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

**Part 3:
Floating unit**

iTeh STANDARD PREVIEW
*Industries du pétrole et du gaz naturel — Évaluation spécifique au
site d'unités mobiles en mer —
(standards.iteh.ai)
Partie 3: Unité flottante*

ISO 19905-3:2017

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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.

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 on 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 the following URL: 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*.

A list of all parts in the ISO 19905 series can be found on the ISO website.

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 the 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 document states the general principles and basic requirements for the site-specific assessment of mobile floating units. The technical information used in the assessment primarily resides in documents referenced herein. This document is intended to be used for assessment and not for design.

Site-specific assessment is normally carried out when an existing mobile floating unit is to be installed at a specific site. The assessment is not intended to provide a full evaluation of the unit; it is assumed that aspects not addressed herein have been addressed at the design stage using other practices and standards.

The purpose of the site-specific assessment is to demonstrate the adequacy of the mobile floating unit, its stationkeeping system and any connected systems for the applicable assessment situations and defined limit states, taking into account the consequences of failure. The results of a site-specific assessment should 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 reliability equivalent, or superior, to that implicit in this document.

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 3: Floating unit

1 Scope

This document specifies requirements and gives guidance for the site-specific assessment of mobile floating units for use in the petroleum and natural gas industries. It addresses the installed phase, at a specific site, of manned non-evacuated, manned evacuated and unmanned mobile floating units.

This document addresses mobile floating units that are monohull (e.g. ship-shaped vessels or barges); column-stabilized, commonly referred to as semi-submersibles; or other hull forms (e.g. cylindrical/conical shaped). It is not applicable to tension leg platforms. Stationkeeping can be provided by a mooring system, a thruster assisted mooring system, or dynamic positioning. The function of the unit can be broad, including drilling, floatel, tender assist, etc. In situations where hydrocarbons are being produced, there can be additional requirements.

The requirements of this document apply to the hull and stationkeeping system for all types of mobile units. The activity specific operating guideline document requirements can be modified to be appropriate to the situation being assessed.

This document does not address all site considerations, and certain specific locations can require additional assessments. <https://standards.iteh.ai/catalog/standards/sist/4fd88268-cb76-44d2-ae52-8f31571896b4/iso-19905-3-2017>

This document is applicable only to mobile floating units that are structurally sound and adequately maintained, which is normally demonstrated through holding a valid RCS classification certificate.

This document does not address design, transportation to and from site, or installation and removal from site.

This document sets out the requirements for site-specific assessments, but generally relies on other documents to supply the details of how the assessments are to be undertaken. In general:

- ISO 19901-7 is referenced for the assessment of the stationkeeping system;
- ISO 19904-1 is referenced to determine the metocean actions on the unit;
- ISO 19906 is referenced for arctic and cold regions;
- the hull structure and airgap are assessed by use of a comparison between the site-specific metocean conditions and its design conditions, as set out in the RCS approved operations manual;
- ISO 13624-1 and ISO/TR 13624-2^[1] are referenced for the assessment of the marine drilling riser of mobile floating drilling units. Equivalent alternative methodologies can be used;
- IMCA M 220^[5] is referenced for developing an activity specific operating guidelines. Agreed alternative methodologies can be used.

NOTE 1 The scope of ISO 19904-1 specifically states that its requirements do not apply to mobile units, but the methodologies given for assessing metocean actions can be used.

NOTE 2 RCS rules and the IMO MODU code^[4] provide guidance for design and general operation of mobile floating units.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 13624-1:2009, *Petroleum and natural gas industries — Drilling and production equipment — Part 1: Design and operation of marine drilling riser equipment*

ISO 19900:2013, *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 19901-7:2013, *Petroleum and natural gas industries — Specific requirements for offshore structures — Part 7: Stationkeeping systems for floating offshore structures and mobile offshore units*

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

ISO 19906:—¹⁾, *Petroleum and natural gas industries — Arctic offshore structures*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 19900, ISO 19901-1, ISO 19901-7, ISO 19904-1 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <http://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1 activity specific operating guidelines ASOG

document that sets out the activity specific actions to be taken at specific *alert level thresholds* (3.3)

Note 1 to entry: The ASOG for drilling operations is often called the well specific operating guideline document.

Note 2 to entry: An example ASOG for DP and moored units is given in [Annex A](#).

3.2 alert level

condition when certain parameters are below the lower limit, or between limits, or above the upper limit

Note 1 to entry: Alert levels are often colour-coded. The colour-coding will often be green for normal, blue for advisory, yellow alert, or red alert. Parameters affecting the change of colour-coded alert levels can be, for example, limiting metocean conditions are reached, loss of equipment function, reduced power levels, offset limits are reached [*watch circles* (3.17)], vessel motions, etc. Actions that need to be taken can include, for example, discontinue drilling, disconnect riser, suspend lifts, etc.

3.3 alert level threshold

boundary between *alert levels* (3.2) which is crossed when certain parameters reach or exceed specific limits and that triggers actions

1) To be published. Stage at time of publication ISO/DIS 19906:2017.

3.4**assessment****site-specific assessment**

evaluation of a mobile floating unit and activity specific equipment to determine compliance with the requirements of this document

[SOURCE: ISO 19905-1:2016, 3.4, modified — the definition has been revised.]

