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BSI Standards Publication

Guidance on performing risk assessment in the design of onshore LNG installations including the ship/shore interface

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National foreword

This Published Document is the UK implementation of ISO/TS 16901:2015.

The UK participation in its preparation was entrusted to Technical Committee PSE/17, Materials and equipment for petroleum, petrochemical and natural gas industries.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Guidance on performing risk assessment in the design of onshore LNG installations including the ship/shore interface

Guide pour l'évaluation des risques dans la conception d'installations terrestres pour le GNL en incluant l'interface terre/navire

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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.

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 meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information.

The committee responsible for this document is ISO/TC 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*.

TECHNICAL SPECIFICATION **ISO/TS 16901:2015(E)**

Guidance on performing risk assessment in the design of onshore LNG installations including the ship/shore interface

1 Scope

This Technical Specification provides a common approach and guidance to those undertaking assessment of the major safety hazards as part of the planning, design, and operation of LNG facilities onshore and at shoreline using risk-based methods and standards, to enable a safe design and operation of LNG facilities. The environmental risks associated with an LNG release are not addressed in this Technical Specification.

This Technical Specification is aimed to be applied both to export and import terminals, but can be applicable to other facilities such as satellite and peak shaving plants.

It applies to all facilities inside the perimeter of the terminal and all hazardous materials including LNG and associated products: LPG, pressurised natural gas, odorizers, and other flammable or hazardous products handled within the terminal.

The navigation risks and LNG tanker intrinsic operation risks are recognised, but they are not in the scope of this Technical Specification. Hazards arising from interfaces between port and facility and ship are addressed and requirements are normally given by port authorities. It is assumed that LNG carriers are designed according to the IGC code, and LNG fuelled vessels receiving bunker is designed according to IMO's regulations.

Border between port operation and LNG facility is where the ship/shore link (SSL) is established.

It is not intended to specify acceptable levels of risk; however, examples of tolerable levels of risk are referenced.

This Technical Specification is not intended to be used retrospectively.

It is recognised that national and/or local laws, regulations, and guidelines take precedence where they are in conflict with this Technical Specification.

Reference is made to ISO 31010 and ISO 17776 with regard to general risk assessment methods, while this Technical Specification focuses on the specific needs scenarios and practices within the LNG industry.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies

ISO/IEC Guide 73:2009, *Risk management — Vocabulary*

ISO 17776:2000, *Petroleum and natural gas industries — Offshore production installations — Guidelines on tools and techniques for hazard identification and risk assessment*.

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC Guide 73 and the following apply.