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

Part 2: Jack-ups commentary and detailed sample calculation

Industries du pétrole et du gaz naturel — Évaluation liée au site des unités marines mobiles —

Partie 2: Compléments sur les 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.

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.

In exceptional circumstances, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide by a simple majority vote of its participating members to publish a Technical Report. A Technical Report is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.

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/TR 19905-2 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: Floating units*

ISO/TR 19905-2:2012 was prepared in 2012 and is referenced as ISO/TR 19905-2:2012. Users are advised, however, that it was published, and only became available, in 2013.

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 soil 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/TR 19905-3[1)], *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.

Introduction

The series of International Standards applicable to types of offshore structures, 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.

ISO 19905-1 was developed from SNAME T&R Bulletin 5-5A[5], but has been considerably altered from that original document. Some of the alterations have involved a restructuring and modification of terminology, but there have been additional changes of greater technical consequence. New material has been added based on studies undertaken since the original development of SNAME T&R 5-5A; new calculation techniques have been addressed because of improved computational capabilities allowing more complex assessments; gaps that existed in the original SNAME T&R 5-5A have been filled, thereby ensuring a more thorough assessment; and changes have been made to align ISO 19905-1 with other standards within the 19900 series. A description of the more important changes, along with the reasoning for the changes, can be found in a series of papers published in 2012 by Offshore Technology Conference. These papers can be of considerable value in helping the analyst, particularly those who are familiar with SNAME T&R 5-5A, in understanding ISO 19905-1. The papers, part of the Technical Session *ISO 19905-1: A Site-Specific Assessment of Mobile Jack-Up Units* are listed in the Bibliography:

— Reference [6], *Background to the ISO 19905-Series and an Overview of the New ISO 19905-1 for the Site-Specific Assessment of Mobile Jack-Up Units*

— Reference [7], *Environmental Actions in the New ISO for the Site-Specific Assessment of Mobile Jack-Up Units*

— Reference [8], *Structural Modeling and Response Analysis in the New ISO Standard for the Site-Specific Assessment of Mobile Jack-Up Units*

— Reference [9], *Foundation Modeling and Assessment in the New ISO Standard 19905-1*

— Reference [10], *Long-Term Applications in the ISO Standard for Site Specific Assessment of Mobile Jack-Up Units and the Use of Skirted Spudcans*

— Reference [11], *Structural Acceptance Criteria in the New ISO for the Site-Specific Assessment of Mobile Jack-Up Units*

— Reference [12], *The Benchmarking of the New ISO for the Site-Specific Assessment of Mobile Jack-Up Units*

This part of ISO 19905, which has been developed from SNAME T&R Bulletin 5-5A, provides a commentary to some clauses of ISO 19905-1 including background information, supporting documentation, and additional or alternative calculation methods as applicable and also provides a detailed sample “go-by” calculation in Annex A. The reader is advised that the information presented herein is intended for use in conjunction with ISO 19905-1 and that the cautions and limitations discussed in ISO 19905-1 apply.