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Oil and gas industries — Control and mitigation of fires and explosions on offshore production installations — Requirements and guidelines

Industries du pétrole et du gaz — Contrôle et atténuation des feux et des explosions dans les installations en mer — Exigences et lignes directrices

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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 document 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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This document was prepared by Technical Committee ISO/TC 67, *Oil and gas industries including lower carbon energy*, Subcommittee SC 6, *Process equipment, piping, systems, and related safety,* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 12, *Oil and gas industries including lower carbon energy,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 13702:2015), which has been technically revised.

The main changes are as follows:

— visualized the risk treatment process in a flow diagram in 5.8;

— improved description of the explosion blast description in Clause A.3;

— improved guidance with respect to risk mitigation in Clause B.1;

— introduction of ESD hierarchy and guidance related to principles to protect pressurised equipment against fire in Clause B.2;

— improved guidance on ignition source control in Clause B.3;

— included guidance for control of spills related to floating LNG in Clause B.4;

— expanded guidance related to gas detection in Clause B.6;

— included guidance related to ignition source control for firewater pump drivers and external power supplies in B.8.2;

— addressing personnel safety related to CO_2 or other asphyxiating gases in B.8.11;

— introduced guidance related to passive fire-retarding surface for helidecks in B.8.13;

— introduced guidance related to tests in B.13;

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— introduced the terms A-class and H-class for fire barriers in C.4.3.

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.

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Introduction

The successful development of the arrangements required to promote safety and environmental protection during the recovery of hydrocarbon resources requires a structured approach to the identification and management of health, safety, and environmental hazards applied during the design, construction, commissioning, operation, inspection, maintenance, and decommissioning of a facility.

This document has been prepared primarily to assist in the development of new installations through their lifecycle.

The content of this document is arranged as follows.

— Objectives: lists the goals to achieved by the control and mitigation measures being described.

— Functional requirements: represent criteria to meet the stated objectives. The functional requirements are performance-orientated measures and, as such, are applicable to the variety of offshore installations utilized for the development of hydrocarbon resources throughout the world.

— Annex A: describes typical fire and explosion hazardous events.

— Annex B: describes recognized practices that can be considered in conjunction with statutory requirements, industry standards, and individual operator philosophy to determine that the measures necessary are implemented for the control and mitigation of fires and explosions. The guidance is limited to principal elements and are intended to provide specific guidance which, due to the wide variety of offshore operating environments, cannot be applicable in some circumstances.

— Annex C: describes typical examples of design requirements for large integrated offshore installations.

This document is based on an approach where the selection of control and mitigation measures for fires and explosions primarily caused from loss of containment is determined by an evaluation of hazards on the offshore installation. The methodologies employed in this assessment and the resultant recommendations differ depending on the complexity of the production process and facilities, type of facility (i.e. open or enclosed), staffing levels, and environmental conditions associated with the area of operation.

NOTE Requirements, rules, and regulations can, in addition, be applicable for the individual offshore installation concerned.

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Oil and gas industries — Control and mitigation of fires and explosions on offshore production installations — Requirements and guidelines

1 Scope

This document specifies the objectives and functional requirements for the control and mitigation of fires and explosions on offshore installations used for the development of hydrocarbon resources in oil and gas industries. The object is to achieve:

— safety of personnel;

— protection of the environment;

— protection of assets;

— minimization of financial and consequential losses of fires and explosions.

This document is applicable to the following:

— fixed offshore structures;

— floating systems for production, storage, and offloading.

Mobile offshore units and subsea installations are excluded, although many of the principles contained in this document can be used as guidance.

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 31073, *Risk management — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 31073 and the following apply.

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

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
accommodation
place where personnel onboard sleep and spend their off-duty time

Note 1 to entry: It can include dining rooms, recreation rooms, lavatories, cabins, offices, sickbay, living quarters, galley, pantries, and similar permanently enclosed spaces.

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