
API Technical Report 17TR8

High-pressure High-temperature Design Guidelines

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The scope of this technical report is to provide design guidelines for oil and gas subsea equipment utilized in high-pressure high-temperature (HPHT) environments (Pressures greater than 15,000 psia [15 ksi, 103.43 MPa] and temperature greater than 350 °F (177 °C).

Service temperature ratings above 550 °F (288 °C) are outside the scope of this technical report.

The scope of this technical report is limited to equipment and components identified in API documents that focus on subsea production equipment while addressing one or a combination of the following loading conditions:

- internal and external pressure;
- ambient and elevated operating temperatures;
- static and dynamic mechanical loads;
- other pressure/temperature induced loadings.

This technical report is intended to provide design guidelines for pressure-containing components, seals and fastener components that come in contact with or are immediately adjacent to wellbore fluids operating at HPHT conditions. Intra-field piping systems (e.g. steel flowline and pipeline jumpers, manifold piping, valving and connectors, intervention riser equipment) are within the scope of this technical report.

This technical report does not cover:

- flexible pipes (bonded and unbonded);
- oil-country tubular goods (OCTG) for drilling or completing wells;
- downstream pipeline or production riser designs;
- downhole component hardware that may be subject to additional application-related design constraints;
- equipment covered by other API publications that specifically address HPHT applications;
- structural members or ancillary equipment associated with HPHT hardware but not working in close proximity to the HPHT environment;
- Brittle materials (i.e. essentially no plastic deformation prior to failure, etc.).

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