SLOVENSKI STANDARD
oSIST prEN ISO 19905-1:2022

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Industrija za predelavo nafte in zemeljskega plina - Ocenjevanje premičnih naftnih ploščadi na področju postavitve - 1. del: Dvižne ploščadi (ISO/DIS 19905-1:2022)

Petroleum and natural gas industries - Site-specific assessment of mobile offshore units - Part 1: Jack-ups (ISO/DIS 19905-1:2022)

Erdöl- und Erdgasindustrie – Beurteilung von mobilen Offshore-Einheiten bezüglich ihres Einsatzgebietes – Teil 1: Hubinseln (ISO/DIS 19905-1:2022)

Industries du pétrole et du gaz naturel - Évaluation spécifique au site d'unités mobiles en mer - Partie 1: Plates-formes auto-élévatrices (ISO/DIS 19905-1:2022)

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75.180.10	Oprema za raziskovanje, vrtanje in odkopavanje	Exploratory, drilling and extraction equipment

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Petroleum and natural gas industries — Site-specific assessment of mobile offshore units —

Part 1:
Jack-ups

Industries du pétrole et du gaz naturel — Évaluation spécifique au site d'unités mobiles en mer — Partie 1: Plates-formes auto-élévatrices

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Contents

Page

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*, Subcommittee SC 7, *Offshore structures*.

This third edition cancels and replaces the second edition (ISO 19905-1:2016), which has been technically revised.

The main changes compared to the previous edition are as follows:

— updates regarding operations in arctic areas in: Scope, 5.1.4, Figure 5.2-1, 6.7, 7.2, 7.6, 7.8, 10.8, Table 10.3-1and A.10.8, and added 8.8.9;

— need for Classification revised in Scope and expanded in 5.1.7;

— many Definitions updated to align with 19900 and other sources. Further definitions added (list??). ALS revised to include Abnormal;

— interaction with ISO 19905-4 explained in 5.1;

— exposure levels (5.5) revised to align with ISO 19900:2019;

— requirements and information on earthquake response analysis gathered in 10.7 and A.10.7 respectively and referenced from 8.6, 8.7, 8.8, A.8.6.3, A.8.7;

— 9.3, A.9.3.1.2, A.9.3.3.1 and A.9.4.1 expanded to include foundation capacities and stiffnesses based on strength parameters rather than applied preload. Annex E.4 added to address the former;

— clarifications of Step 2 foundation checks in 9.3.6;

— 9.4.6 on cyclic mobility expanded to address liquefaction and liquefaction-induced lateral flow and A.9.4.6 expanded accordingly;

— earthquake analysis requirements (10.7) revised; reference to 5.5.5 added and text moved from other clauses inserted;

— minor revision to alternative analysis methods (10.10, formerly 10.9);

— 13.2 minor clarifications;

— added definitions of symbols for undrained shear strength in A.4.6;

— added definitions of symbols for horizontal and moment capacity coefficients and cyclic degradation factors in A.4.9 A;

— clarified that the H_{max} to H_{srp} relationships in A.6.4.2.2 are defaults in the absence of site-specific data; the application of kinematics reduction in A.6.4.2.3 should no longer be by means of wave height reduction;

— most probable peak enhancement factor in A.6.4.2.7 now given as a range, with the most conservative to be used in the absence of site-specific information;

— default current profile in A.6.4.3 revised;

— alternative wind profiles now permitted in A.6.4.6.2;

— added references to ISO 19901-10 and ISO 19901-8 in A.6.5.1.1;

— added reference to liquefaction-induced lateral flows in Table A.6.5-1;

— the requirements for the geotechnical report in A.6.5.1.5.3 have been revised and expanded especially in respect of shear strength;

— penetration in clays in A.9.3.2.2 updated to address strain rate dependency and strain softening;

— squeezing of clay in A.9.3.2.6.2 revised;

— punch-through for sand overlying clay in A.9.3.2.6.4 on clarified and formula revised;

— major update to the ultimate vertical/horizontal/rotational capacity interaction function in A.9.3.3.2 for spudcans in sand and clay due to the addition of a caveat on the need to consider the effects of cyclic loading on foundation capacities;

— the effect of cyclic loading on the yield surface has been added in A.9.3.3.7; incorporates text that was in A.9.3.4.2.2;

