

Revision update NORSOK D-010, Rev.4

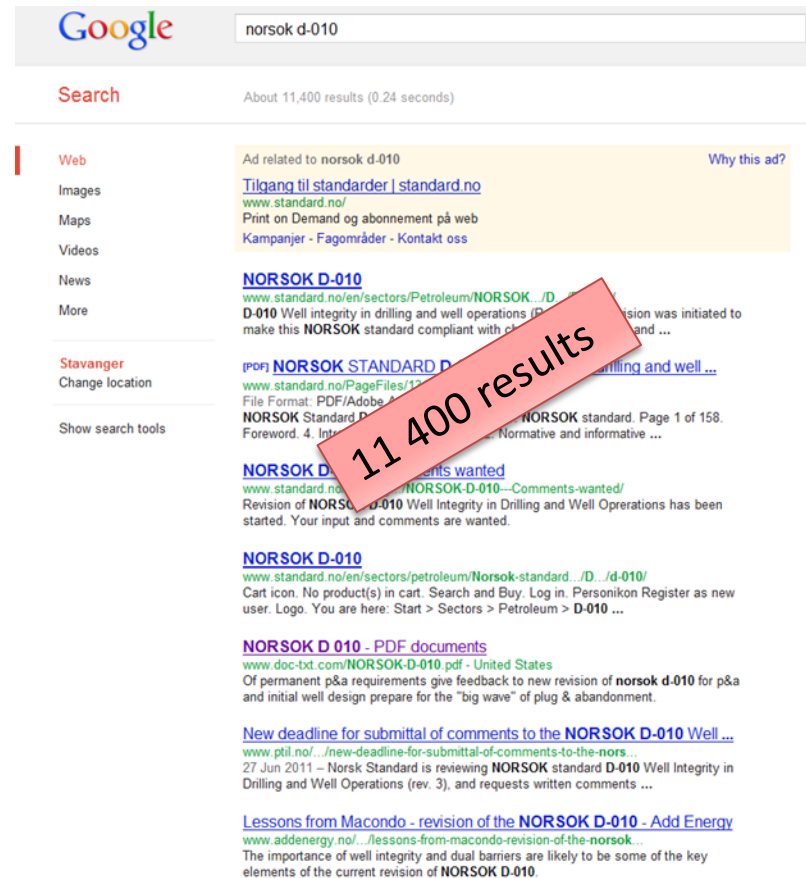
PAF Workshop

14.6.2012

by Terje Løkke-Sørensen, add energy

The short version

- We received over 300 comments, variable degree of relevance / complexity.
- 20 technical editors working
- 80% complete in processing comments, 55% overall
- There will be changes: formation strength, cement height/bonding, P&A , MPD, more
- Original target date for issuing industry hearing is 1.11. (~~30.3~~)
 - **>Your last chance to make a difference!**



Google search results for "norsok d-010". The search bar shows "norsok d-010" and the results indicate "About 11,400 results (0.24 seconds)".

The results include:

- Ad related to norsok d-010** (Why this ad?)
 - [Tilgang til standarder | standard.no](#)
 - [www.standard.no/](#)
 - Print on Demand og abonnement på web
 - [Kampanjer - Fagområder - Kontakt oss](#)
- NORSOK D-010**
 - [www.standard.no/en/sectors/Petroleum/NORSOK.../D-010](#)
 - D-010 Well integrity in drilling and well operations (D-010) revision was initiated to make this NORSOK standard compliant with...
- (PDF) NORSOK STANDARD D-010**
 - [www.standard.no/PageFiles/1/...](#)
 - File Format: PDF/Adobe...
 - NORSOK Standard D-010 Well Integrity in Drilling and Well Operations. Page 1 of 158.
 - Foreword, 4. Introduction, Normative and informative ...
- NORSOK D-010 - Comments wanted**
 - [www.standard.no/en/sectors/Petroleum/NORSOK-D-010--Comments-wanted/](#)
 - Revision of NORSOK D-010 Well Integrity in Drilling and Well Operations has been started. Your input and comments are wanted.
- NORSOK D-010**
 - [www.standard.no/en/sectors/petroleum/Norsk-standard.../D-010/](#)
 - Cart icon. No product(s) in cart. Search and Buy. Log in. Personikon Register as new user. Logo. You are here: Start > Sectors > Petroleum > D-010 ...
- NORSOK D 010 - PDF documents**
 - [www.doc-txt.com/NORSOK-D-010.pdf - United States](#)
 - Of permanent p&a requirements give feedback to new revision of **norsok d-010** for p&a and initial well design prepare for the "big wave" of plug & abandonment.
- New deadline for submittal of comments to the NORSOK D-010 Well ...**
 - [www.ptil.no/.../new-deadline-for-submittal-of-comments-to-the-norsok...](#)
 - 27 Jun 2011 – Norsk Standard is reviewing **NORSOK standard D-010** Well Integrity in Drilling and Well Operations (rev. 3), and requests written comments ...
- Lessons from Macondo - revision of the NORSOK D-010 - Add Energy**
 - [www.addenergy.no/.../lessons-from-macondo-revision-of-the-norsok...](#)
 - The importance of well integrity and dual barriers are likely to be some of the key elements of the current revision of **NORSOK D-010**.

Why update?

- Standard Norge has a requirement for periodic revision. Last revised Aug. 2004
- Change proposals has been received
- Recommendations from OLF Well Integrity and P&A Forum are transferred to D-010
- Assess experience / learning from Montara/Macondo incidents
- Make it more international?

NORSOK STANDARD

D-010
Rev. 3, August 2004

Well integrity in drilling and well operations

This NORSOK standard is developed with broad petroleum industry participation by interested parties in the Norwegian petroleum industry and is owned by the Norwegian petroleum industry represented by The Norwegian Oil Industry Association (OLF) and Federation of Norwegian Manufacturing Industries (TBL). Please note that whilst every effort has been made to ensure the accuracy of this NORSOK standard, neither OLF nor TBL or any of their members will assume liability for any use thereof. Standards Norway is responsible for the administration and publication of this NORSOK standard.

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The Work → Milestones

Work

- ✓ Invite industry to submit comments
- ✓ Read and evaluate comments
 - Formulate changes (80% complete)
 - QA check changes (ongoing)
 - Tidy up language throughout the standard
 - Issue rev.4 for hearing
 - Processes comments from hearing
 - Final issue

Revised Milestones (original dates)

- ✓ Obtain comments – round 1 (24.08.11)
- ✓ Obtain comments – round 2 (15.11.11)
- ✓ Kick-off meeting w. Editor Group (26.10.11)
 - New: Issue draft to EGD/DMF (15.8.12)
 - Issue draft for Industry Hearing (~~30.3.2012~~ 1.11.2012)
 - Industry hearing (8 4 weeks)
 - Final (4 12 weeks) -> ~~30.6.2012~~ 1.5.2013
- 10 months delay, mainly due to:
 - large number of comments
 - difficult comments/issues
 - Editors busy with other work

Who does what?

- T.Løkke-Sørensen has been engaged by Standard Norge to coordinate the work
- Editor group process comments and formulate changes
- Standard Norge:
 - Ensure compliance with general NORSOK requirements
 - host LiveLink / e.mail
 - provide secretarial support
 - coordinate hearings
- Standard Norge Expert Group Drilling and OLF Drilling Manager Forum will act as reference group and provide guidance and quality assessment

