

Regulatory Changes and challenges related to P&A

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My Presentation

- Focus on P&A of the wells
- Regulations
- Industry Challenges
- Future needs
- Hope for the future?



PSA focus - P&A

- *Assure necessary focus and attention on integrity and P&A of wells within the companies and the licensees*
- *Assure that the requirements to P&A are up to date*
- *Assure that all wells are adequately secured before they are abandoned with the necessary barriers in place and operational for the longest period of time the wells are expected to be abandoned*
- *Assure that wells are planned to be easily P&A'd*
- *Assure necessary verification of the well barriers*
- *Assure that temporarily abandoned wells are monitored, assessed, and permanently plugged in due time*



Assure that the industry is ready for P&A!



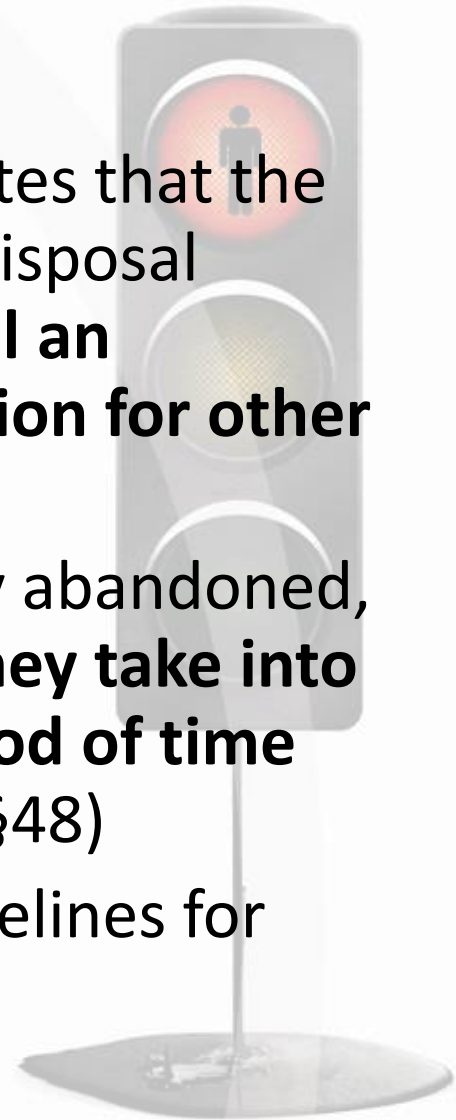
Regulatory requirements to permanent P&A (1)

- The wells are regarded as installations and not only technical requirements for P&A are valid:
 - Facilities should be designed such as (FR § 5):
 - they can withstand the loads/actions faced
 - major accident risk is as low as possible,
 - a failure in one component, system or a single mistake does not result in unacceptable consequences,
 - the main safety functions are maintained,
 - operational assumptions and restrictions are safeguarded in a prudent manner,
 - the lowest possible risk of pollution is facilitated



Regulatory requirements to permanent P&A (2)

- The Act relating to petroleum activities states that the Ministry shall make a decision relating to disposal based on **“technical, safety, environmental and economic aspects as well as to consideration for other users of the sea”**
- When a well is temporarily or permanently abandoned, **the barriers shall be designed such that they take into account well integrity for the longest period of time** the well is expected to be abandoned.(FR §48)
- Norsok D-010 Standard giving specific guidelines for performing the P&A work



Industry Challenges:

- Large number of wells with **high need for drilling rigs**
- Technical **challenging, complicated and time consuming high cost** operations
- Robust solutions that **will last** «for ever»
- **Credible verification** of necessary quality, suitability and durability of the barriers
- **Suitable** equipment and methods
- **Timing** (not postpone all the wells)

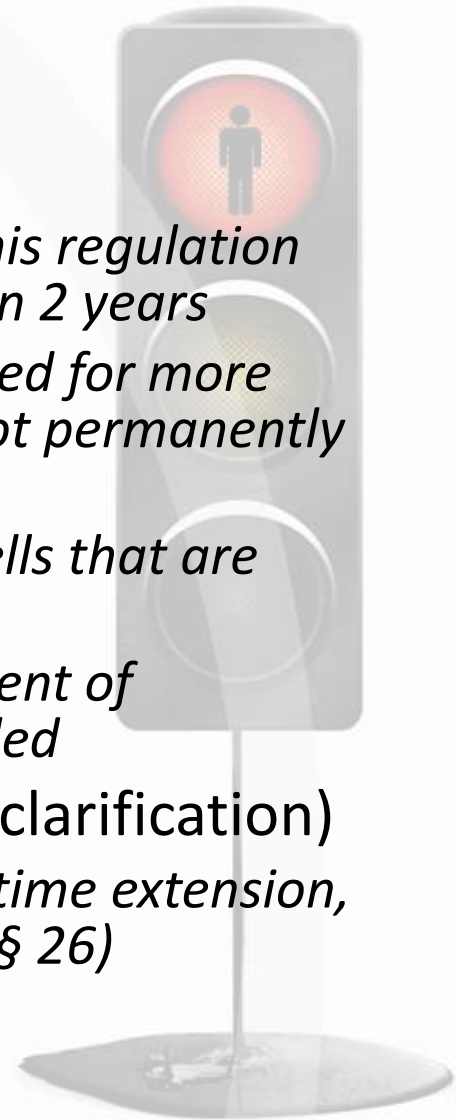


Future needs

- Increased focus on P&A when planning and drilling the well – **improved primary cementing**
- Focus on permanently P&A of explorations wells as soon as verified no need for future use
- Development of alternative materials **and P&A methods**
- **New improved methods/tools to verify the quality** of the barriers, especially outside the casing
- **Dedicated** P&A installations/vessels
- Dedicated and multidisciplinary P&A teams
- Better completion solutions to avoid time consuming work to remove control lines

Proposed Changes to the 2013/2014 Regulation:

- *AF §88 Securing Wells*
 - *Exploration wells started after date of effect of this regulation shall not be temporarily abandoned for more than 2 years*
 - *Appraisal wells shall not be temporarily abandoned for more than 3 years if the hydrocarbon filled zones are not permanently P&A*
 - *Temporarily abandoned wells will also include wells that are shut in*
 - *Two qualified barriers for temporarily abandonment of production wells with no completion string installed*
- *SF § 26 Contents of applications for consents (clarification)*
 - *Information to be received when applying for lifetime extension, e.g. well status and plans for permanent P&A (SF§ 26)*



Bright future?

- A lot of challenges that the industry will have to face in the nearest future
- It is reassuring to see that the industry has started the work to face these challenges:
 - Establishing of the PAF forum with regular meeting and a yearly workshop on P&A – also the eagerness and willingness
 - In general a higher focus on P&A within each company (e.g. dedicated personnel for P&A)
 - Operators taking the responsibility of being “locomotives” to drive technology forward
 - Major work on upgrading the Norsok D-010
 - Planning new wells also with regard to P&A
 - Work done to develop new methods for P&A
 - UiS incorporated P&A in higher education (PhD)

There is hope for achieving robust and secured permanent P&A solutions if the challenges are met!

And Finally!

Thank You!

Any Questions?

