

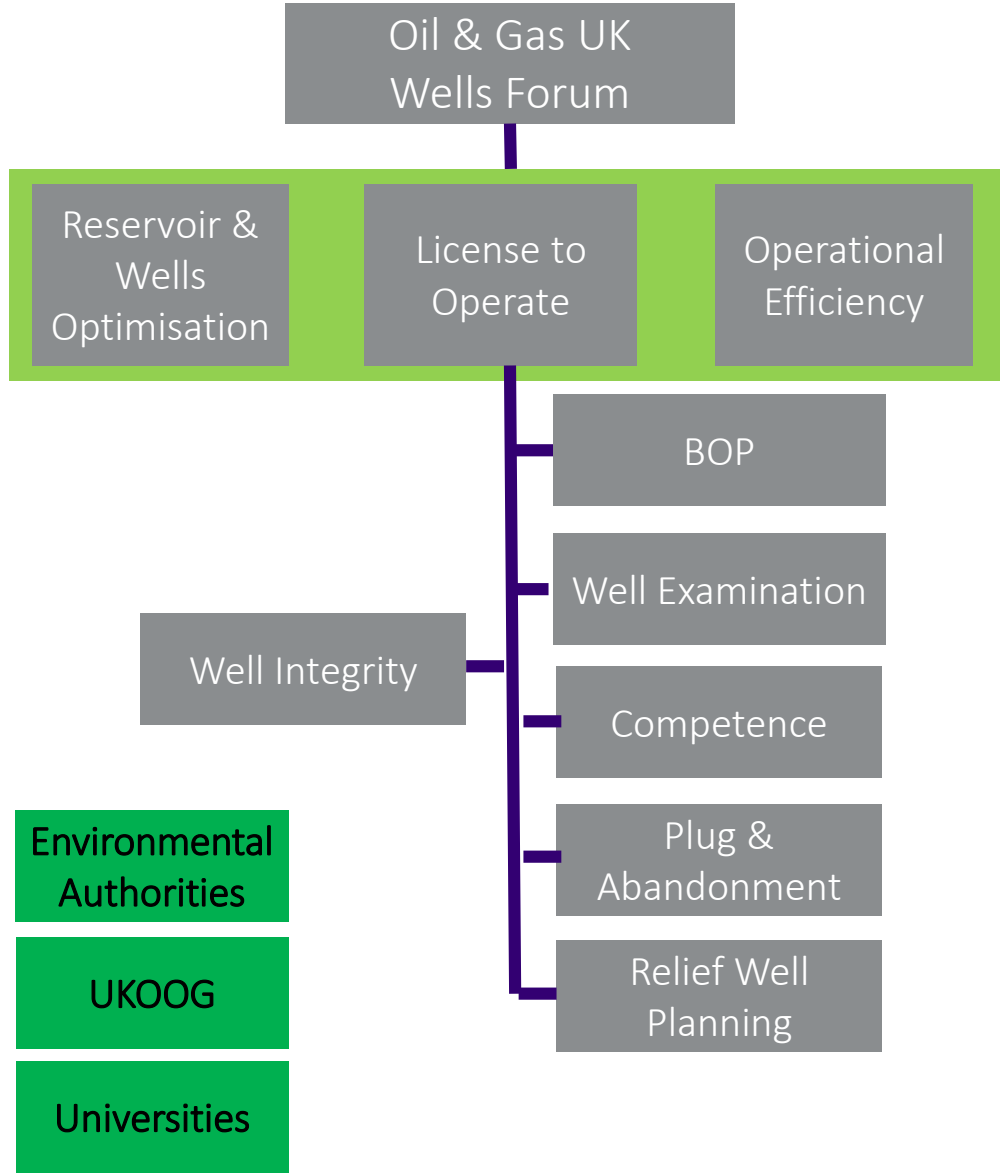
Well Integrity Update -The UK Perspective

