



SLOVENSKI STANDARD
oSIST prEN ISO 19905-1:2022
01-april-2022

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-élevatrices (ISO/DIS 19905-1:2022)

Ta slovenski standard je istoveten z: prEN ISO 19905-1

<https://standards.itec.ai/catalog/standards/sist/25ca0f08-fa23-498f-85a4-1806f97b8ec4/osist-pren-iso-19905-1-2022>

ICS:

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

oSIST prEN ISO 19905-1:2022

en,fr,de

**iTeh STANDARD
PREVIEW
(standards.iteh.ai)**

oSIST prEN ISO 19905-1:2022

<https://standards.iteh.ai/catalog/standards/sist/25ca0f08-fa23-498f-85a4-1806f97b8ec4/osist-pren-iso-19905-1-2022>

DRAFT INTERNATIONAL STANDARD

ISO/DIS 19905-1

ISO/TC 67/SC 7

Secretariat: BSI

Voting begins on:
2022-02-11

Voting terminates on:
2022-05-06

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-élevatrices*

ICS: 75.180.10

**iTeh STANDARD
PREVIEW
(standards.iteh.ai)**

[oSIST prEN ISO 19905-1:2022
https://standards.iteh.ai/catalog/standards/sist/25ca0f08-fa23-498f-85a4-1806f97b8ec4/osist-pren-iso-19905-1-2022](https://standards.iteh.ai/catalog/standards/sist/25ca0f08-fa23-498f-85a4-1806f97b8ec4/osist-pren-iso-19905-1-2022)

This document is circulated as received from the committee secretariat.

ISO/CEN PARALLEL PROCESSING

THIS DOCUMENT IS A DRAFT CIRCULATED FOR COMMENT AND APPROVAL. IT IS THEREFORE SUBJECT TO CHANGE AND MAY NOT BE REFERRED TO AS AN INTERNATIONAL STANDARD UNTIL PUBLISHED AS SUCH.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.

RECIPIENTS OF THIS DRAFT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION.



Reference number
ISO/DIS 19905-1:2022(E)

© ISO 2022

**iTeh STANDARD
PREVIEW
(standards.iteh.ai)**

[oSIST prEN ISO 19905-1:2022](https://standards.iteh.ai/catalog/standards/sist/25ca0f08-fa23-498f-85a4-1806f97b8ec4/osist-pren-iso-19905-1-2022)
<https://standards.iteh.ai/catalog/standards/sist/25ca0f08-fa23-498f-85a4-1806f97b8ec4/osist-pren-iso-19905-1-2022>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2022

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents	Page
Foreword.....	x
Introduction.....	xiii
1 Scope	1
2 Normative references	2
3 Terms and definitions	2
4 Symbols and abbreviated terms	16
4.1 Symbols	16
4.2 Abbreviated terms	18
5 Overall considerations	19
5.1 General	19
5.1.1 Interaction with ISO 19905-4	19
5.1.2 Competency	20
5.1.3 Planning	20
5.1.4 Assessment situations and associated criteria	20
5.1.5 Reporting	20
5.1.6 Regulations	20
5.1.7 Classification of unit	20
5.2 Assessment approach	21
5.3 Selection of assessment situations	23
5.4 Determination of assessment situations	24
5.4.1 General	24
5.4.2 Reaction point and foundation fixity	24
5.4.3 Extreme storm event approach angle	24
5.4.4 Weights and centre of gravity	24
5.4.5 Hull elevation	25
5.4.6 Leg length reserve	25
5.4.7 Adjacent structures	25
5.4.8 Other	25
5.5 Exposure levels	25
5.5.1 Determination of exposure level	25
5.5.2 Exposure level L1	25
5.5.3 Exposure level L2	26
5.5.4 Exposure level L3	26
5.5.5 Exposure level for earthquake	26
5.6 Analytical tools	26
6 Data to assemble for each site	27
6.1 Applicability	27
6.2 Jack-up data	27
6.3 Site and operational data	27
6.4 Metocean data	28
6.5 Geophysical and geotechnical data	29
6.6 Earthquake data	29
6.7 Ice data	29

ISO/DIS 19905-1:2022(E)