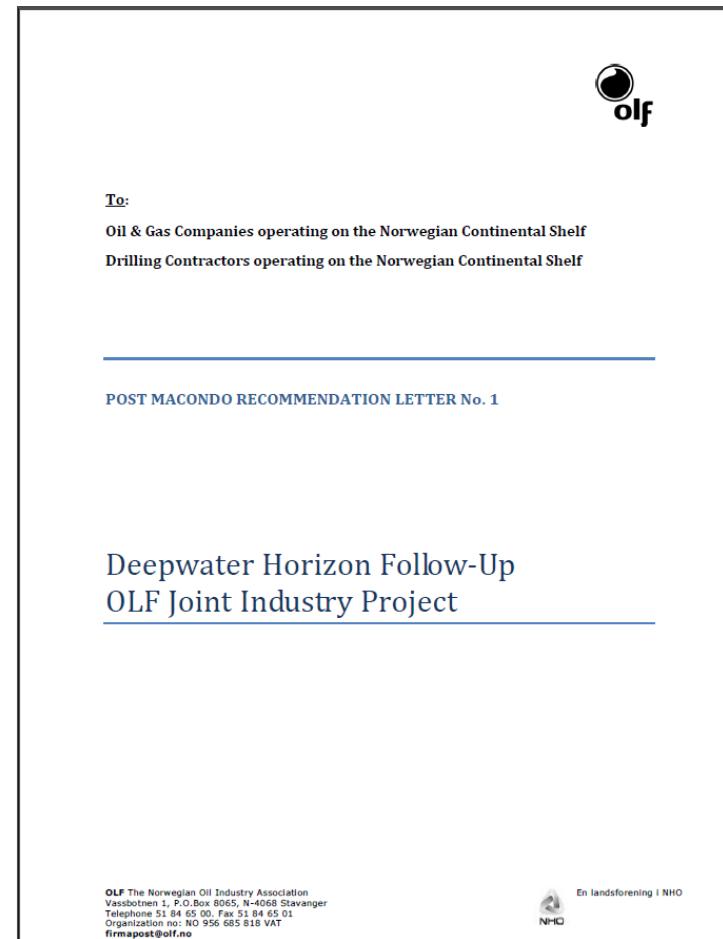
Clauses
1. Scope
2. Normative and informative references
3. Terms, definitions and abbreviations
4. General principles
5. Drilling activities
6. Testing activities
7. Completion activities
8. Production activities
9. Sidetracks, suspension and abandonment activities
10. Wireline operations
11. Coiled tubing operations
12. Snubbing operations
13. Under balanced drilling and completion operations
14. Pumping operations
15. Well Barrier Elements Acceptance Tables
Annex A (Normative)

Editor Group

NORSOK D- 010 rev. 4	Main Editor	Co-editor
	Name, Company	Name, Company
1. Scope	Terje Løkke-Sørensen	Michelle Monteau, Statoil
2. Normative & Informative Ref.	Terje Løkke-Sørensen	Michelle Monteau, Statoil
3. Definitions and Abbreviations	Terje Løkke-Sørensen	Michelle Monteau, Statoil
4. General Principles	Tore Fjågesund, Lundin	Dag Sande, Statoil
5. Drilling Activities	Ørjan Bustnes, Spring Energy	Arne Hjelle, Statoil
6. Testing Activities	Gary McDonald, Wintershall	Arild Fosså , Statoil
7. Completion Activities	Lars-Endre Hestenes, BG	John Helge Olsen, Statoil
8. Production Activities	Anders Hjellen, BP	Hilde Brandanger Haga / WIF
9. ST, Susp. & Aban. Activities	Garry Brewster, Talisman	Svein Inge Rafoss, Statoil
10. Wireline Operations	Alistar Buchanan, Statoil	Terje Olsen, COP
11. Coiled Tubing Operations	Kenneth Maribu, COP	Alistar Buchanan, Statoil
12. Snubbing Operations	Jack Nerdrum, Wild Well Control	Alistar Buchanan, Statoil
13. Under Balanced D&C Ops.	Per Cato Berg, Statoil	Connor Stricklan, Shell
14. Pumping Operations	Kristian Haarestad, PTC	Not needed
Annex A	Ørjan Bustnes, Spring Energy	Not needed

Sources of Comments

- Comments obtained through invitation , \pm 300
- Recommendations from OLF's Macondo report
- Recommendations from PSA's Macondo report



Regulations vs. D-010

- D-010 has become an integral part of the guidelines to PSA's regulations and is often referred to
- "Shortcomings" is corrected by adding regulatory requirements
- We should consider to include these "Shortcomings" in D-010
- Rev.4 will be included in the regulations for 2014 (given release by August 2013).