Mike Richardson

Wednesday 14th June 2017

Norwegian Oil & Gas Well Integrity Forum

O&GUK Well Life Cycle Integrity Group



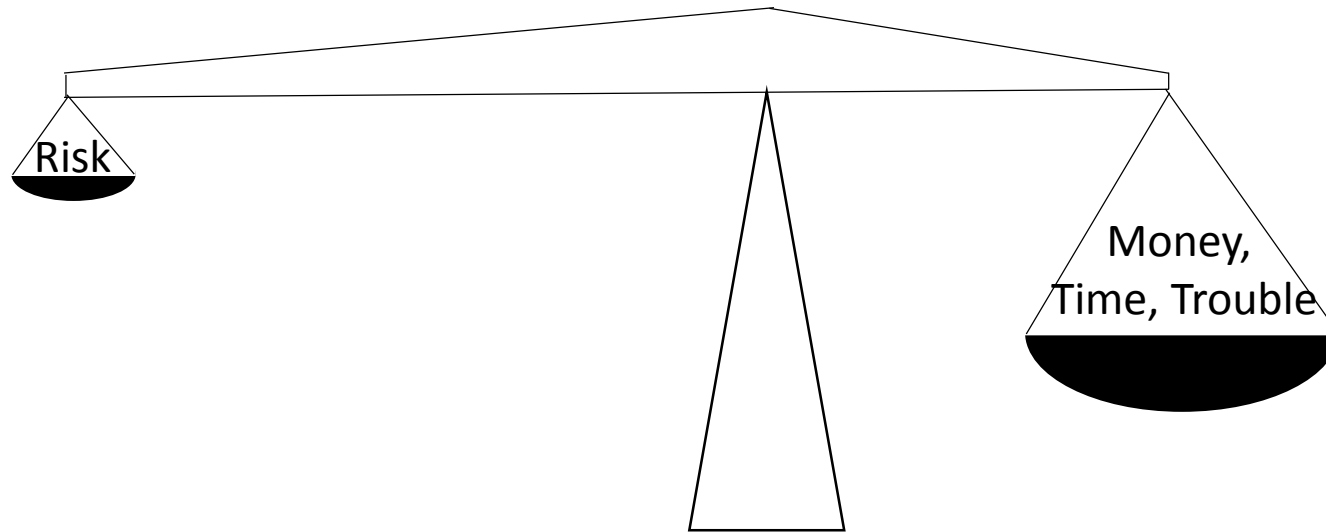
Work Group Members	
Steve Bedford	BP
Mike Richardson	Centrica
Adrian Eunson	Chevron
Peter Irvine	Conocophillips
Mike Hartley	Engie
Graham Skinner	H&S Executive
Joseph From	iGas
Bill Barrows	Nexen
Katy Heidenreich	Oil&Gas UK
A Delveaux	Perenco
Dave McGuckien	RepsolSinopec
Ian Taylor	Shell
Gavin Mundie	TAQA
Stuart Connon	Total
Michael Piber	Wintershall
Simon Hough	H&S Executive
Rod Smith	Schlumberger

Purpose of the Oil & Gas UK Guidelines

- Document Good Industry Practice to help Industry meet the requirements of UK legislation and avoid a loss of well integrity
- Written in a style designed to encourage discussion
- Operators do not have to follow the Guidelines but should be prepared to justify how their approach reduces risk to “as low as reasonably practicable”.
- Relevant to all wells, and well operations, for the purpose of exploiting naturally occurring hydrocarbons – onshore and offshore
- Focus on typical wells & standard operations. Reference existing standards and guidelines, rather than creating new
- Address HSE guidance relating to well integrity, including the Well Construction Standards. Include guidance on roles and responsibilities.