3.5**assessment situation**

mobile floating unit configuration together with the metocean and ice actions to be assessed

[SOURCE: ISO 19905-1:2016, 3.5, modified — the definition has been revised.]

3.6**assessor**

entity performing the site-specific assessment

[SOURCE: ISO 19905-1:2016, 3.6]

3.7**drift-off**

unintended move of a dynamically positioned or thruster-assisted vessel off its intended location [*watch circle* (3.17)] relative to its set point, generally caused by loss of stationkeeping control or propulsion

[SOURCE: ISO 13624-1:2009, 3.1.25, modified — the definition has been revised.]

3.8**drive-off**

unintended move of a dynamically positioned or thruster-assisted vessel off its intended location [*watch circle* (3.17)] relative to its set point, driven by the vessel's main propulsion or stationkeeping thrusters

[SOURCE: ISO 13624-1:2009, 3.1.27, modified — the definition has been revised.]

3.9**extreme storm event**

extreme combination of wind, wave and current conditions to which the structure can be subjected during its deployment

Note 1 to entry: This is the metocean event used for ULS storm assessment and varies depending on what is being assessed. For example, the metocean event for the ULS assessment of the mooring system can be different from that used in the ULS assessment of the hull strength or airgap.

[SOURCE: ISO 19905-1:2016, 3.17, modified — Note 1 to entry has been revised.]

3.10**operating manual****marine operations manual**

manual that defines the operational characteristics and capabilities of the mobile floating unit

Note 1 to entry: The *assessor* (3.6) is advised to ensure that the operations manual referenced is the latest revision and that any updated weight data are provided.

[SOURCE: ISO 19905-1:2016, 3.45, modified — “jack-up” has been replaced by “mobile floating unit”.]

3.11**operator**

representative of the companies leasing the site

Note 1 to entry: The operator is normally the oil company acting on behalf of co-licensees.

[SOURCE: ISO 19905-1:2016, 3.46]

3.12

recognized classification society

RCS

member of the International Association of Classification Societies (IACS), with recognized and relevant competence and experience in mobile floating units, and with established rules and procedures for classification/certification of such units used in petroleum-related activities

[SOURCE: ISO 19901-7:2013, 3.23, modified — the definition has been revised.]

3.13

set point position

intended location of the *unit* (3.15)

3.14

sudden hurricane

hurricane that forms locally and, due to speed of formation and proximity to infrastructure at time of formation, might not allow sufficient time to evacuate manned facilities

Note 1 to entry: The population of storms used to derive the sudden hurricane at a given site can be defined in terms of the time horizon required to evacuate the site.

3.15

unit

platform

complete assembly, including hull structure, topsides, foundations and stationkeeping systems

[SOURCE: ISO 19900:2013, 3.35, modified — the definition has been revised.]

3.16

unit owner

representative of the companies owning or chartering the *unit* (3.15)

[SOURCE: ISO 19905-1:2016, 3.29, modified — “jack-up” has been replaced by “unit”.]

3.17

watch circles

concentric group of imaginary closed curves (e.g. circles) developed from the *alert levels* (3.2) that indicate when specific actions need to be taken

Note 1 to entry: Watch circles, which are often colour coded to indicate the actions that need to be taken, are normally described in the *activity specific operating guidelines* (3.1).

4 Abbreviated terms

ALS	accidental limit state
ASOG	activity specific operating guidelines
DP	dynamic positioning
FLS	fatigue limit state
FMEA	failure mode and effects analysis
IACS	International Association of Classification Societies
IMCA	International Marine Contractors Association
IMO	International Maritime Organization

MODU	mobile offshore drilling unit
MOU	mobile offshore unit
RAO	response amplitude operators
RCS	recognized classification society
SLS	serviceability limit state
ULS	ultimate limit state

5 Overall considerations

5.1 General

5.1.1 Competency

Assessments undertaken in accordance with this document shall only be performed by persons competent through education, training and experience in the relevant disciplines.

5.1.2 Planning

Adequate planning shall be undertaken before a site specific assessment is started. The planning shall include the determination of all assessment situations relevant for the site under consideration. The assessment criteria shall be in accordance with the general requirements for assessment of existing structures specified in ISO 19900, as far as relevant for mobile floating units.

5.1.3 Reporting <https://standards.iteh.ai/catalog/standards/sist/4fd88268-cb76-44d2-ac52-8f31571896b4/iso-19905-3-2017>

The assessor should prepare a report summarizing the inputs, assumptions and conclusions of the assessment. Previous site-specific assessments may be taken into consideration when preparing the report.

5.1.4 Regulations

Each country can have its own set of regulations concerning offshore operations. It is the responsibility of the operator and the owner of the mobile floating unit to comply with relevant rules and regulations, which can depend upon the site and type of activities to be conducted.

5.1.5 Classification of unit

This document is applicable only to mobile floating units that are structurally sound and adequately maintained. To achieve this, the unit shall either

- hold valid classification society certification from an RCS, as defined in [3.12](#), 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 afloat operations, and are subject to periodic inspection, both to the standards of an RCS.

Mobile floating units that do not comply with this requirement shall be assessed in accordance with the provisions of ISO 19904-1, supplemented by methodologies from this document, where applicable.

5.2 Assessment

The objective of the assessment is to show that the acceptance criteria are met. [Annex B](#) provides a diagrammatic example of the process to be used in the site-specific assessment of a mobile floating