



Exploration & Production

GENERAL SPECIFICATION

Drilling & Wells

GS EP FP 410

Subsea Wellhead and Guidance System

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Contents

1. Scope	4
2. Reference documents.....	4
3. Introduction	6
3.1 Abbreviations	6
3.2 Responsibility.....	6
3.3 Documents.....	7
4. System description	7
4.1 Base Design	7
4.2 Alternate Designs.....	8
5. Specific Equipment Requirements	9
5.1 Guidance System.....	9
5.2 Low pressure conductor housing	11
5.3 High Pressure Wellhead Housing.....	12
5.4 Casing hangers.....	13
5.5 Casing hanger Pack-Off / Seal Assemblies	14
5.6 Wellhead corrosion cap.....	15
5.7 Running tools / Test tools.....	15
5.8 False Rotary and Hang-off Plates	16
5.9 Bore protector and wear bushings.....	16
5.10 Emergency hang-off tool (optional)	16
5.11 Auxiliary equipment.....	17
6. Testing requirements.....	17
6.1 Introduction	17
6.2 Qualification	17
6.3 Factory Acceptance Tests (FAT).....	17
6.4 Wellhead System Verification Test.....	18
7. Test, handling and transportation equipment	18
8. Documentation	18



9. Specific manufacturing and inspection requirement.....	20
9.1 General.....	20
9.2 LP and HP housings	20
10. Quality.....	20
10.1 Quality Assurance.....	20
10.2 Quality control.....	21
Bibliography.....	22



1. Scope

This document covers the minimum requirements, which shall apply for the design of the Subsea Wellhead System.

The presented technical requirements shall be applicable to subsea wellhead systems to be used for subsea production and/or injection wells.

2. Reference documents

The reference documents listed below form an integral part of this General Specification. Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and supplements, is the latest revision published at the EFFECTIVE DATE of the CONTRACT.

This general specification and all other equipment specifications referenced herein are based on a set of Industry standards and COMPANY internal rules identified below.

This general specification is supplementary to document **GS EP SPS 001** and shall therefore, be used in conjunction with said document and other COMPANY specifications and standards identified therein. The relationship between the main COMPANY documents defining the requirements to the Subsea Stations is illustrated in **GS EP SPS 001**.

Standards

Reference	Title
ASTM D 395	Standard Test Methods for Rubber Property - Compression Set
ASTM D 412	Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension
ASTM D 471	Standard Test Methods for Rubber Property - Effect of Liquid E
ASTM D 1414	Standard Test Methods for Rubber O-Rings R
ASTM D 2240	Standard Test Methods for Rubber Property - Durometer Hardness
NACE MR0175 / ISO 15156	Material Requirements. Sulphide Stress Cracking. Resistant Metallic Material for Oil Field Equipment
ISO 898-1	Mechanical Properties of fasteners made of carbon steel and alloy steel - Part 1: Bolts, screws and studs with specified property classes - Coarse thread and fine pitch thread
ISO 10423	Petroleum and Natural Gas Industries - Drilling and Production Equipment - Wellhead and Christmas Tree Equipment Second Edition



Reference	Title
ISO 13628-1	Petroleum and natural gas industries - Design of operation of subsea productions systems - Part 1: General requirements and recommendations
ISO 13628-4	Petroleum and natural gas industries - Design of operation of subsea productions systems - Part 4: Subsea wellhead and tree equipment
ISO 13628-7	Petroleum and natural gas industries - Design of operation of subsea productions systems - Part 7: Completion/workover riser systems
ISO 13628-8	ROV Interfaces on Subsea Production Systems
ISO 140001	Environmental management systems — Requirements with guidance for use
ISO 10005	Quality management systems: Guidelines for quality plans
ISO TS 29001	Petroleum, petrochemical and natural gas industries - Sector-specific quality management systems - Requirements for product and service supply organizations

Professional Documents

Reference	Title
API SPEC 5 CT	Casing and Tubing
API SPEC 8A	Drilling and Production Hoisting Equipment
API SPEC 16A	Specification for Drill Through Equipment
API RP 16Q	Design and Operation of Marine Drilling Riser System
API RP 17H	ROV Interfaces with Subsea Equipment