7	Actions.....	29
7.1	Applicability.....	29
7.2	General.....	30
7.3	Metoccean actions.....	30
7.3.1	General.....	30
7.3.2	Hydrodynamic model.....	30
7.3.3	Wave and current actions.....	31
7.3.4	Wind actions.....	31
7.4	Functional actions.....	31
7.5	Displacement dependent effects.....	31
7.6	Dynamic effects.....	32
7.7	Earthquakes.....	32
7.8	Ice actions.....	32
7.9	Other actions.....	32
8	Structural modelling.....	32
8.1	Applicability.....	32
8.2	Overall considerations.....	32
8.2.1	General.....	32
8.2.2	Modelling philosophy.....	32
8.2.3	Levels of FE modelling.....	33
8.3	Modelling the leg.....	33
8.3.1	General.....	33
8.3.2	Detailed leg.....	33
8.3.3	Equivalent leg (stick model).....	33
8.3.4	Combination of detailed and equivalent leg.....	33
8.3.5	Stiffness adjustment.....	34
8.3.6	Leg inclination.....	34
8.4	Modelling the hull.....	34
8.4.1	General.....	34
8.4.2	Detailed hull model.....	34
8.4.3	Equivalent hull model.....	34
8.5	Modelling the leg-to-hull connection.....	34
8.5.1	General.....	34
8.5.2	Guide systems.....	34
8.5.3	Elevating system.....	34
8.5.4	Fixation system.....	35
8.5.5	Shock pad — floating jacking systems.....	35
8.5.6	Jackcase and associated bracing.....	35
8.6	Modelling the spudcan and foundation.....	35
8.6.1	Spudcan structure.....	35
8.6.2	Seabed reaction point.....	35
8.6.3	Foundation modelling.....	35
8.7	Mass modelling.....	36
8.8	Application of actions.....	36
8.8.1	Assessment actions.....	36
8.8.2	Functional actions due to fixed load and variable load.....	38
8.8.3	Hull sagging.....	38
8.8.4	Metoccean actions.....	39
8.8.5	Inertial actions.....	39
8.8.6	Large displacement effects.....	39
8.8.7	Conductor actions.....	39
8.8.8	Earthquake actions.....	39

8.8.9	Ice actions	39
9	Foundations	39
9.1	Applicability.....	39
9.2	General.....	40
9.3	Geotechnical analysis of independent leg foundations.....	40
9.3.1	Foundation modelling and assessment.....	40
9.3.2	Leg penetration during preloading	41
9.3.3	Yield interaction	41
9.3.4	Foundation stiffnesses	42
9.3.5	Vertical-horizontal foundation capacity envelopes	42
9.3.6	Acceptance checks	43
9.4	Other considerations	44
9.4.1	Skirted spudcans.....	44
9.4.2	Hard sloping strata.....	45
9.4.3	Footprint considerations	45
9.4.4	Leaning instability	45
9.4.5	Leg extraction difficulties	45
9.4.6	Cyclic mobility, liquefaction and liquefaction-induced lateral flow.....	45
9.4.7	Scour	46
9.4.8	Spudcan interaction with adjacent infrastructure	46
9.4.9	Geohazards.....	46
9.4.10	Carbonate material.....	46
10	Structural response.....	46
10.1	Applicability.....	46
10.2	General considerations.....	47
10.3	Types of analyses and associated methods	47
10.4	Common parameters	48
10.4.1	General.....	48
10.4.2	Natural periods and affecting factors.....	48
10.4.3	Damping	49
10.4.4	Foundations	49
10.4.5	Storm excitation	50
10.5	Storm analysis.....	50
10.5.1	General.....	50
10.5.2	Two-stage deterministic storm analysis	50
10.5.3	Stochastic storm analysis.....	52
10.5.4	Initial leg inclination.....	52
10.5.5	Limit state checks.....	52
10.6	Fatigue analysis	53
10.7	Earthquake analysis.....	53
10.8	Ice.....	54
10.8.1	General.....	54
10.8.2	ULS.....	54
10.8.3	ALS.....	55
10.8.4	Assessments in the area types.....	55
10.8.5	Additional factors to be considered for arctic and cold regions	55
10.9	Accidental situations	55
10.10	Alternative analysis methods	55
10.10.1	Ultimate strength analysis.....	55
10.10.2	Methodology	56
11	Long-term applications.....	56

ISO/DIS 19905-1:2022(E)

