Subsea Equipment Pressure Ratings

API TECHNICAL REPORT 17TR4
SECOND EDITION, MAY 2016

energy API
AMERICAN PETROLEUM INSTITUTE

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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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Subsea Equipment Pressure Ratings

1 Scope

The impact of operation in deep water on the pressure rating of equipment is a special concern. The objective of this document is to foster a better understanding of the effects of simultaneous internal and external pressures on the rated working pressure of equipment covered by the scope of API Specification 17D, Subsea Wellhead and Tree Equipment.

Additionally, it is intended to provide a high-level overview of issues that should be considered if a user selects to consider differential pressure in their design, especially in components with irregular geometry and with high stress concentrations. It is not intended to serve as a design specification. This document was prepared in response to a request from the API Subcommittee 17 (SC17).

2 Normative References

The following referenced documents are essential when considering the examples outlined in 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 17TR12, *Consideration of External Pressure in the Design and Pressure Rating of Subsea Equipment*

ASME *Boiler and Pressure Vessel Code, Section VIII, Division 2, Rules for Construction of Pressure Vessels, Alternative Rules*, 2010 Edition

ASME *Boiler and Pressure Vessel Code, Section VIII, Division 3, Rules for Construction of Pressure Vessels, Alternative Rules for Construction of High Pressure Vessels*, 2010 Edition

3 Definitions and Nomenclature

3.1 Definitions

For the purposes of this document, the following definition applies.

3.1.1
rated working pressure
The maximum internal pressure a piece of equipment is designed to contain and/or control. [Source: API Spec 17D, API Spec 6A]

3.2 Nomenclature

A cross-sectional area of vessel wall

D_i inside diameter of vessel

D_o outside diameter of vessel

d diameter variable, such that $D_i < d \leq D_o$

F external applied force

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