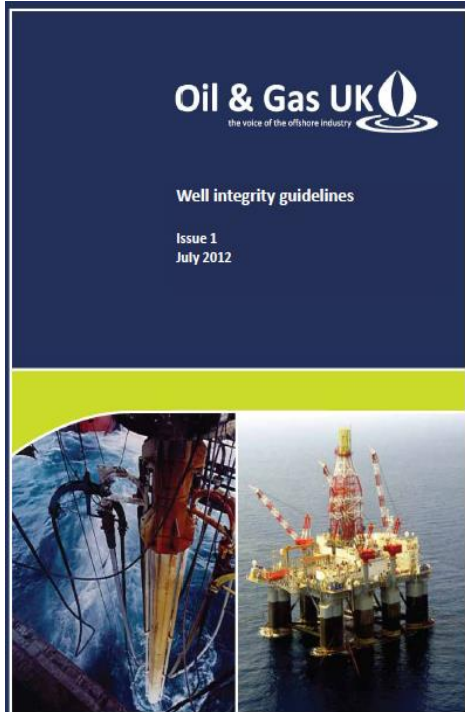
ALARP -As Low As Reasonably Practicable



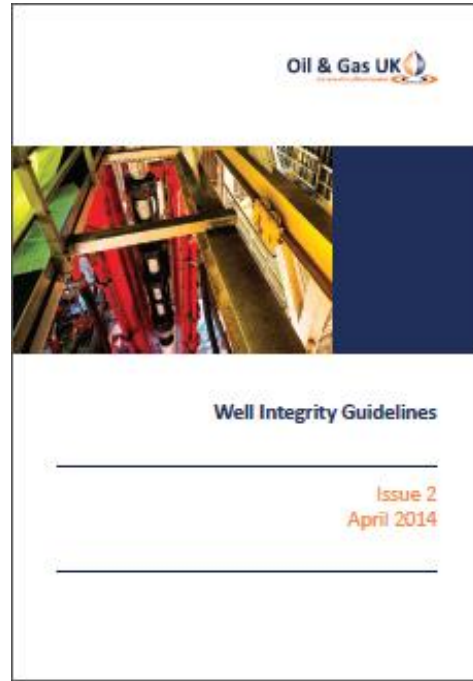
“‘Reasonably practicable’ is a narrower term than ‘physically possible’ ... a computation must be made by the owner in which the quantum of risk is placed on one scale and the sacrifice involved in the measures necessary for averting the risk (whether in money, time or trouble) is placed in the other, and that, if it be shown that there is a **gross disproportion** between them – the risk being insignificant in relation to the sacrifice – the defendants discharge the onus on them.” (HSE Reference: Edwards v. National Coal Board, [1949] 1 All ER 743)

<<http://www.hse.gov.uk/risk/theory/alarpglance.htm>>

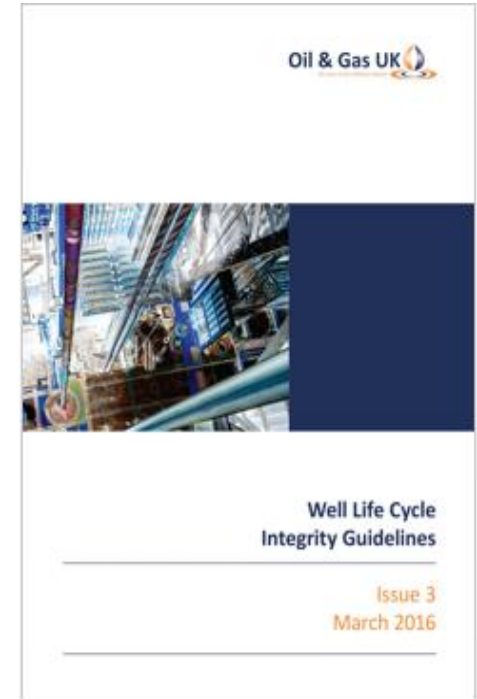
Evolution of the Guidelines



First issue written and published in July 2012, 18 months after the workgroup was formed.



Issue 2 published in April 2014, incorporated feedback and comments on Issue 1.

