

# GENERAL SPECIFICATION

## CORROSION

### GS EP COR 100

**Cathodic protection of offshore structures  
according to DNV-RP-B401**

|      |         |                                    |
|------|---------|------------------------------------|
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## 1. Scope

The aim of this present specification is to define the minimum requirements for the design, calculation methods, selection of equipment and alloy materials, installation and commissioning of external cathodic protection for offshore fixed structures (platforms, wharves, piers, jetties, and piles, subsea templates, wells, etc.).

For offshore floating structures, the applicable GS is [GS EP COR 103](#). Additional requirements are specified for subsea equipment in [GS EP SPS 009](#) and [GS EP SPS 029](#).

This document supplements or modifies the Recommended Practice [DNV-RP-B401](#).

Additional requirements are given in [ISO 13174](#) for coastal structures (harbors, jetties, etc.).

New cathodic protection system is implemented using galvanic (or sacrificial) anodes unless specified in particular requirements of project specification. Cathodic protection can be achieved by impressed current or galvanic anode methods. Design life, economics and constructability should be considered when selecting method. Design of jacket cathodic protection retrofit system is described in [GS EP COR 402](#).

Internal surfaces of utility risers, J-tubes, sump caissons, pump caisson etc. are not covered in this document but are covered in [GS EP COR 101](#).

## 2. Reference documents

This document is the TOTAL E&P transposition of the TOTAL S.A. Harmonized GS GR COR 862.

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 this document.

### External Documents

| Reference                   | Title                                                                                                                      |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------|
| <a href="#">DNV-RP-B401</a> | Cathodic Protection Design                                                                                                 |
| <a href="#">IEC 60079-7</a> | Explosive atmospheres - Part 7: Equipment protection by increased safety "e"                                               |
| <a href="#">ISO 15589-2</a> | Petroleum and natural gas industries - Cathodic protection of pipeline transportation systems - Part 2: Offshore Pipelines |
| <a href="#">ISO 13174</a>   | Cathodic protection of harbour installation                                                                                |

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| Reference     | Title                                                                                                  |
|---------------|--------------------------------------------------------------------------------------------------------|
| GS EP COR 101 | Internal cathodic protection of equipment and storage tanks                                            |
| GS EP COR 102 | Design of cathodic protection of submarine pipelines by galvanic anodes according to ISO 15589-2       |
| GS EP COR 103 | Cathodic protection of offshore floating structures                                                    |
| GS EP COR 201 | Galvanic anodes                                                                                        |
| GS EP COR 202 | Monitoring systems for cathodic protection of offshore structures                                      |
| GS EP COR 210 | Monolithic insulating joints                                                                           |
| GS EP COR 233 | Riser coatings                                                                                         |
| GS EP COR 350 | External protection of offshore and coastal structures and equipment by painting                       |
| GS EP COR 351 | External protection of structures and equipment by painting. Floating structures                       |
| GS EP COR 402 | Design of jacket cathodic protection retrofit system                                                   |
| GS EP COR 501 | Control of cathodic protection of submerged fixed structures                                           |
| GS EP ELE 141 | Power transformers                                                                                     |
| GS EP EXP 311 | Plant integrity - Minimum inspection requirements                                                      |
| GS EP SPS 009 | Corrosion protection of subsea stations                                                                |
| GS EP SPS 029 | Metallic Materials for Subsea Production Facilities                                                    |
| GS EP STR 100 | Offshore steel structures - General                                                                    |
| GS EP STR 101 | Design of offshore jacket and subsea structures                                                        |
| GS EP STR 901 | Design rules and construction standards for ancillary structures of offshore and onshore installations |



### 3. Applicability

This specification is applicable to offshore structures.

### 4. Definitions of terms

For the purpose of this document, the following terms and definitions apply:

|                      |                                                                                                        |
|----------------------|--------------------------------------------------------------------------------------------------------|
| <b>Company:</b>      | Any entity of the TOTAL Group mentioned in the contract or the order.                                  |
| <b>Contractor:</b>   | Entity that enters into a Contract with the Company performing the work covered by this specification. |
| <b>DFT:</b>          | Dry Film Thickness                                                                                     |
| <b>Manufacturer:</b> | Entity responsible for manufacturing products.                                                         |

### 5. Cathodic protection by galvanic anodes

#### 5.1 Amendments to [DNV-RP-B401](#)

The following requirements for the design of cathodic protection by galvanic anodes of offshore structure shall be read in complement to the Recommended Practice [DNV-RP-B401](#).

The following chapters of the [DNV-RP-B401](#) are modified:

#### § 1.3.1 Amended section

The requirements for the supply and manufacture of sacrificial anodes shall be taken from [GS EP COR 201](#).

#### § 3.1 Terminology Amended section

Owner is assimilated to Company in this document.

#### § 5.4 Protective Potentials Amended section

For carbon steel, the following potential criteria shall be reached on the structures:

- More negative than -800 mV/Ag-AgCl-seawater in aerated seawater, mud line and buried zone.
- For carbon steel with SMYS greater than or equal to 550 MPa, the potential remains more positive than -1100 mV/Ag-AgCl-sea water.
- For other materials, potential requirements are in accordance with [ISO 15589-2](#) Table 1 and material requirements are in accordance with [GS EP SPS 029](#) § 6 to avoid hydrogen embrittlement.

#### § 5.5.4 to § 5.5.10 Amended section

For materials sensitive to HISC, requirements from [GS EP SPS 029](#) § 6 shall be followed.