Regulations

Reference	Title
Not applicable	

Codes

Reference	Title
ASME	Boiler and Pressure Vessel Code



Other documents

Reference	Title
DNV 2011-0063 rev1	Wellhead Fatigue Analysis Method

Total General Specifications

Reference	Title
GS EP SPS 001	Design philosophy and requirements for subsea stations
GS EP SPS 002	Design of subsea structures
GS EP SPS 003	Foundation design considerations for subsea stations

3. Introduction

3.1 Abbreviations

API	American Petroleum Institute
BOP	Blow out preventer
DTHT	Drill Through Horizontal Trees
FAT	Factory Acceptance Test
HP	High Pressure (housing)
HXT	Horizontal Xmas Tree
LP	Low Pressure (housing)
LRP/EDP	Lower Riser Package /Emergency Disconnect Package. A downhole package used for running VXTs, and allowing through tubing interventions on VXTs and HXTs
NACE MR	National Association of Corrosion Engineers Material Requirements
PGB	Permanent Guide Base
SCF	Stress Concentration Factor
TGB	Temporary Guide base
TH	Tubing Hanger
VXT	Vertical Xmas Tree
WH	Wellhead
XMT	Xmas Tree

3.2 Responsibility

The Subsea Wellhead System shall comply with all documents referenced herein or otherwise stated in the Well Specific Specifications included in the Tender. The Well Specific



Specifications shall cover for example; wellhead size (18 ¾" standard, Large Bore or 13 5/8" Slim Bore), Christmas Tree type (vertical, horizontal, mono-bore), stand alone well or template or some particular requirements (for example cutting re-injection or heavy casing programs).

It is the responsibility of anyone who supplies equipment to this specification to ensure compliance with the requirements defined by this specification, other referenced standards and statutory requirements. Any deviation from any of the requirements defined herein shall be clearly indicated and treated as a non-conformance.

The specific TOTAL Representative issuing the Tender is responsible for the specification requirements. Any conflict between referenced standard and rules shall be indicated to the TOTAL Representative. The more stringent approach shall be followed unless otherwise specified.

3.3 Documents

Documents : ASTM D 395, ASTM D 412, ASTM D 471, ASTM D 1414, ASTM D 2240, NACE MR0175 / ISO 15156, ISO 898-1, ISO 13628-1, API SPEC 5 CT, API SPEC 8A, API SPEC 16A, API RP 16Q, API RP 17H, DNV 2011-0063 rev1 are an integral part of this document.

4. System description

The specification is applicable to any type of exploration and development scenario, as clearly stated within **GS EP SPS 001**.

4.1 Base Design

This specification describes the functional and technical requirements for a conventional well architecture with 2 casing hangers suspended in the high pressure housing. Additional requirements such as shallow liners, a third casing hanger, or any other item are wells specific and will be described in the Tender documents whenever required.

The wellhead system shall be identical for all subsea stations of a given project except when Cutting Re-Injection (CRI) is contemplated.

The subsea wellhead system shall incorporate the following subcomponents:

- A Guide Base which will be specific to each type of well: a Permanent Guide Base for development wells, a Temporary Guide Base for exploration wells. Note that for the particular case of a multi-well structure, there will be no requirement for a Permanent Guide Base.
- A LP (Low Pressure) Conductor Housing with a project specific extension (OD, Length, Wall Thickness, Grade, Connector type).
- A HP (High Pressure) Wellhead Housing, which shall allow accommodate 2 casing hangers with pack off seal assemblies. Specifics of the extension (OD, Length, Wall Thickness, Grade, Connector type) will be prescribed for every project.
- A 13-3/8" or 14" casing hanger and a 10 ¾ or 9 5/8 casing hanger complete with pack off seal assemblies.
- The required tooling required for the installation of all equipment: PGB or TGB together with LP housing, HP housing, casing hangers, seal assemblies, wear bushings, test tools.