

# OLF – P&A Forum

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## Involvement in higher education

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# Content

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- New Master Specialization in Well Engineering
- Incorporation of P&A in Education
- Status on Bach/Master thesis's
  - Some examples of titles/topics
- PhD Positions within P&A
- SBBU – Center for drilling and wells for improved recovery
- Questions/Advices from the audience ?

# A new master specialization within Well engineering (2012-2014)

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- A new master specialization in Well Engineering will start up Autumn 2012.
- Supported by Statoil through the Akademia programme.



# Renewal and extension of Well Eng Spec.

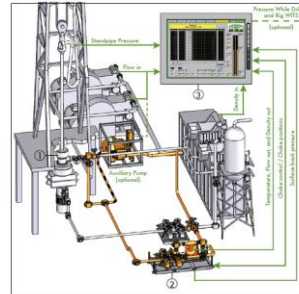
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- **During development of the new masterprogram, special emphasis will among other be on the following:**
  - More focus on well control & barriers
  - More focus on risk analysis, regulations, HSE
  - Courses dealing with Completion and Intervention will be enlarged revealing the increased focus on these "life cycle phases"
  - Plug and Abandonment will become a new separate topic in the Well Intervention course and correspond to 5 credits.
  - Industry visits & Lectures from Industry

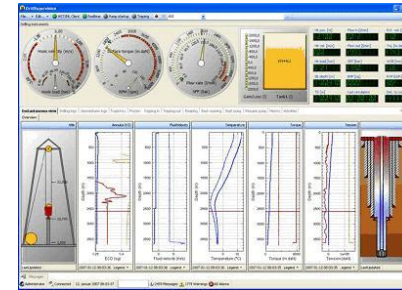
# Renewal and extension of Well Eng Spec.



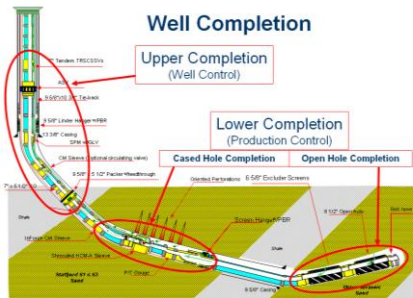
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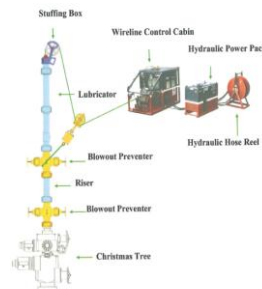
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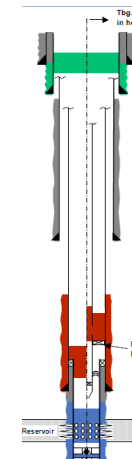
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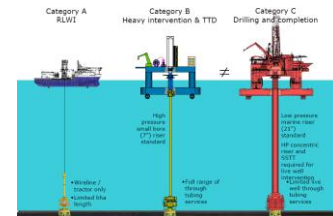
Baker Hughes



Wireline – Aker Solutions



P& A Norsok D010



Subsea





# Initial steps - including P&A in teaching

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- Have already started to have some sessions on P&A in existing courses (last autumn)
  - NorsokD010/requirements/barriers
  - Introduction to vessels and operational sequence
  - Main challenges/risks associated with P&A
  - Presentation of some promising new technologies (e.g new materials for P&A)
  - Guest lecture from Industry – Arne G Larsen from Hydrawell



# Masterprogram structure 2012

First year		Second year	
1 Sem	2 Sem	3 Sem	4 Sem
Basic Science and Petroleum Engineering 10 STP	Petroleum Production and Multiphase Flow - 10 STP	Well Completion 10 STP	Master thesis 30 STP
Geology and Petrophysics for Drilling Engineers - 5 STP	Advanced Drilling Technology and Engineering 15 STP	<b>Well Intervention &amp; Plug and Abandonment 10 STP</b>	
Well Engineering 15 STP	Management, Economy & Operations' 5 STP	Subsea Technology (10 STP)	

Official start 2013

# Well Intervention and Plug & Abandonement (2013)

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- It was found natural to group this topic together with a course in well intervention
- The course will also be based on our present course in drilling fluids (5 credits)





# Possible content of future course

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- History/Definitions/Classification systems for P&A wells
- Regulations/Requirements
- Methods/Operations
- Cement/other plugging materials
- Vessels for P&A operations
- New technologies for more cost effective P&A operations
- **Input + Guest Lectures from Industry highly appreciated!**



# Status on Bachelor/Master thesis

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- Master/Bach thesis's are usually written in cooperation with industry, internally at UiS or through the SBBU center.
- Roughly
  - 8 masters
  - 4 bachelors