11.1	Applicability.....	56
11.2	Assessment data	56
11.3	Special requirements.....	57
11.3.1	Fatigue assessment.....	57
11.3.2	Weight control.....	57
11.3.3	Corrosion protection	57
11.3.4	Marine growth.....	57
11.3.5	Foundations	57
11.4	Survey requirements	57
12	Structural strength	58
12.1	Applicability.....	58
12.1.1	General.....	58
12.1.2	Truss type legs	58
12.1.3	Other leg types	58
12.1.4	Fixation system and/or elevating system	59
12.1.5	Spudcan strength including connection to the leg.....	59
12.1.6	Overview of the assessment procedure.....	59
12.2	Classification of member cross-sections	59
12.2.1	Member types.....	59
12.2.2	Material yield strength.....	59
12.2.3	Classification definitions.....	59
12.3	Section properties of non-circular prismatic members.....	60
12.3.1	General.....	60
12.3.2	Plastic and compact sections	60
12.3.3	Semi-compact sections.....	60
12.3.4	Slender sections.....	61
12.3.5	Cross-section properties for the assessment.....	61
12.4	Effects of axial force on bending moment.....	61
12.5	Strength of tubular members.....	61
12.6	Strength of non-circular prismatic members.....	61
12.7	Assessment of joints.....	62
13	Acceptance criteria.....	62
13.1	Applicability.....	62
13.1.1	General.....	62
13.1.2	Ultimate limit states.....	62
13.1.3	Serviceability and accidental limit states.....	63
13.1.4	Fatigue limit states	63
13.2	General formulation of the assessment check.....	63
13.3	Leg strength assessment.....	64
13.4	Spudcan strength assessment	64
13.5	Holding system strength assessment.....	64
13.6	Hull elevation assessment	64
13.7	Leg length reserve assessment.....	65
13.8	Overturning stability assessment	65
13.9	Foundation integrity assessment.....	66
13.9.1	Foundation capacity check	66
13.9.2	Displacement check	67
13.10	Interaction with adjacent infrastructure	67
13.11	Temperatures.....	67
Annex A (informative)	Additional information and guidance.....	68
A.1	Scope.....	68

A.2	Normative references.....	68
A.3	Terms and definitions	68
A.4	Symbols.....	68
A.4.1	Symbols used in A.1.....	68
A.4.2	Symbols used in A.2.....	68
A.4.3	Symbols used in A.3.....	68
A.4.4	Symbols used in A.4.....	68
A.4.5	Symbols used in A.5.....	68
A.4.6	Symbols used in A.6.....	68
A.4.7	Symbols used in A.7.....	70
A.4.8	Symbols used in A.8.....	72
A.4.9	Symbols used in A.9.....	72
A.4.10	Symbols used in A.10	76
A.4.11	Symbols used in A.11	77
A.4.12	Symbols used in A.12	77
A.5	Overall considerations.....	81
A.6	Data assembled for each site	81
A.6.1	Scope.....	81
A.6.2	Jack-up data.....	81
A.6.3	Site data	81
A.6.4	Metocean data	81
A.6.5	Geophysical and geotechnical data.....	91
A.6.6	Earthquake data	95
A.6.7	Ice data.....	95
A.7	Actions.....	95
A.7.1	Applicability.....	95
A.7.2	General.....	95
A.7.3	Metocean actions.....	95
A.7.4	Functional actions.....	115
A.7.5	Displacement dependent actions.....	116
A.7.6	Dynamic effects.....	116
A.7.7	Earthquakes.....	116
A.7.8	Ice actions	116
A.7.9	Other actions.....	116
A.8	Structural modelling.....	117
A.8.1	Applicability.....	117
A.8.2	Overall considerations.....	117
A.8.3	Modelling the leg.....	120
A.8.4	Modelling the hull.....	124
A.8.5	Modelling the leg-to-hull connection.....	124
A.8.6	Modelling the spudcan and foundation	134
A.8.7	Mass modelling.....	135
A.8.8	Application of actions.....	135
A.9	Foundations	140
A.9.1	Applicability.....	140
A.9.2	General.....	140
A.9.3	Geotechnical analysis of independent leg foundations.....	140
A.9.4	Other considerations	197
A.10	Structural response.....	206
A.10.1	Applicability.....	206
A.10.2	General considerations.....	206
A.10.3	Types of analyses and associated methods	206

ISO/DIS 19905-1:2022(E)

