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Petroleum and natural gas industries - Well integrity - Part 1: Life cycle governance (ISO 16530-1:2017)

Táto norma obsahuje anglickú verziu európskej normy.
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**Petroleum and natural gas industries - Well integrity - Part
1: Life cycle governance (ISO 16530-1:2017)**

Pétrole et industries du gaz naturel - Intégrité du puits
- Partie 1: Gouvernance du cycle de vie (ISO 16530-
1:2017)

Erdöl- und Erdgasindustrie - Bohrungsintegrität - Teil
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Contents	Page
European foreword.....	3

European foreword

This document (EN ISO 16530-1:2017) has been prepared by Technical Committee ISO/TC 67 "Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries" in collaboration with Technical Committee CEN/TC 12 "Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries" the secretariat of which is held by NEN.

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**Petroleum and natural gas
industries — Well integrity —**

**Part 1:
Life cycle governance**

*Pétrole et industries du gaz naturel — Intégrité du puits —
Partie 1: Gouvernance du cycle de vie*





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Contents

Page

Foreword	vii
Introduction	viii
1 Scope	1
2 Normative references	2
3 Terms and definitions	2
4 Abbreviated terms	10
5 Common elements of the well integrity life cycle	11
5.1 General	11
5.2 Well integrity	11
5.3 Well integrity policy	12
5.4 Well integrity management system	12
5.5 Risk assessment	12
5.5.1 General	12
5.5.2 Risk register	13
5.5.3 Well type risk profile	14
5.6 Organizational structure and tasks	14
5.7 Barriers	14
5.7.1 General	14
5.7.2 Barrier philosophy	15
5.7.3 Well barriers	15
5.7.4 Operational barriers	17
5.7.5 Human barriers	17
5.7.6 Administrative controls	17
5.7.7 Impact barriers	18
5.8 Performance standards for equipment	18
5.8.1 General	18
5.8.2 Well operating limits	18
5.9 Well barrier verification	19
5.9.1 General	19
5.9.2 Function testing	19
5.9.3 Barrier verification testing	19
5.9.4 Direction of flow	20
5.9.5 Effects of temperature	21
5.9.6 Modelling verification	21
5.10 Reporting and documentation	21
5.10.1 General	21
5.10.2 Well integrity status reporting	21
5.10.3 Well life cycle phase deliverables	22
5.10.4 Well handover process	23
5.11 Management of change	23
5.11.1 General	23
5.11.2 MOC process	23
5.11.3 Dispensation from the WIMS	24
5.12 Continuous improvement	24
5.12.1 General	24
5.12.2 Key performance indicator monitoring	24
5.12.3 Lessons learned	25
5.13 Auditing	25
5.13.1 General	25
5.13.2 Audit process	25
6 Basis of design phase	25
6.1 Basis of design phase objectives	25

ISO 16530-1:2017(E)

