Subsea Equipment Qualification—Standardized Process for Documentation

API RECOMMENDED PRACTICE 17Q
FIRST EDITION, JUNE 2010

AMERICAN PETROLEUM INSTITUTE

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Upstream Segment

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Introduction

This recommended practice stated herein applies specifically to the qualification of subsea components and is based on established industry standards or supplemental practices as discussed below. It can also be adapted by others in the industry to aid in standardizing and streamlining their qualification processes.

The component categories presented in this recommended practice are based on those listed in API Recommended Practice 17A. These component categories allow for component-specific forms, such as failure mode assessment (FMA) and product qualification sheet (PQS), which are described in this recommended practice to be used as a means of identifying any qualification gaps and documenting the qualification limits of the project subsea components, respectively.

The FMA approach is based on a simplified version of a *Failure Mode Effects and Criticality Analysis*, which is often used as a design tool within the industry. This tool applies specifically to components and equipment for offshore developments. The objective through use of the FMA is to systematically ensure the technology functions reliably within specified limits. The FMA is used to identify component-specific failure mechanisms and critical design features and to aid managing qualification gaps.

The purpose of this recommended practice is to provide a systematic, structured framework for subsea equipment qualification. General requirements, recommendations, and overall guidance provided in this recommended practice may assist various users in areas requiring consideration during qualification of subsea components and production systems for the petroleum and natural gas industry.

This recommended practice defines functional requirements to suit component qualification specifically for subsea developments and operations. This recommended practice is intended to perform the following functions:

— to facilitate and complement the decision-making process rather than to replace individual engineering judgment;

— to provide qualification guidance where industry requirements may not exist;

— to provide a mechanism to document and communicate component technical requirements and control potential component changes with equipment suppliers and their supply chain.

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1 Scope

This recommended practice (RP) provides guidance on relevant qualification methods that may be applied to facilitate subsea project execution. Qualification of subsea equipment is based on a breakdown of individual subsea components and categorization of those individual components based on classes of equipment and component functionality. A comprehensive component-level breakdown can cater to wide flexibility for field-specific configurations. The qualification process presented in this recommended practice is governed by component-level evaluation and referencing using two separate forms of documentation: failure mode assessments (FMAs) and product qualification sheets (PQSs). Detailed documentation resources related to the proactive qualification methodology presented in this recommended practice are provided in the annexes. These resources include an index of components and individual PQS documents. Documents relating to manufacturing inspection and Factory Acceptance Testing are outside the scope of this document.

2 Normative References

The following reference 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 17A, *Recommended Practice for Design and Production of Subsea Production Systems*

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

3 Terms, Definitions, Acronyms, and Abbreviations

For the purposes of this RP, the following terms, definitions, acronyms, and abbreviations apply.

3.1 Terms and Definitions

3.1.1
component
Any self-contained part of a larger entity.

3.1.2
component description
Brief narrative or explanation of the self-contained part of a larger entity [see **component** (3.1.1)].

3.1.3
component identifier
Part number or other discreet type of identification allocated by the supplier.

3.1.4
customer
The recipient of a product or service provided by a supplier.

3.1.5
dimensions
The overall physical component or assembly envelope dimensions (length x width x height).