A.10.4	Common parameters	207
A.10.5	Storm analysis	218
A.10.6	Fatigue analysis	232
A.10.7	Earthquake analysis	232
A.10.8	Ice	235
A.10.9	Accidental situations	238
A.10.10	Alternative analysis methods	239
A.11	Long-term applications	239
A.11.1	Applicability	239
A.11.2	Assessment data	239
A.11.3	Special requirements	240
A.11.4	Survey requirements	244
A.12	Structural strength	245
A.12.1	Applicability	245
A.12.2	Classification of member cross-sections	246
A.12.3	Section properties of non-circular prismatic members	254
A.12.4	Effects of axial force on bending moment	260
A.12.5	Strength of tubular members	264
A.12.6	Strength of non-circular prismatic members	271
A.12.7	Assessment of joints	288
A.13	Acceptance checks	289
Annex B (normative)	Summary of partial action and partial resistance factors	290
Annex C (informative)	Additional information on structural modelling and response analysis	292
C.1	Guidance on 8.5 — Modelling the leg-to-hull connections	292
C.2	Guidance on A.10.5.3.4 — Methods for determining the MPME	293
C.2.1	Guidance on the first method of Table A.10.5-1 — Fitting Weibull distributions to the results of a number of time domain simulations to determine responses at the required probability level and average the results	293
C.2.2	Guidance on the second method of Table A.10.5-1: Fitting Gumbel distribution to histogram of absolute maximum responses from a number of time domain simulations to determine responses at required probability level	295
C.2.3	Guidance on the third method of Table A.10.5-1 — Application of Winterstein's Hermite polynomial method to the results of time domain simulation(s)	297
C.2.4	Guidance on the fourth method of Table A.10.5-1: Application of drag-inertia method to determine the base shear and overturning moment DAF from time domain simulation	299
Annex D (informative)	Foundations — Recommendations for the acquisition of site-specific geotechnical data	302
Annex E (informative)	Foundations — Additional information and alternative approaches	309
E.1	Guidance on A.9.3.2.2: Penetration in clays — Bearing capacity factors of Houslyby and Martin	309
E.2	Guidance on A.9.3.2.4 — Penetration in silica sands	316
E.3	Guidance on A.9.3.2.6.4 — Punch-through — Sand overlying clay — Further details on alternate methods	318
E.4	Calculated foundation capacities approach	322
E.4.1	General	322
E.4.2	Background	322
E.4.3	Suitable spudcan geometries	323
E.4.4	Criterion for use of calculated foundation capacities	325
E.4.5	Soil strength parameters	327

E.4.6	Calculated foundation yield surface and fixity.....	327
E.4.7	Bearing capacity check.....	328
E.4.8	Sliding capacity check.....	328
E.4.9	Spudcan-to-leg connection and spudcan structural integrity checks.....	329
E.4.10	Precautions and considerations when adopting calculated foundation capacities	329
E.5	Example of simplified free-field liquefaction assessment calculation method.....	331
E.5.1	General.....	331
E.5.2	Calculation of CRR based on shear wave velocity.....	332
E.5.3	Calculation of the CRR based on CPT data.....	332
E.5.4	CSR calculation.....	333
E.5.5	Ratio of CRR and CSR.....	334
Annex F (informative)	Informative annex on Clause A.12 — Structural strength	335
F.1	Guidance on A.12.6.2.4 — Axial compressive column buckling strength.....	335
F.2	Guidance on A.12.6.3.2 — Interaction formula approach — Determination of η	336
F.3	Guidance on A.12.6.3.3 — Interaction surface approach	337
Annex G (informative)	Contents list for typical site-specific assessment report	cccxix
Annex H (informative)	Regional information.....	ccclvi
H.1	General.....	ccclvi
H.2	Norway.....	ccclvi
H.2.1	Description of region.....	ccclvi
H.2.2	Regulatory framework.....	ccclvi
H.2.3	Technical requirements	ccclvi
H.2.4	Technical commentary.....	ccclviii
H.2.5	Additional national requirements.....	ccclviii
H.3	US Gulf of Mexico.....	ccclviii
H.3.1	Description of region	ccclviii
H.3.2	Regulatory framework.....	ccclx
H.3.3	Metocean conditions.....	ccclx
Bibliography	ccclxiv

ISO/DIS 19905-1:2022(E)

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).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 10.3-1 and 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;

ISO/DIS 19905-1:2022(E)

- 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.