manufactured from materials that ensure ductile failure modes (e.g. carbon steels, low-alloy steels, and corrosion-resistant alloys). Components manufactured from materials that may not ensure ductile failure modes (e.g. composite materials, titanium, and titanium alloys) are beyond the scope of this standard.

Within this document, the following apply:

— all tables are normative, unless otherwise stated,

— all figures are typical and informative in nature,

— all instances of NOTE and EXAMPLE provide guidance and as such are typical and informative in nature.

The standard covers equipment that is connected to a fluid conduit tieback riser, either inside the marine riser (TBIRS) or open water (OWIRS). Intervention equipment such as riserless light well intervention systems, downline connected equipment, and remotely operated vehicle (ROV) intervention equipment are outside the scope of this standard.

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 Technical Report 5C3, *Calculating Performance Properties of Pipe Used as Casing or Tubing*

API Recommended Practice 5C5, *Procedures for Testing Casing and Tubing Connections*

API Specification 5CRA, *Specification for Corrosion-resistant Alloy Seamless Tubes for Use as Casing, Tubing, and Coupling Stock*

API Specification 5CT, *Specification for Casing and Tubing*

API Specification 5DP, *Specification for Drill Pipe*

API Specification 5L, *Specification for Line Pipe*, 45th Edition

API Specification 6A, *Specification for Wellhead and Christmas Tree Equipment*, 20th Edition

API Standard 6ACRA, *Age-hardened Nickel-based Alloys for Oil and Gas Drilling and Production Equipment*