6.2	Organizational structure and tasks	26
6.3	Well barriers	27
6.4	Hazard identification and assessment	27
6.5	Well integrity considerations for the basis of design	28
6.5.1	General information to be provided	28
6.5.2	Well objectives and life cycle	28
6.5.3	Inflow requirements	28
6.5.4	Outflow requirements	29
6.5.5	Well location and targets	29
6.5.6	Prognoses regarding geological formations, pore pressure, formation strength and temperature	29
6.5.7	Data acquisition requirements	29
6.5.8	Other considerations for well integrity	30
6.5.9	Production and injection characteristics affecting well integrity through the life cycle	30
6.6	Quality assurance and approval process	30
6.7	Deliverables	30
7	Well design phase	31
7.1	Well design phase objectives	31
7.2	Organizational structure and tasks	31
7.3	Risk controls in well design	32
7.3.1	Risk register	32
7.3.2	Lessons learned	33
7.3.3	Well life cycle risk considerations	33
7.3.4	Additional considerations during well design	34
7.4	Well barriers	36
7.4.1	General	36
7.4.2	Well barrier plan	36
7.4.3	WBE design performance standards	37
7.4.4	Verification of the final well barrier	38
7.4.5	Emergency shutdown related safety systems	38
7.5	Well operating limits	39
7.6	Contingency planning for well construction	39
7.7	Surveillance and monitoring requirements	39
7.8	Well design deliverables, reporting and documentation	40
8	Well construction phase	40
8.1	Well construction phase objectives	40
8.2	Organizational structure and tasks	41
8.3	Well programme	42
8.4	Well barrier schematic	42
8.5	Barrier verification	42
8.5.1	General	42
8.5.2	Wellhead movement and fatigue	42
8.5.3	Cement	43
8.5.4	Casing shoe testing	43
8.5.5	Wellhead seal profile	44
8.5.6	Tubular connections	44
8.5.7	Casing wear	44
8.6	Risk identification and assessment	44
8.7	Management of change	44
8.7.1	Potential changes to the well plan	44
8.7.2	Suspended well considerations	45
8.8	Deliverables (reporting and documentation)	45
8.8.1	Well handover information	45
8.8.2	Risk register	46
8.9	Continuous improvement	46
9	Well operational phase	46

9.1	Well operational phase objectives.....	46
9.2	Organizational structure and tasks.....	47
9.3	Well barriers	47
9.3.1	General.....	47
9.3.2	Performance standards.....	47
9.3.3	Leak rates	48
9.4	Well monitoring and surveillance.....	51
9.4.1	General.....	51
9.4.2	Monitoring and surveillance frequency.....	51
9.4.3	Well operating limits	52
9.4.4	Suspended and shut-in wells	53
9.4.5	Visual inspection.....	53
9.4.6	Well logging.....	53
9.4.7	Corrosion monitoring.....	53
9.4.8	Corrosion monitoring and prevention – external.....	54
9.4.9	Erosion monitoring.....	54
9.4.10	Structural integrity monitoring	54
9.4.11	Well elevation monitoring	55
9.4.12	Reservoir subsidence.....	56
9.5	Annulus pressure management	56
9.5.1	Management considerations	56
9.5.2	Sources of annulus pressure.....	56
9.5.3	Annulus pressure monitoring and testing.....	57
9.5.4	Frequency of monitoring tubing and annulus casing pressures	58
9.5.5	Investigation of annulus pressure.....	58
9.5.6	Maximum allowable annulus surface pressure.....	59
9.5.7	Maintaining annulus pressure within the thresholds.....	61
9.5.8	Review and change of MAASP and thresholds.....	61
9.6	Well maintenance	62
9.6.1	General.....	62
9.6.2	Replacement parts.....	63
9.6.3	Frequency of maintenance.....	63
9.6.4	Component testing methods	64
9.7	Risk assessment of well integrity failure and its management.....	64
9.7.1	General.....	64
9.7.2	Integrity failure ranking and prioritization.....	64
9.7.3	Well failure model.....	64
9.8	Reporting and documentation	65
9.9	Periodic well review.....	66
9.9.1	Well use review.....	66
9.9.2	End of well life review.....	66
9.10	Change of well use.....	67
9.11	Well stock performance review.....	67
9.12	Continuous improvement.....	69
10	Well intervention phase.....	69
10.1	Well intervention phase objectives	69
10.2	Organizational structure and tasks.....	70
10.3	Well handover.....	71
10.4	Well intervention programme	71
10.5	Well barriers	71
10.5.1	General.....	71
10.5.2	Well barrier plans	72
10.5.3	Well barrier qualification	72
10.5.4	Well barrier verification	72
10.5.5	Well operating limits	72
10.6	Risk management.....	72
10.7	Management of change.....	73
10.8	Deliverables (documentation and reports).....	73

