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Oil and gas industries including lower carbon energy — Offshore structures —

Part 8: Marine soil investigations

*Industries du pétrole et du gaz y compris les énergies à faible teneur
en carbone — Structures en mer —*

Partie 8: Investigations des sols en mer



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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).

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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, *Oil and gas industries including lower carbon energy*, Subcommittee SC 7, *Offshore structures*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 12, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 19901-8:2014), which has been technically revised.

The main changes are as follows:

- application classes for in situ testing tools are removed and replaced by an assessment of documented calibration results and uncertainty analyses;
- new procedures for calibration and verification of cone penetrometers are introduced with reference to the latest edition of ISO 22476-1.
- references to project specifications for technical details have been reduced where possible and roles and responsibilities have been further clarified.
- title and scope change adopted as per Technical Management Board Resolution 53/2022.

A list of all parts in the ISO 19901 series can be found on the ISO website.

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

The International Standards on offshore structures prepared by TC 67/SC 7 (ISO 19900, the ISO 19901 series, ISO 19902, ISO 19903, ISO 19904, ISO 19905 series and ISO 19906) constitute a common basis covering those aspects that address design requirements and assessments of 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 nature or combination of the materials used. Application specific requirements for different energy industries are referencing relevant overarching standards. For example, for the offshore wind industry the IEC standards IEC 61400-1 and IEC 61400-3-1 outline the normative design requirements (e.g. return periods) for offshore turbine support structures.

Structural integrity is a concept comprising models for describing actions, structural analyses, design rules, safety elements, workmanship, quality control procedures and national requirements, all of which are mutually dependent. The modification of one aspect of design in isolation can disturb the balance of reliability inherent in the overall concept of structural integrity (see ISO 19900). The implications involved in modifications, therefore, should be considered in relation to the overall reliability of all offshore structural systems.

A marine soil investigation is only one of many possible marine site investigations as illustrated in [Figure 1](#). The scope of a marine soil investigation, such as field programme, equipment to be used, laboratory testing programme, soil parameters to be established and reporting, is usually defined in project specifications based on important factors, such as type of structures involved, type of soil conditions expected, regional or site-specific investigation, preliminary or final soil investigations. The reporting can comprise anything from field data only to reporting of soil parameter values.

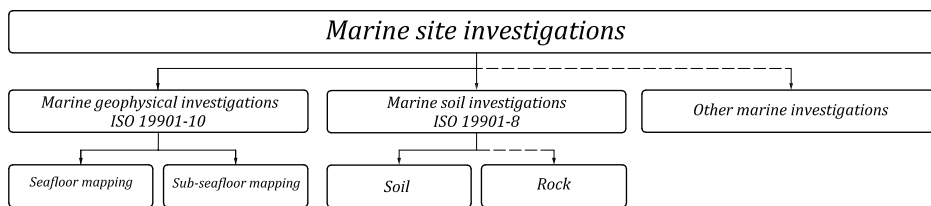


Figure 1 — Marine soil investigations shown as one of many types of marine site investigations.

Use of this document is based on the following assumptions:

- communication takes place between geophysical and geotechnical specialists for defining the scope of the marine soil investigation based on the results of a geophysical investigation (see ISO 19901-10);
- communication takes place between geotechnical personnel involved in marine soil investigations and the personnel responsible for foundation design, for construction and for installation of the offshore structures;
- soil data are collected, documented and interpreted by trained personnel;
- the project-specific scope of work for marine soil investigations is defined by one or more project specifications.

The detailed requirements for equipment and methods given in this document are only applicable if relevant for the scope of work defined in the project specifications.

This document is intended to provide flexibility in the choice of marine soil investigation techniques without hindering innovation.

In this document, the following verbal forms are used:

- “shall” indicates a requirement;

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- “should” indicates a recommendation;
- “can” indicates a possibility or a capability;
- “may” indicates a permission.

Information marked as “NOTE” is intended to assist the understanding or use of the document. “Notes to entry” used in [Clause 3](#) provide additional information that supplements the terminological data and can contain requirements relating to the use of a term.

[Annex A](#) gives additional information intended to assist the understanding or use of this document. The clause numbers in [Annex A](#) correspond to the normative main text to facilitate easy cross-referencing. [Annex B](#) covers conduct of laboratory tests as part of marine soil investigations.