Irish Standard
I.S. EN ISO 19905-1:2012

Petroleum and natural gas industries - Site-specific assessment of mobile offshore units - Part 1: Jack-ups (ISO 19905-1:2012)

I.S. EN ISO 19905-1:2012

Incorporating amendments/corrigenda/National Annexes issued since publication:

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SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

This document replaces:

This document is based on:
EN ISO 19905-1:2012

Published:
15 August, 2012

This document was published
under the authority of the NSAI
and comes into effect on:
15 August, 2012

ICS number:
75.180.10

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I.S. EN ISO 19905-1:2012

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 19905-1

August 2012

ICS 75.180.10

English Version

Petroleum and natural gas industries - Site-specific assessment of mobile offshore units - Part 1: Jack-ups (ISO 19905-1:2012)

Industries du pétrole et du gaz naturel - Évaluation spécifique au site d'unités mobiles en mer - Partie 1: Plates-formes auto-élévatrices (ISO 19905-1:2012)

Erdöl- und Erdgasindustrie - Beurteilung von mobilen Offshore Einheiten bezüglich ihres Einsatzgebietes - Teil 1: Hubinseln (ISO 19905-1:2012)

This European Standard was approved by CEN on 16 June 2012.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN ISO 19905-1:2012: E

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Foreword

This document (EN ISO 19905-1:2012) has been prepared by Technical Committee ISO/TC 67 "Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries" in collaboration with Technical Committee CEN/TC 12 “Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries” the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2013, and conflicting national standards shall be withdrawn at the latest by February 2013.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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Endorsement notice

The text of ISO 19905-1:2012 has been approved by CEN as a EN ISO 19905-1:2012 without any modification.

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I.S. EN ISO 19905-1:2012

INTERNATIONAL STANDARD

ISO 19905-1

First edition
2012-08-01

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

Reference number
ISO 19905-1:2012(E)

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Published in Switzerland

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 19905-1 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*.

ISO 19905 consists of the following parts, under the general title *Petroleum and natural gas industries — Site-specific assessment of mobile offshore units*:

— *Part 1: Jack-ups*

— *Part 2: Jack-ups commentary and detailed sample calculation* [Technical Report]

The following part is under preparation:

— Part 3, dealing with the site-specific assessment of mobile floating units.

ISO 19905 is one of a series of International Standards for offshore structures. The full series consists of the following International Standards:

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

— ISO 19901-1, *Petroleum and natural gas industries — Specific requirements for offshore structures — Part 1: Metocean design and operating considerations*

— ISO 19901-2, *Petroleum and natural gas industries — Specific requirements for offshore structures — Part 2: Seismic design procedures and criteria*

— ISO 19901-3, *Petroleum and natural gas industries — Specific requirements for offshore structures — Part 3: Topsides structure*

— ISO 19901-4, *Petroleum and natural gas industries — Specific requirements for offshore structures — Part 4: Geotechnical and foundation design considerations*

— ISO 19901-5, *Petroleum and natural gas industries — Specific requirements for offshore structures — Part 5: Weight control during engineering and construction*

— ISO 19901-6, *Petroleum and natural gas industries — Specific requirements for offshore structures — Part 6: Marine operations*

— ISO 19901-7, *Petroleum and natural gas industries — Specific requirements for offshore structures — Part 7: Stationkeeping systems for floating offshore structures and mobile offshore units*

— ISO 19901-8[1)], *Petroleum and natural gas industries — Specific requirements for offshore structures — Part 8: Marine soils investigations*

— 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 19905-1, *Petroleum and natural gas industries — Site-specific assessment of mobile offshore units — Part 1: Jack-ups*

— ISO/TR 19905-2, *Petroleum and natural gas industries — Site-specific assessment of mobile offshore units — Part 2: Jack-ups commentary and detailed sample calculation*

— ISO 19905-3[2)], *Petroleum and natural gas industries — Site-specific assessment of mobile offshore units — Part 3: Floating units*

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

1) Under preparation. It is also expected that there will be further parts of ISO 19901.

2) Under preparation.

Introduction

The series of International Standards applicable to types of offshore structure, ISO 19900 to ISO 19906, addresses 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, whatever the type of structure and the nature or combination of the materials used.

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 offshore structural systems.

The series of International Standards applicable to the various types of offshore structure is intended to provide a wide latitude in the choice of structural configurations, materials and techniques, without hindering innovation. Sound engineering judgement is therefore necessary in the use of these International Standards.

