

Recommended Practice for Subsea High Integrity Pressure Protection Systems (HIPPS)

Upstream Segment

API RECOMMENDED PRACTICE 170
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Recommended Practice for Subsea High Integrity Pressure Protection Systems (HIPPS)

1 Scope

This recommended practice (RP) addresses the requirements for the use of high integrity pressure protection systems (HIPPS) for subsea applications. API 14C, IEC 61508, and IEC 61511 specify the requirements for onshore, topsides, and subsea safety instrumented systems (SIS's) and are applicable to HIPPS, which are designed to autonomously isolate downstream facilities from overpressure situations. This document integrates these requirements to address the specific needs of subsea production. These requirements cover the HIPPS pressure sensors, logic solver, shutdown valves, and ancillary devices including testing, communications, and monitoring subsystems.

2 Normative References

The following referenced documents are indispensable for the application of this RP. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

API Specification 6A/ISO 10423, *Specification for Wellhead and Christmas Tree Equipment*

API Recommended Practice 6HT, *Heat Treatment and Testing of Large Cross Section and Critical Section Components*

API Recommended Practice 17A/ISO 13628-1, *Design and Operation of Subsea Production Systems—General Requirements and Recommendations*

API Recommended Practice 17C/ISO 13628-3, *Recommended Practice on TFL (Through Flowline) Systems*

API Specification 17D/ISO 13628-4, *Subsea Wellhead and Christmas Tree Equipment*

API Specification 17F/ISO 13628-6, *Specification for Subsea Production Control Systems*

API Recommended Practice 17H/ISO 13628-8, *Recommended Practice for Remotely Operated Vehicle (ROV) Interfaces on Subsea Production Systems*

NOTE ISO 13628-8 will be withdrawn and replaced by ISO 13628-13 when published. In this document, any reference to ISO 13628-8 should be replaced with ISO 13628-13 when published and available.

ANSI/ASME B31.3 ^{1 2}, *Process Piping*

ANSI/ASME B31.8, *Gas Transmission and Distribution Piping Systems*

AWS D1.1 ³, *Structural Welding Code—Steel*

IEC 61508, Parts 1 to 4 ⁴, *Functional safety of electrical/electronic/programmable electronic safety-related systems*

¹ American National Standards Institute, 25 West 43rd Street, 4th Floor, New York, New York 10036, www.ansi.org.

² ASME International, 3 Park Avenue, New York, New York 10016-5990, www.asme.org.

³ American Welding Society, 550 NW LeJeune Road, Miami, Florida 33126, www.aws.org.

⁴ International Electrotechnical Commission, 3, rue de Varembe, P.O. Box 131, CH-1211, Geneva 20, Switzerland, www.iec.ch.