Til § 84 Overvåking av brønnparametere

Kravet til innsamling innebærer blant annet at data som kan indikere en mulig brønnkontrollhendelse blir målt, registrert og behandlet.

For å oppfylle kravet til innsamling bør standarden NORSOK D-010 kapittel 4.7.2, 5.7.3 og 5.7.4.2 brukes, **med følgende tillegg:** ved prøving av formasjonens oppsprekingsstyrke bør det trykkprøves til maksimalt forventet trykk for brønnseksjonen.

D-010 vs. Regulations

- D-010 has instructions which are specifically linked to PSA ->
- PSA has expressed no concern if these links are removed in order to make the standard less «Norwegian».

4.10.4 Special well incident reporting

The Petroleum Safety Authority (PSA) shall be notified immediately in the event of shallow-gas is detected and in the event of well influx/inflow (kick) where the following steps have occurred:

- a) Positive indication of flow from wellbore.
- b) The wellbore is closed by shutting in the BOP/safety valve.
- c) Pressure or pressure build up is registered in the closed-in wellbore.
- d) Kill operation is initiated, which can be
 - 1) bull heading;
 - 2) driller's method or weight and weight method;
 - 3) volumetric method.

Additional information shall be reported by completing the relevant sections in SPA's Common Data Reporting system.

OLF Macondo recommendations

OLF's Macondo recommendations;

1.1 - Include the requirement for locking casing hangers in the applicable standard.

- ✓ 1.2 - Expand the requirements related to negative pressure testing in the applicable standard.
- ✓ 2.1 - Introduce and define the term 'critical cement job' in the relevant standard.
- ✓ 2.2 - Introduce the requirement for independent design verification of 'critical cement jobs' in the relevant standard

3.1 - Implement periodic physical testing of emergency subsea well control activation systems as a standard, and include the requirement in the relevant standard.

3.5 - Establish a recommended practice for prepping BOP's for ROV activation in the relevant standard. -

<http://www.olf.no/en/Activities/HSE-and-operation/Lessons-learned-for-the-Deepwater-HorizonMacondo-accident>

Out - in

4. General

- Significantly altered
- Out:
 - WC equipment arrangement
 - Activity program content
 - SIMOPS & Critical Activities
- In (new/strongly enhanced):
 - When and how to make WBS
 - Inflow testing - how
 - Formation testing and acceptance
 - Reilef well plan & well capping
 - WI management system

8. Production

- Significantly altered
- Out: -
- In:
 - Updated handover doc. (OLF 117)
 - Requirements for operating envelopes for pressures, temperature, flow rates, composition of well fluid and passive annuli
 - Risk of communication between tubulars /annuli
 - “Zero” leakage for valves bordering to external environment / surroundings (e.g. swab valve), (otherwise API RP 14B)
 - If risk of loss of containment is significantly increased by shutting in the well -> keep producing, pending well barrier reestablishment.
 - Well integrity categorisation according to OLF 117

Category	Principle
Red	One barrier failure and the other is degraded/not verified, or leak to surface
Orange	One barrier failure and the other is intact, or a single failure may lead to leak to surface
Yellow	One barrier degraded, the other is intact
Green	Healthy well - no or minor issue

Out - in

9. P&A

- Significantly upgraded
- Out: -
- In (new/strongly enhanced)
 - Definition of suspension vs. temp. P&A
 - Examples of P&A options
 - Flow-chart decision making:
 - Section milling
 - Squeeze or circ. cement into annulus
 - WBEAC:
 - Casing cement, 30 m of bonded cement
 - Cement plug
 - Shale formation (new)
 - Alternative (to cement) casing bonding material (new)

13 UBD / MPD

- Significantly upgraded
- Out: -
- In:
 - MPD with surface BOP
 - Operating limits
 - WC action procedures and drills
 - WBEAC:
 - UBD/MPD choke system (new)
 - Statically underbalanced fluid column(nw)

!!!

WHEN IS YOUR LAST CHANCE TO
COMMENT ON REV.4?

*A standard is worth nothing
unless it is referred to!*

Knut Heiren, Standard Norge, 2004