This part of ISO 19905, which has been developed from SNAME Technical & Research Bulletin 5-5A[7], 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.

NOTE For the exposure level 1(L1) assessment and, where appropriate, the exposure level 2 (L2) assessment prior to evacuation being effected, this part of ISO 19905 requires the use of 50 year independent or 100 year joint probability metocean extremes, together with associated partial action factors. It is based on extensive benchmarking and best practice in the international community.

Site-specific assessment is normally carried out when an existing jack-up unit is to be installed at a specific site. The assessment is not intended to provide a full evaluation of the jack-up; it assumes that aspects not addressed herein have been addressed using other practices and standards at the design stage. In some instances, the original design of all or part of the structure could be in accordance with other standards in the ISO 19900 series, and in some cases, different practices or standards could have been applied.

The purpose of the site assessment is to demonstrate the adequacy of the jack-up and its foundations for the assessment situations and defined limit states, taking into account the consequences of failure. It is important that the results of a site-specific assessment be appropriately recorded and communicated to those persons required to know or act on the conclusions and recommendations. Alternative approaches to the site-specific assessment can be used, provided that they have been shown to give a level of structural reliability equivalent, or superior, to that implicit in this part of ISO 19905.

Annex A provides background to and guidance on the use of this part of ISO 19905. The clause numbering in Annex A is the same as in the normative text in order to facilitate cross-referencing. ISO/TR 19905-2 provides additional background to some clauses and a detailed sample 'go-by' calculation.

Annex B summarizes the partial factors. Supplementary information is presented in Annexes C to H.

To meet certain needs of industry for linking software to specific elements in this part of ISO 19905, a special numbering system has been permitted for figures, tables, equations and bibliographic references.

In International Standards, the following verbal forms are used:

— “shall” and “shall not” are used to indicate requirements strictly to be followed in order to conform to the document and from which no deviation is permitted;

— “should” and “should not” are used to indicate that, among several possibilities, one is recommended as particularly suitable, without mentioning or excluding others, or that a certain course of action is preferred but not necessarily required, or that (in the negative form) a certain possibility or course of action is deprecated but not prohibited;

— “may” is used to indicate a course of action permissible within the limits of the document;

— “can” and “cannot” are used for statements of possibility and capability, whether material, physical or causal.

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

Part 1: Jack-ups

1 Scope

This part of ISO 19905 specifies requirements and guidance for the site-specific assessment of independent leg jack-up units for use in the petroleum and natural gas industries. It addresses

a) manned non-evacuated, manned evacuated and unmanned jack-ups;

b) the installed phase at a specific site.

To ensure acceptable reliability, the provisions of this part of ISO 19905 form an integrated approach, which is used in its entirety for the site-specific assessment of a jack-up.

This part of ISO 19905 does not apply specifically to mobile offshore drilling units operating in regions subject to sea ice and icebergs. When assessing a jack-up operating in such areas, it is intended that the assessor supplement the provisions of this part of ISO 19905 with the provisions relating to ice actions and procedures for ice management contained in ISO 19906.

This part of ISO 19905 does not address design, transportation to and from site, or installation and removal from site. However, it is advisable that the assumptions used in the assessment be checked against the as-installed configuration.

To ensure that the design of the jack-up is sound and the structure is adequately maintained, this part of ISO 19905 is applicable only to independent leg jack-ups that either

— hold a valid classification society certification from a recognized classification society (RCS) throughout the duration of the operation at the specific site subject to assessment; or

— have been verified by an independent competent body to be structurally fit for purpose for elevated situations and are subject to periodic inspection, both to the standards of an RCS.

NOTE 1 An RCS is an International Association of Classification Societies (IACS) member body, meeting the RCS definition given in 3.52.

Jack-ups that do not comply with this requirement are assessed according to the provisions of ISO 19902, supplemented by methodologies from this part of ISO 19905, where applicable.

NOTE 2 Future revisions of this part of ISO 19905 can be expanded to cover mat-supported jack-ups.

NOTE 3 Well conductors are a safety-critical element for jack-up operations. However, the integrity of well conductors is not part of the site-specific assessment process for jack-ups and is, therefore, not addressed in this part of ISO 19905. Annex A provides references to other publications addressing this topic.

NOTE 4 RCS rules and the IMO MODU code provide guidance for the design of jack-ups.