— revised guidance on the selection of shear modulus for clay in A.9.3.4 following clarification from and discussion with NGI on the latest published knowledge;

— Step 2a foundation capacity and sliding checks in A.9.3.6.4 revised and the figures corrected;

— guidance on Cyclic mobility in A.9.4.6 significantly expanded, and this clause now also addresses liquefaction and liquefaction-induced lateral flow;

— guidance on structural and foundation modelling expanded in A.10.7.3.2 with particular reference to modelling for earthquake response analysis;

— guidance on ice added in A.10.8;

— guidance in A.12.2.3.2 on non-circular prismatic member classification and in A.12.2.3.3 on reinforced components clarified in respect of slender components;

— sketch in Table 12.3-1 b) corrected;

— clarifications in Table A.12.4-1 and correction to equation in Figure A.12.4-1;

— guidance on strength of tubular members in A.12.5 updated to align with ISO 19902:2020 (combined axial and bending loading in A.12.5.3 of cosine interaction form instead of previous form using linear interaction) and simplified combined axial, bending, beam shear and torsion checks have been added;

— clarified calculation for *e* in A.12.6.2.3 on axial compressive local strength check;

— clarified F_y in A.12.6.2.5.4 on Class 4 slender-section bending moment strength;

— beam shear area formulations updated for chord cross sections updated in A.12.6.3.4;

— Table B.2: revised partial resistance factor for horizontal foundation capacity for total stress (clay/undrained) and added partial resistance factors for vertical-horizontal foundation bearing capacity when considering material factored soil strength and for calculated foundation capacities.

— corrections to formulae in Figure C.2.4-1, "The drag-inertia method including DAF scaling factor";

— Figure E.1-1 corrected;

— Figure E.3-1 b) corrected;

— added E.4 on calculated foundation capacities approach;

— added E.5 providing an example of a simplified free-field liquefaction assessment calculation method;

— US Gulf of Mexico requirements (H.3) metocean data replaced by reference to hurricane data from API RP-2MET, 2019. General updates. Unmanned post-evacuation case expanded.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

ISO 19905-1 is one of the International Standards on offshore structures prepared by TC 67/SC 7 (i.e. ISO 19900, the ISO 19901 series, ISO 19902, ISO 19903, ISO 19904-1, the ISO 19905 series and ISO 19906).

NOTE These are sometimes referred to as the ISO 19900 series on offshore structures.

The International Standards on offshore structures prepared by TC 67/SC 7 address design requirements and assessments for all offshore structures used by the petroleum and natural gas industries worldwide. Through their application, the intention is to achieve reliability levels appropriate for manned and unmanned offshore structures, regardless of the type of structure and the nature or combination of the materials used.

The International Standards on offshore structures prepared by TC 67/SC 7 consists of the following documents:

— ISO 19900, *Petroleum and natural gas industries — General requirements for offshore structures*

— ISO 19901 (all parts), *Petroleum and natural gas industries — Specific requirements for offshore structures*

— ISO 19902, *Petroleum and natural gas industries — Fixed steel offshore structures*

— ISO 19903, *Petroleum and natural gas industries — Fixed concrete offshore structures*

— ISO 19904-1, *Petroleum and natural gas industries — Floating offshore structures — Part 1: Monohulls, semi-submersibles and spars*

— ISO 19905 (all parts), *Petroleum and natural gas industries — Site-specific assessment of mobile offshore units*

— ISO 19906, *Petroleum and natural gas industries — Arctic offshore structures*

It is important to recognize that structural integrity is an overall concept comprising models for describing actions, structural analyses, design or assessment rules, safety elements, workmanship, quality control procedures and national requirements, all of which are mutually dependent. The modification of one aspect of design or assessment in isolation can disturb the balance of reliability inherent in the overall concept or structural system. The implications involved in modifications, therefore, need to be considered in relation to the overall reliability of all offshore structural systems.

These documents applicable to the various types of offshore structure is intended to provide wide latitude in the choice of structural configurations, materials and techniques without hindering innovation. Sound engineering judgment is, therefore, necessary in the use of these documents.

This part of ISO 19905, which has been developed from the Society of Naval Architects and Marine Engineers (SNAME) Technical & Research Bulletin 5-5A (2002), states the general principles and basic requirements for the site-specific assessment of mobile jack-ups; it is intended to be used for assessment and not for design.