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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 23511-2021

Petroleum and natural gas industries - General requirements for offshore structures

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foreword

This document is in accordance with the provisions of GB/T 1:1-2020 "Guidelines for Standardization Work Part 1: Structure and Drafting Rules of Standardization Documents"

drafted:

This document replaces GB/T 23511-2009 "General Requirements for Offshore Structures in the Oil and Gas Industry", and GB/T 23511-2009

In contrast, in addition to editorial changes, the main technical changes are as follows:

a) Added terms and definitions such as "rare environmental events", "accidental events", "calibration", "design resistance" and "degradation", changed "design/evaluation"

terms and definitions such as "Evaluation Standard" and "Design/Assessment Conditions", and the terms and definitions such as "Catenary Mooring" and "Compliant Structure" are deleted (see

Chapter 3, Chapter 2 of the:2009 edition);

b) Changed symbols and abbreviations (see Chapter 4, Chapter 3 of the:2009 edition);

c) Changed the provisions of the basic requirements of the structure, and added the description of the general rules (see 5:1);

d) Changed the structural integrity requirements that the structure and components should meet (see 5:2, 4:1 of the:2009 edition), and increased the function of the offshore platform:

can be required (see 5:3);

e) The requirements for specific stages of the structure have been changed, including provisions for construction, structural integrity management and disposal (see 5:4, 4:7,:2009 edition,:2009 edition):

4:11, 4:12);

f) Changed the requirements for structural durability, maintenance and inspection (see 5:5:1, 4:2 of the:2009 edition), and increased the structural robustness design requirements

provisions (see 5:5:2);

g) The requirements for the design/assessment basis of the structure have been changed, and the description of the general rules has been added (see 6:1);

h) Changed the regulations on the location and orientation of the platform, natural environment conditions, and geological conditions (see 6:2, 6:3, 6:4, 4:8,:2009 edition

4:10);

i) increased the possibility of scouring and ice erosion causing disturbance to the seabed in the design (see 6:4:3);

j) Added the design requirements for the superstructure (see 6:5:1);

k) Changed the regulations on structural deck elevation (see 6:5:2, 4:9:3 of the:2009 edition);

l) Changed the splash zone scope and the provisions of the drainage system (see 6:5:3, 4:9:3 of the:2009 edition);

m) Changed the provisions of the structural positioning system (see 6:5:4, 4:9:4 of the:2009 edition);

n) Added provisions for riser and riser system (see 6:5:5);

o) The provisions for foundation and mooring system are added (see 6:5:6), and the provisions for additional operation requirements are added (see 6:5:7);

p) The requirement for structural subdivision is deleted (see 4:9:5 of the:2009 edition);

q) The regulations on hazards and hazardous events have been changed (see 7:1 and 7:2, 4:3 of the:2009 edition), and the relevant regulations on exposure levels have been added

(see 7:3), the provisions on structural and component design/assessment conditions have been changed (see 7:4, 5:2:2 of the:2009 edition);

r) Changed the limit state verification method (see Chapter 8, Chapter 5 of the:2009 edition), added the description of the general rule (see 8:1), changed

Provisions for basic variables and representative values (see 8:2, 6:1, 8:2:1 and 8:2:2 of the:2009 edition);

s) Changed the provisions of limit state classification (see 8:3:1, 5:1:2 of the:2009 edition);

t) Changed the provisions for critical, rare/accidental, in-place and fatigue limit states (see 8:3:2, 8:3:3, 8:3:4 and 8:3:5,:2009 edition

5:1:3, 5:1:4, 5:1:5 and 5:1:6);

u) The provisions of limit state verification procedures have been added (see 8:4);

v) Changed the provisions of action classification (see 9:1, 6:2:1 of the:2009 edition);

w) Changed the provisions of permanent, operational, environmental, accidental, repeated effects and their representative values (see 9:2, 9:3, 9:4, 9:5 and 9:6,:2009

Versions 6:2:1:2, 6:2:1:3, 6:2:1:4, 6:2:1:5 and 6:2:1:6);

x) The provisions on the classification of effects according to spatial changes are deleted (see 6:2:2 of the:2009 edition);

y) The provisions on the classification of actions according to the response of the structure are deleted (see 6:2:3 of the:2009 edition);

z) The provisions on material and soil properties have been changed (see 10:3:2, 6:3 and 8:3 of the:2009 edition);

aa) Changed the provisions of geometric parameters (see 10:3:3, 6:4 and 8:4 of the:2009 edition);

bb) The provisions on design values and sub-item coefficients have been changed, and the provisions on action design values have been added (see 10:1);

cc) Changed the provisions of combined action (see 10:2, 8:2:3 of the:2009 edition);

dd) Changed the provisions of soil material design value and geometric variable design value (see 10:3:2 and 10:3:3, 8:3:2 and:2009 edition)

8:4:2), delete the provisions of soil material characteristic value and geometric parameter characteristic value (see 8:3:1 and 8:4:1 of the:2009 edition);

ee) Changed the provisions of structural calculation or analysis model uncertainty (see 10:3:4, 8:5 of the:2009 edition);

ff) Changed operating and extreme design/assessment conditions, rare and accidental design/assessment conditions, normal use design/assessment conditions, fatigue

provisions for subitem action coefficients for design/assessment validation (see 10:4, 10:5, 10:6 and 10:7, 8:6 of the:2009 edition);

gg) Added provisions for the use of probabilistic modeling and analysis methods for structures (see 10:8);

hh) added analysis procedures and calculation models for structural design/assessment (see Chapter 11 and A:11);

i) Changed the provisions for installation inspection, in-place inspection, maintenance and repair of structures (see 12:2 and 12:3, 9:3:4 of the:2009 edition

and 9:4);

j) The provisions on material inspection and manufacturing inspection of structures are

deleted (see 9:3:2 and 9:3:3 of the:2009 edition);

kk) Changed the provisions of records and design and construction documents (see 12:4, 9:5 of the:2009 edition);

l) Basic requirements for structural design and assessment, design/assessment basis, determination of design/assessment conditions, limit state verification, work

Additional guidance on use, design values and partial coefficients, models and analyses (see A:5, A:6, A:7, A:8, A:9, A:10 and A:11):

This document is equivalent to ISO :19900:2019 "General Requirements for Offshore Structures for the Oil and Gas Industry":

Please note that some content of this document may be patented: The issuing agency of this document assumes no responsibility for identifying patents:

1 Scope

This document specifies general requirements and recommendations for the design and assessment of subsea (fixed) and floating (floating) offshore structures:

This document applies to all phases of the structural life cycle, including:

--- successive stages of construction (including fabrication, transport and installation);

--- In-service service stage, including design life and life extension period;

--- Disposal stage:

This document contains general requirements and recommendations for the design of new structures, structural integrity management and assessment of existing structures:

This document does not apply to subsea and riser systems or piping systems:

2 Normative references

The contents of the following documents constitute essential provisions of this document through normative references in the text: Among them, dated citations

documents, only the version corresponding to that date applies to this document; for undated references, the latest edition (including all amendments) applies to

this document:

ISO :19901-1 Particular requirements for marine structures in the oil and gas industry - Part 1: Marine meteorological design and operational requirements (Pe-

troleumandnaturalgasindustries-Specificrequirementsforoffshorestructures-Part 1:Metocean

designandoperatingconsiderations)