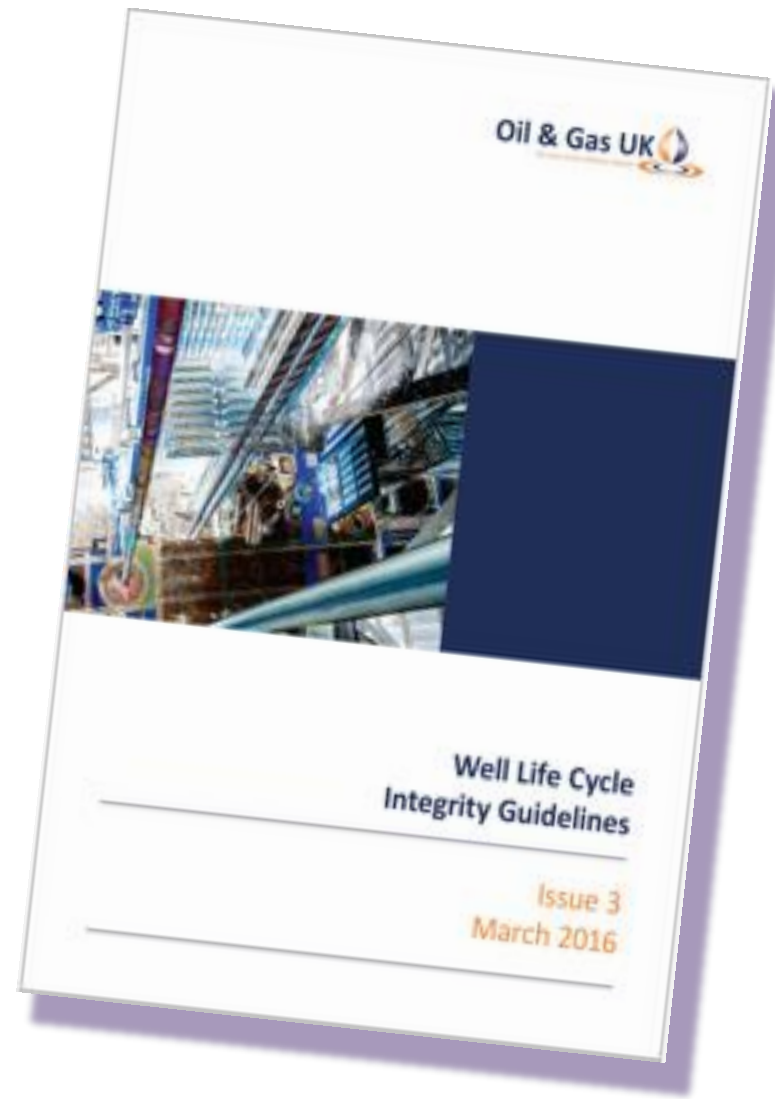


Issue 3 published in March 2016.

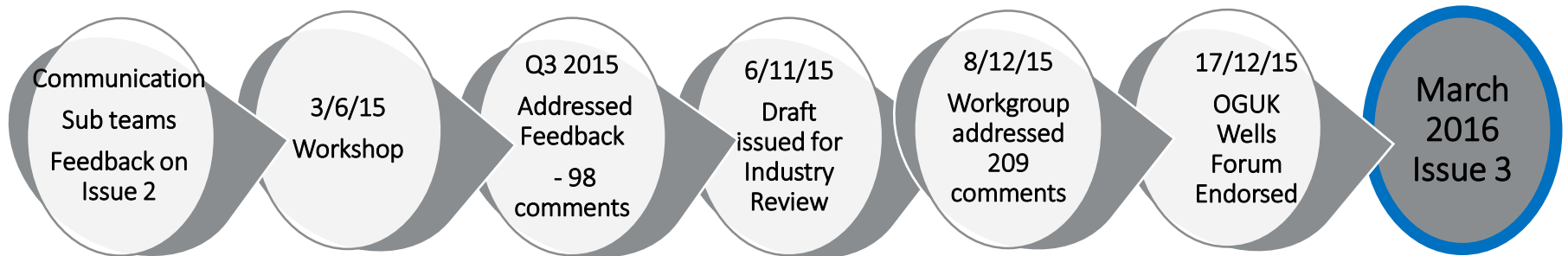
Issue 4 scheduled for Q2 2018

Oil & Gas UK Well Integrity Guidelines

- 3rd Edition Published March 2016
- Improved info on
 - Risk assessments
 - Pressure testing
 - Barriers
 - Test frequency
 - Gas Lift
 - Ageing wells
 - Fracking
 - Completion fluid
 - Annulus top up
 - Non-Standard wells



Guidelines Revision Process



- Interfaced with the Norwegian Oil & Gas Well Integrity Forum and confirmed that the draft Issue 3 is consistent with the direction of Norwegian work.
- Interfaced with the OGP workgroup producing the ISO Standard for full life cycle well integrity, while this document is going through a 2nd ballot confirmed that there are no significant gaps between the draft Issue 3 and the draft ISO document.
- Interfaced with UKOOG to incorporate requirements for shale wells with the intent of simplifying the existing Shale Gas Guidelines to cross reference the Well Integrity Guidelines

Guidelines Changes in Version 3 (March 2016)

- Updated with most recent publications, added references and added terms to glossary.
- Updated to reflect recent changes in regulatory environment, primarily SCR 2015.
- Updated text to reflect current terminology on barriers and make section more readable. Specifically updated definitions of pressure containment boundary, well barriers, number of barriers, types of well barrier, concept of primary and secondary barriers. Updated sections on risk assessment and pressure testing.
- Updated section on risk assessment and references to recent industry practices and standards.
- Restatement of main well integrity issues for gas lift and guidance on mitigating these. Clarity on what wellhead components are required on the non-active side of a wellhead.

Guidelines Changes in Version 3 continued

- **Visual inspection of wells**
Guidance on frequency of inspection.
- **Pressure testing and topping up annuli**
Updated guidance to include consideration of hydraulic fracturing.
- **Barriers within wellheads**
Guidance on pressure testing of void spaces in wellheads including safety advice prior to testing and inspecting voids.
- **Testing xmas tree valves**
Guidance on performance standards for workover and intervention pressure control equipment including recent industry findings on closure times and the effect of temperature, fluid type and control line geometry.
- **Non-standard well types**
Moved section on CRI wells to Section 14 Special Cases.

