Design and Operation of Subsea Production Systems—General Requirements and Recommendations

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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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Introduction

This document has been prepared to provide general requirements, recommendations, and overall guidance for the user to the various areas requiring consideration during development of a subsea production system for the petroleum and natural gas industry. The intention is to facilitate and complement the decision process rather than to replace individual engineering judgment and, where requirements are nonmandatory, to provide positive guidance for the selection of an optimum solution.

The development of this document is based on input from API Subcommittee 17 (Subsea Production Systems) technical experts. The technical revisions have been made in order to accommodate the needs of industry and to move this specification to a higher level of service to the petroleum and natural gas industry.

This document is not intended to inhibit a manufacturer from offering, or the purchaser from accepting, alternative equipment or engineering solutions for a specific application. This may be particularly applicable where there is innovative or developing technology.

Users should be aware that the current revision of this document no longer includes much material that was considered to be tutorial in nature. The majority of this material can now be found in API Technical Report 17TR13.

Design and Operation of Subsea Production Systems—General Requirements and Recommendations

1 Scope

API 17A provides general requirements and recommendations for the development of subsea production systems, from the design phase to decommissioning and abandonment. This document also references to other API 17-series documents as well as various other relevant industry documents.

The complete subsea production system comprises several subsystems necessary to produce hydrocarbons from one or more subsea wells and transfer them to a given processing facility located offshore (fixed, floating, or subsea) or onshore, or to inject water/gas through subsea wells.

This document, given its broad scope, has a systems engineering section. The purpose of this section is to help ensure consistency across the various subsystems.

If requirements as stated in this document are in conflict with, or are inconsistent with, requirements as stated in other API 17-series documents, then the specific requirements in the subsystem series document(s) take precedence.

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 Recommended Practice 17B, *Recommended Practice for Flexible Pipe*

API Recommended Practice 17C, *Recommended Practice on TFL (Through Flowline) Systems*

API Specification 17D, *Design and Operation of Subsea Production Systems—Subsea Wellhead and Tree Equipment*

API Specification 17E, *Specification for Subsea Umbilicals*

API Standard 17F, *Standard for Subsea Production Control Systems*

API Recommended Practice 17G, *Recommended Practice for Completion/Workover Risers*

API Recommended Practice 17H, *Remotely Operated Tools and Interfaces on Subsea Production Systems*

API Specification 17J, *Specification for Unbonded Flexible Pipe*

API Specification 17K, *Specification for Bonded Flexible Pipe*

API Specification 17L1, *Specification for Flexible Pipe Ancillary Equipment*

API Recommended Practice 17L2, *Recommended Practice for Flexible Pipe Ancillary Equipment*

API Recommended Practice 17N, *Recommended Practice for Subsea Production System Reliability and Technical Risk Management*

API Standard 17O, *Standard for Subsea High Integrity Pressure Protection Systems (HIPPS)*

API Recommended Practice 17P, *Design and Operation of Subsea Production Systems—Subsea Structures and Manifolds*

API Recommended Practice 17Q, *Subsea Equipment Qualification—Standardized Process for Documentation*

API Recommended Practice 17R, *Recommended Practice for Flowline Connectors and Jumpers*

API Recommended Practice 17S, *Recommended Practice for the Design, Testing, and Operation of Subsea Multiphase Flow Meters*

API Recommended Practice 17U, *Recommended Practice for Wet and Dry Thermal Insulation of Subsea Flowlines and Equipment*

API Recommended Practice 17V, *Recommended Practice for Analysis, Design, Installation, and Testing of Safety Systems for Subsea Applications*

API Recommended Practice 17W, *Recommended Practice for Subsea Capping Stacks*

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

API Specification Q2, *Specification for Quality Management System Requirements for Service Supply Organizations for the Petroleum and Natural Gas Industries*

3 Terms, Definitions, Acronyms, Abbreviations, and Symbols

3.1 Terms and Definitions

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

3.1.1
extended factory acceptance test
EFAT
Test conducted to verify that the specified requirements, for a set of interfacing products, have been fulfilled.

3.1.2
interchangeability test
ICT
Test conducted to verify the interchangeability requirements of "identical" products, which may be interfaced with other mating products at the installation site, have been fulfilled.

3.1.3
life cycle
That of a subsea development that includes design, manufacture through commissioning, operations, intervention, and decommissioning.

3.1.4
predeployment test
PDT
Test conducted to verify that the specified requirements, for a product that is ready for deployment, are still fulfilled.

3.1.5
site received test
SRT
Test conducted to verify that the specified requirements, for a product that has been transported from one site to another, are still fulfilled.