11	Well abandonment phase	73
11.1	Well abandonment phase objectives	73
11.2	Organizational structure and tasks	74
11.3	Well abandonment programme	75
11.4	Well barriers for abandonment	75
11.4.1	General	75
11.4.2	Well barrier material selection and qualification	76
11.4.3	Well barrier placement, configuration and redundancy	76
11.4.4	Well barrier verification	76
11.4.5	Reference documents for well abandonment barriers	76
11.5	Risk management	77
11.6	Management of change	77
11.7	Deliverables (documentation and reports)	77
Annex A	(informative) Risk assessment techniques	79
Annex B	(informative) Risk register	82
Annex C	(informative) Example of well integrity roles and responsibilities chart	85
Annex D	(informative) Example of a well integrity competence matrix	86
Annex E	(informative) Examples of well barrier elements, functions and failure characteristics	88
Annex F	(informative) Examples of well barriers during the well life cycle and a well barrier schematic	91
Annex G	(informative) Example of performance standard for well barrier elements	96
Annex H	(informative) Function testing by analysing hydraulic signature	98
Annex I	(informative) Determination of leak rate	100
Annex J	(informative) Well handover	104
Annex K	(informative) Examples of key performance indicators	106
Annex L	(informative) Example of hazard identification checklist	107
Annex M	(informative) Example plot of pore pressure versus formation strength	108
Annex N	(informative) Well barrier element performance requirements	109
Annex O	(informative) Example of leak testing of gas-lift valves	110
Annex P	(informative) Example of well operating limits	112
Annex Q	(informative) Example of possible well leak paths	114
Annex R	(informative) MAASP calculations	115
Annex S	(informative) Example of a change in MAASP calculations	121
Bibliography		123

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 on 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 the following URL: www.iso.org/iso/foreword.html.

This document 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*.

A list of all parts in the ISO 16530 series can be found on the ISO website.

Introduction

This document has been developed by oil and gas producing operating companies and is intended for use in the petroleum and natural gas industries worldwide. This document is intended to provide guidance to the well operator on managing well integrity throughout the well life cycle. Furthermore, this document addresses the minimum compliance requirements for the well operator in order to claim conformity with this document.

It is necessary that users of this document are aware that requirements over and above those outlined herein may be needed for individual applications.

This document addresses the process of managing well integrity during each of the well life cycle phases, namely: basis of design; design; construction; operation; intervention (including work-over) and abandonment.

The following terminology, in line with ISO/IEC Directives, is used in this document:

- a) The term “shall” denotes a minimum requirement in order to conform to this document.
- b) The term “should” denotes a recommendation or that which is advised but not required in order to conform to this document.
- c) The term “may” is used to indicate a course of action permissible within the limits of this document.
- d) The term “can” is used to express possibility or capability.

In addition, the term “consider” is used to indicate a suggestion or to advise.

The phases of a well life cycle have separate and distinct requirements for achieving well integrity management objectives, but all phases have common elements and techniques. [Clause 5](#) discusses these common elements and techniques. [Clauses 6](#) to [11](#) discuss each individual phase and its requirements. Additionally, each clause highlights the aspects to be considered within the common elements and techniques as applicable to that phase.

[Figure 1](#) summarizes the elements which are common among phases, and the relation between the phases.