Guidelines Changes in Version 3 continued

- **Review of degradation/life extension**
Completely revised -additions include: guidance on key elements of a degradation management programme, reference to “creeping change” and examples of strategies for the management of degradation and well failure.
- **Natural or induced seismicity (as issue affecting well integrity)**
Guidance on considerations for risk of loss of integrity through geo-mechanical subsurface movement.
- **Completion fluid as a barrier**
Added paragraph to cover use of completion fluid as a barrier in case where there is no flow potential – for example when the well is open to an impermeable formation such as shale prior to stimulation.

Guidelines Changes in Version 3 continued

- **Fluid pumping operations**
includes guidance on hydraulic fracturing operations and specifically fracture containment and induced seismicity in alignment with UKOOG.
- **Suspend**
Has now become “Management of late-life and end of life wells” and contains guidance on late life well management including: definitions of shut-in wells, plugged wells and temporary plugging for suspension of well operations and suspension of well activity/operation.
- **Section 14 Special Cases**
Now contains guidance on well integrity related aspects of multi-lateral wells and cuttings re-injection wells.
- **Appendix 2**
Added appendix 2 which contains a definition of the WONS well descriptors.

Guidelines Changes in Version 4 (Q2 2018)

Work underway to determine what guidance can be provided on:

- Composite wraps
- Use of well integrity reliability data and failure prediction
- Well degradation and corrosion in annuli (conductors & surface casing)
- Sustained casing pressure
- Gas storage wells
- Process safety for wells –including drilling and intervention
- Interface / gap analysis with ISO 16530-1
- BOPs following API standard 53
- Welded casing

Other Well & Well Integrity Issues

Relief well planning

Refresh the current Guidelines for issue in the first half of 2018. Address the following: legislative changes, capping and edits to improve clarity.

BOP Guidelines

Further to a gap assessment between the Guidelines and API Standard 53 proposal to utilise API standard 53 with any “orphan” requirements incorporated into the Well Integrity Guidelines. Accordingly the BOP Guidelines will be retired when Issue 4 of the Well Integrity Guidelines are published in the 1st half 2019.

Wells Personnel Competency Guidelines

Issue 2 for publication before the end of June.

Well Examination Guidelines

Small amount of feedback on the draft Issue 2 of both sets of Guidelines. Circulated with an electronic vote. If endorsed the aim is to publish Issue 2 by the end of June

Well Abandonment Guidelines

Refresh to reduce prescription was endorsed and a small workgroup drawn from well operators, drilling contractors and service providers will deliver a draft update for Forum review by September with the intent of publishing by the year end.

Well design

Develop a Terms of Reference to build upon the successful elements of the well scrutiny sessions.

Operational efficiency workgroup

Analyse data from 5 to 10 wells per Operator against some basic key performance indicators and hold a workshop in August to extract best practices which would then be shared at the October Wells Forum. Initial focus is primarily on reducing flat time.

IADC Rig Audit initiative

IADC proposed development of a common rig audit protocol and sharing the audit findings to avoid each operator independently auditing a rig. The Wells Forum put forward some potential issues with this approach. IADC and OGUK agreed to approach the UK Regulators to get their views and will revert with a business case for the October Wells Forum.

Level 5 Well Control Training

5 companies (including BP) had responded to the OGUK request for views on Level 5. The Wells Forum view was to support, rather than duplicate, work being done by other bodies such as IADC. OGUK agreed to engage with IOGP, IWCF and IADC to monitor progress and revert back to the Wells Forum if Forum input was required.

OGA UKCS Asset Stewardship Survey Results

- Exploration well count steady but half the level of what the OGA are looking for.
- Development drilling as expected.
- Appraisal and infill drilling significantly down indicating that operators have slashed discretionary spend. OGA want to see an increase in infill activity.
- The survey indicated untapped potential to deliver ERD and multi lateral wells. The OGA stated that if necessary they would enforce access to platform rigs to drill ERD wells to access satellite Fields from a Platform owned by a different operator.
- Average well cost is significantly down on 2014 costs but not yet at the 50% target.
- The OGA and OGUK will look to combine their surveys to reduce the burden on Industry, including WIEN and OGA surveys.
- The survey highlighted significant issues with WONS data that resulted in data cleanup so that future surveys should be more efficient.

Reservoir and Wells Optimisation

New title for the former Well Intervention Execution network (WIEN). Workshop to bring together subsurface drilling and intervention disciplines

Please stay in touch.....

Oil & Gas UK invite you to the annual UK Well Integrity Workshop.
September 2017

Beyond well integrity –contact:

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