SLOVENSKI STANDARD
SIST-TP CEN ISO/TR 13624-2:2014

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Industrija za predelavo nafte in zemeljskega plina - Vrtalna in proizvodna oprema - 2. del: Metodologija, delovanje in celovita tehnična dokumentacija globokomorskega vrtanja (ISO/TR 13624-2:2009)

Petroleum and natural gas industries - Drilling and production equipment - Part 2: Deepwater drilling riser methodologies, operations, and integrity technical report (ISO/TR 13624-2:2009)

Erdöl- und Erdgasindustrie - Bohr- und Förderanlagen - Teil 2: Riser für die Tiefsee, Methodik, Betrieb und technische Dokumentation (ISO/TR 13624-2:2009)

Industries du pétrole et du gaz naturel - Équipement de forage et de production - Partie 2: Méthodologies, opérations et rapport technique d'intégrité relatifs aux tubes prolongateurs pour forages en eaux profondes (ISO/TR 13624-2:2009)

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75.180.10	Oprema za raziskovanje in odkopavanje	Exploratory and extraction equipment

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Foreword

The text of ISO/TR 13624-2:2009 has been prepared by Technical Committee ISO/TC 67 “Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries” of the International Organization for Standardization (ISO) and has been taken over as CEN ISO/TR 13624-2:2013 by Technical Committee CEN/TC 12 “Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries” the secretariat of which is held by AFNOR.

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The text of ISO/TR 13624-2:2009 has been approved by CEN as CEN ISO/TR 13624-2:2013 without any modification.

TECHNICAL REPORT

ISO/TR 13624-2

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Petroleum and natural gas industries — Drilling and production equipment —

Part 2: Deepwater drilling riser methodologies, operations, and integrity technical report

Industries du pétrole et du gaz naturel — Équipement de forage et de production —

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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.

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.

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ISO/TR 13624-2 was prepared by Technical Committee ISO/TC 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*, Subcommittee SC 4, *Drilling and production equipment*.

ISO/TR 13624 consists of the following parts, under the general title *Petroleum and natural gas industries — Drilling and production equipment*:

— *Part 1: Design and operation of marine drilling riser equipment*

— *Part 2: Deepwater drilling riser methodologies, operations, and integrity technical report*

Introduction

Since API RP 16Q was issued in 1993, hydrocarbon exploration in 1 200+ m (4 000+ ft) water depths has increased significantly. As a consequence, the need was identified to update that code of practice to address the issues particular to deepwater operations.

Under the auspices of the DeepStar programme, substantial work was commissioned during 1999 and 2000 by the DeepStar Drilling Committee 4502 and led to the development of *Deepwater Drilling Riser Methodologies, Operations, and Integrity Guidelines* in February 2001. Several contractors participated in these efforts. These guidelines were intended to supplement and update the existing API RP 16Q:1993 for deepwater application. In a subsequent joint industry project and in collaboration with DeepStar and the API, these guidelines were later supplemented with other identified revisions and technically edited by an API task group to produce the revision of API RP 16Q:1993 as ISO 13624-1 and the API Technical Report TR1.

This Technical Report is a supplement to the revised API RP 16Q and provides guidance on various analysis methodologies and operating practices.

NOTE The figures have been reproduced as provided by the Technical Committee and, in some cases, contain only USC units.

Petroleum and natural gas industries — Drilling and production equipment —

Part 2: Deepwater drilling riser methodologies, operations, and integrity technical report

1 Scope

This part of ISO 13624 pertains to mobile offshore drilling units that employ a subsea BOP stack deployed at the seafloor. It is intended that the drilling riser analysis methodologies discussed in this part of ISO 13624 be used and interpreted in the context of ISO 13624-1.

2 Normative references

The following referenced documents are indispensable for the application 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*

API RP 16Q:1993, *Design, Selection, Operation and Maintenance of Marine Drilling Riser Systems*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
accumulator
⟨BOP⟩ pressure vessel charged with gas (e.g. nitrogen) over liquid and used to store hydraulic fluid under pressure for operation of blowout preventers

3.2
accumulator
riser tensioner
pressure vessel charged with gas (e.g. nitrogen) over liquid that is pressurized on the gas side from the tensioner high-pressure gas supply bottles and supplies high-pressure hydraulic fluid to energize the riser tensioner cylinder

3.3
air-can buoyancy
tension applied to the riser string by the net buoyancy of an air chamber created by a closed-top, open-bottom cylinder forming an air-filled annulus around the outside of the riser pipe

3.4
annulus
space between two pipes, when one pipe is positioned inside the other

3.5
apparent weight
effective weight
submerged weight
riser weight in air minus buoyancy

NOTE Apparent weight is commonly referred to as weight in water, wet weight, submerged weight or effective weight.

3.6
auxiliary line
conduit (excluding choke-and-kill lines) attached to the outside of the riser main tube

EXAMPLE Hydraulic supply line, buoyancy-control line, mud-boost line.

3.7
ball joint
ball-and-socket assembly having a central through passage that has an internal diameter equal to or greater than that of the riser and that may be positioned in the riser string to reduce local bending stresses

3.8
blowout
uncontrolled flow of well fluids from the well bore

3.9
blowout preventer
BOP
device attached immediately above the casing, which can be closed to shut in the well

3.10
blowout preventer
〈annular type〉 remotely controlled device that can form a seal in the annular space around any object in the well bore or upon itself

NOTE Compression of a reinforced elastomer packing element by hydraulic pressure affects the seal.

3.11
BOP stack
assemblage of well-control equipment, including BOPs, spools, valves, hydraulic connectors and nipples, that connects to the subsea wellhead

NOTE Common usage of this term sometimes includes the lower marine riser package (LMRP).

3.12
box
female member of a riser coupling, C&K line stab assembly or auxiliary line stab assembly

3.13
buoyancy-control line
auxiliary line dedicated to controlling, charging or discharging air-can buoyancy chambers

3.14
buoyancy modules
devices added to riser joints to reduce their apparent weight, thereby reducing riser top tension requirements

3.15
choke-and-kill lines
C&K lines
kill line
external conduits arranged laterally along the riser pipe and used for circulation of fluids into and out of the well bore to control well pressure

3.16
control pod
assembly of subsea valves and regulators that, when activated from the surface, directs hydraulic fluid through special porting to operate BOP equipment

3.17
coupling
mechanical means of joining two sections of riser pipe in an end-to-end engagement

3.18
diverter
device attached to the wellhead or marine riser to close the vertical flow path and direct well flow away from the drill floor and rig

3.19
drift-off
unplanned lateral move of a dynamically positioned vessel off its intended location relative to the wellhead, generally caused by loss of either stationkeeping control or propulsion

3.20
drilling fluid
mud
water- or oil-based fluid circulated down the drillpipe into the well and back up to the rig for purposes including containment of formation pressure, the removal of cuttings, bit lubrication and cooling, treating the wall of the well and providing a transmission medium for well data

3.21
drive-off
unplanned move of a dynamically positioned vessel off location driven by the vessel's main propulsion or stationkeeping thrusters

3.22
dynamic positioning
⟨automatic stationkeeping⟩ computerized means of maintaining a vessel on location by selectively driving and/or directing thrusters

3.23
effective tension
axial tension that is calculated at any point along a riser in water considering only the top tension and the apparent weight of the riser and its contents

NOTE See ISO 13624-1:2009, 5.4.3, and Sparks, 1984.

3.24
factory acceptance testing
FAT
testing by a manufacturer of a particular product to validate its conformance to performance specifications and ratings