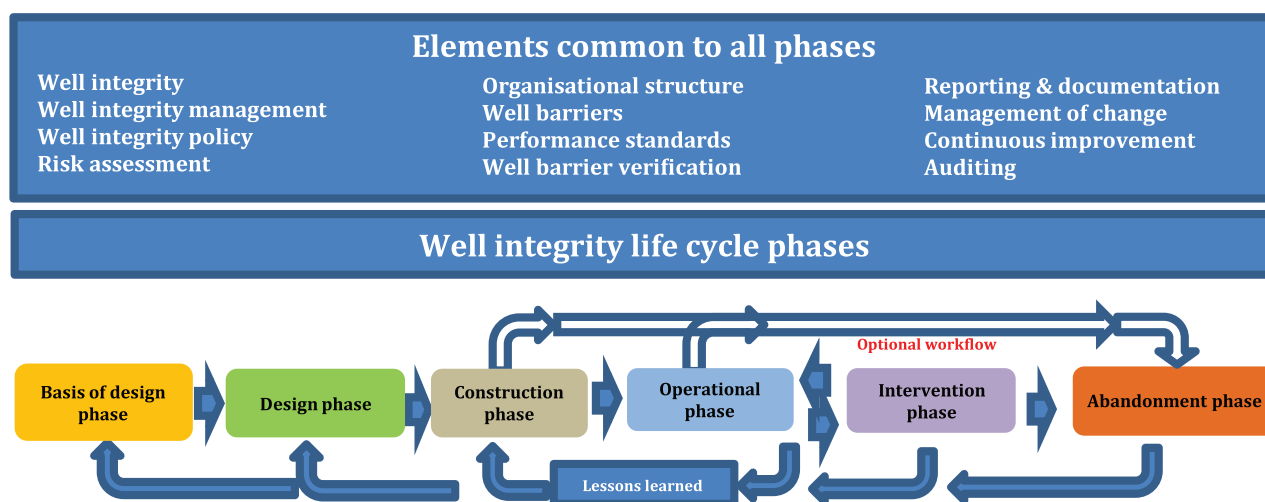


Figure 1 — Elements common to the phases of well integrity management

Petroleum and natural gas industries — Well integrity —

Part 1: Life cycle governance

1 Scope

This document is applicable to all wells that are operated by the petroleum and natural gas industry. This document is applicable to any well, or group of wells, regardless of their age, location (including onshore, subsea and offshore wells) or type (e.g. naturally flowing, artificial lift, injection wells).

This document is intended to assist the petroleum and natural gas industry to effectively manage well integrity during the well life cycle by providing:

- minimum requirements to ensure management of well integrity; and
- recommendations and techniques that well operators can apply in a scalable manner based on a well's specific risk characteristics.

Assuring well integrity comprises two main building blocks: the first is to ensure well integrity during well design and construction, and the second is to manage well integrity throughout the remaining well life thereafter.

This document addresses each stage of the well life cycle, as defined by the six phases in a) to f), and describes the deliverables between each phase within a Well Integrity Management system.

- a) The “**Basis of Design Phase**” identifies the probable safety and environmental exposure to surface and subsurface hazards and risks that can be encountered during the well life cycle. Once identified, these hazards and risks are assessed such that control methods of design and operation can be developed in subsequent phases of the well life cycle.
- b) The “**Design Phase**” identifies the controls that are to be incorporated into the well design, such that appropriate barriers can be established to manage the identified safety and environmental hazards. The design addresses the expected, or forecasted, changes during the well life cycle and ensures that the required barriers in the well's design are based on risk exposure to people and the environment.
- c) The “**Construction Phase**” defines the required or recommended elements to be constructed (including rework/repair) and verification tasks to be performed in order to achieve the intended design. It addresses any variations from the design which require a revalidation against the identified hazards and risks.
- d) The “**Operational Phase**” defines the requirements or recommendations and methods for managing well integrity during operation.
- e) The “**Intervention Phase**” (including work-over) defines the minimum requirements or recommendations for assessing well barriers prior to, and after, any well intervention that involves breaking the established well barrier containment system.
- f) The “**Abandonment Phase**” defines the requirements or recommendations for permanently abandoning a well.

The six phases of the well life cycle, as defined in this Scope, and their interrelationships, are illustrated in [Figure 1](#) in the Introduction.

This document is not applicable to well control. Well control refers to activities implemented to prevent or mitigate unintentional release of formation fluids from the well to its surroundings during drilling, completion, intervention and well abandonment operations, and involves dynamic elements, i.e. BOPs, mud pumps, mud systems, etc.

This document is not applicable to wellbore integrity, sometimes referred to as “borehole stability”. Wellbore integrity is the capacity of the drilled open hole to maintain its shape and remain intact after having been drilled.

2 Normative references

There are no normative references in this document.

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