



Exploration & Production

GENERAL SPECIFICATION

STRUCTURAL

GS EP STR 106

Assessment of existing fixed offshore steel platforms

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1. Scope

This document defines the codes, standards, reference documents, the procedures and the acceptance criteria to be applied for the assessment of existing fixed offshore steel platforms, including the jacket, the foundations and the superstructures.

The text of this document is based on [ISO 19902](#) Section 25 Assessment of existing structures not yet published. It amends, supplements and replaces various clauses/sections of [API RP 2A](#) and [ISO 19902](#) for the studies and works to be performed for platform re-assessment

The assessment shall be performed according to [API RP 2A WSD](#) or [API RP 2A LFRD](#), which is subject to COMPANY approval, unless otherwise indicated in the present specification.

In all cases, the design principle (i.e. WSD or LFRD) shall be the same for all parts of the platform (jacket, deck, etc.), and for all conditions.

Materials for procurement, welding and associated inspections are covered by specifications [GS EP STR 201](#), [GS EP STR 301](#) and [GS EP STR 304](#).

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.

The assessment of existing fixed offshore steel platforms shall be conducted in accordance to the reference documents including codes and standards defined hereafter.

Where national regulations exist, their provisions and those of the standards and codes to which they refer shall apply, supplementing or amending the provisions of this document, subject to prior COMPANY approval.

If there are no national regulations covering all or part of the subject of this document, the reference documents shall be strictly applied, as supplemented by the provisions of this specification and the project documents.

In case the re-assessment of a particular structure or part of a structure is not covered by any of the listed reference documents, CONTRACTOR shall propose the use of a reputed and fit for purpose international code or regulation, subject to COMPANY approval.

Only the main reference documents are mentioned; the CONTRACTOR shall be responsible for complying with all secondary reference documents dealing with the subject of this document.

Standards

Reference	Title
ISO 19900 Series	Requirements for offshore structures
API RP 2A LRFD (ISO 19902)	Recommended Practice for Planning and Constructing Fixed Offshore Platforms Load and Resistance Factor Design
API RP 2A WSD	Recommended Practice for Planning and Constructing Fixed Offshore platforms, Working Stress Design
API Bulletin 2V	Bulletin on design of flat plate structures
API Bulletin 2U	Bulletin on stability design of cylindrical shells
ISO 1000	SI units and recommendations for the use of their multiples and of certain other units
AISC LRFD	Manual of steel construction - Load and resistance factor design latest edition (subject to COMPANY approval)
AISC ASD	Manual of steel construction. Allowable Stress Design
DNV classification notes n° 30.5	Environmental Conditions and Environmental Loads
DNV Rules	Rules for the design, construction and inspection of offshore structures. Appendix B, Loads, 1977
NF P 22-255 or equivalent	Metal construction. Hollow section welded assemblies on type I and H sections. Design and verification

Professional Documents

Reference	Title
Not applicable	

Regulations

Reference	Title
Not applicable	

Codes

Reference	Title
AWS D 1.1	Structural Welding Code - Steel

Other documents

Reference	Title
Not applicable	

Total General Specifications

The provisions of this document shall be applied in the light of the project documents supplied by COMPANY, including:

- Country specificity appendices
- Particular specification
- Data sheets
- Articles and conditions; list of tasks
- Quality assurance provisions.

Reference	Title
GS EP COR 100	Design of cathodic protection of offshore structures
GS EP COR 222	Fusion Bonded Epoxy (FBE) external coating for pipelines
GS EP COR 350	External protection of offshore and coastal structures and equipment by painting
GS EP GEO 702	Requirements for design and installation of skirted foundations and suction anchors
GS EP STR 001	Weight monitoring and weighing offshore units
GS EP STR 100	Fixed offshore steel platforms - General
GS EP STR 102	Design of offshore topside structure
GS EP STR 105	Boat landings and bumpers
GS EP STR 201	Materials for offshore steel structures
GS EP STR 301	Fabrication of offshore steel structures
GS EP STR 304	Fabrication of welded plate girders (W.P.G.)
GS EP STR 401	Load-out, sea-fastening, transportation and installation of offshore structures
GS EP STR 431	Installation of piles for offshore steel structures. Driven piles
GS EP STR 432	Installation of piles for offshore steel structures. Drilled and grouted piles
GS EP STR 901	Design rules and construction standards for ancillary structures of offshore installations

3. General

This document gives procedures for the assessment of existing fixed steel offshore structures to demonstrate their fitness-for-purpose. The aims and procedures are also applicable to topsides structures. The assessment process has a number of stages and where a numerical assessment is required there are five levels of complexity, as per [ISO 19902](#). It is recommended that an assessment follows the levels sequentially although some may be skipped.

An assessment shall be undertaken if any of the initiators specified in section 6 are triggered, with the objective to demonstrate the fitness-for-purpose of the structure for its specific site conditions and operational requirements, based on the principles given in this document.

A structure is fit-for-purpose when the risk of structural failure leading to unacceptable consequences is sufficiently low. The process described in this document shall be followed for the assessment of fitness-for-purpose.

A structure that complies with the requirements given in [GS EP STR 101](#) and [GS EP STR 102](#) may be considered fit-for purpose.

Demonstration of adequate fitness-for-purpose may include justified deviation from [GS EP STR 101](#) and [GS EP STR 102](#), or modifications to either the structure or its operation (i.e. prevention and mitigation measures). Deviations from [GS EP STR 101](#) and [GS EP STR 102](#) shall be reviewed and approved by the regulator, where one exists, and/or personnel with sufficient knowledge and experience of the behaviour of fixed steel offshore structures to understand and assess the implications of the deviations. The rationale for the deviations shall be documented.

For existing structures, it is permissible to accept limited individual component 'failure' (i.e. action effects exceeding the component strength as given in this document), provided that both the reserve against overall system failure and deformations remain acceptable. The assessment process involves detailed review, analysis, testing or calculation of the aspects of the design that do not comply with [GS EP STR 101](#) and [GS EP STR 102](#). The current state of scientific and technical knowledge and the best available data should be used in this process. It is recommended that simple techniques be exhausted prior to the use of technically complex analyses.

For structures that do not comply with [GS EP STR 101](#) and [GS EP STR 102](#), the risk associated with a failure shall be reduced, as much as is reasonably practicable, by effecting risk prevention and mitigation measures. In determining the reasonable practicability of effecting these measures, the balance between the benefits and the cost, time and difficulty of implementing the measures should be considered. Local conditions and circumstances and the degree of confidence in the data and techniques used in the assessment should also be considered.

Prevention and mitigation measures to reduce the occurrence and the consequences of structural failure should be considered during all stages of the assessment process. If the structure is strengthened because of a failure to pass the assessment, the design of the strengthening should enable the structure to pass subsequent assessments at level 1.

In certain circumstances an assessment of one structure may be taken as an assessment of similar structures in similar conditions if all the requirements of section 9 are met.