# Status on Bachelor/Master thesis

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- Typical topics have been related to:
  - Challenges
  - Regulations
  - Methods for Placement and Verification of barriers
  - Improved plugging materials for P&A
  - Rigless P&A
  - Cost/Risk and P&A operations
  - New technology for improved P&A



## Examples – Recent master thesis titles

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- "Final Field Permanent Plug and Abandonment-Methodology Development, Time and Cost Estimation and Risk Evaluation" - Frederik Birkeland, Statoil – Hogne Kile Supervisor (2011)
- "Risk Based Cost and Duration Estimation of P&A Operations", Sanggi Raksagati– looking at a software program for risk based cost estimation of P&A operations. (rigless P&A) (2012..), Supervised through SBBU
- "P&A for Valhall DP wells" - Nils Oskar Berg Njø, BP, Martin Straume External Supervisor. (2012..)

# Teaching/Research at UiS

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- Two PhD Positions will be funded by SBBU
- 1 - Improved Materials for P&A
- 2 - Rig less P&A Technology Availability and Cost Effectiveness of Rig Less P&A Operations

# 1 - Improved Materials for P&A

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- The basis for this project is an ongoing study regarding the effect of CO<sub>2</sub> on the setting and strength development of cementitious materials

Present research:

- silica minerals for HTHP - wells
- cement used as activator for setting
- alkali activated setting – geopolymers
- the effect of CO<sub>2</sub> on strength development

Future research:

- Materials for P&A in arctic environments

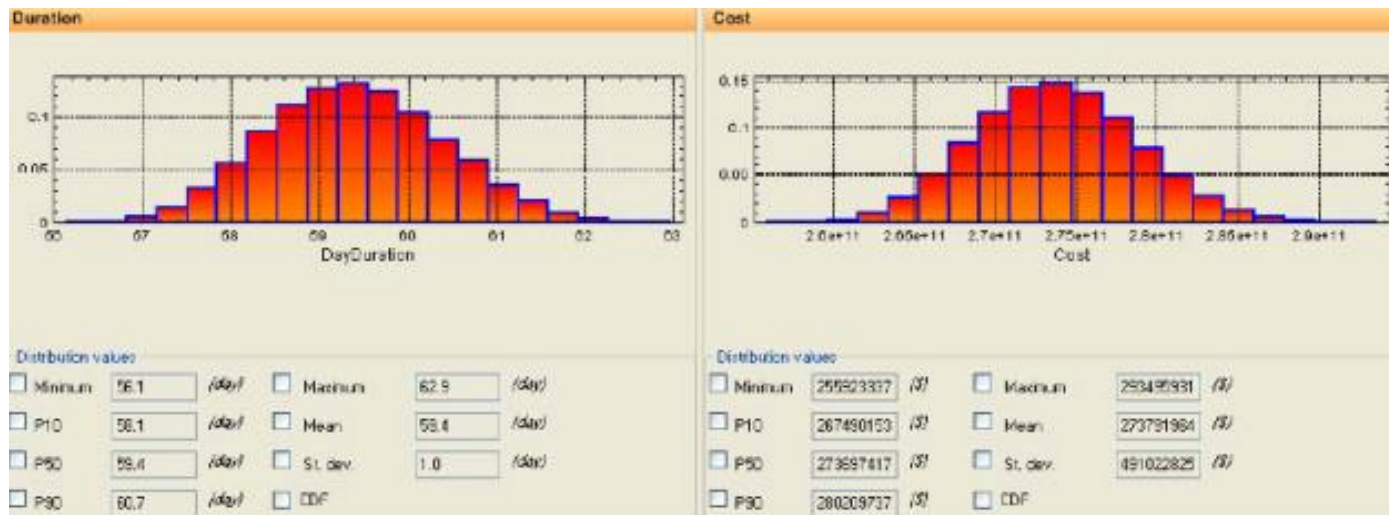


## 2. – Rig less P&A Technology Availability and Cost Effectiveness of Rig Less P&A Operations



University of  
Stavanger

- Evaluate potential of new technologies
- A risk based quantitative methodology will be used for evaluation



# Centre for Drilling and Wells for improved Recovery (SBBU)

## *Vision*

- *The vision is to unlock petroleum resources through better drilling and well technology.*

## *Objective*

- *The objective is improved safety for people and the environment and value creation through better resource development and reduced cost.*

## *Strategy*

- *Collaborative environment between the oil industry and the R&D community.*
- *Continued process for development of the R&D program.*
- *Associated projects involving service companies and smaller suppliers.*
- *National and international cooperation.*



RESEARCH PARTNERS



INDUSTRIAL PARTNERS



# SBBU Academy

- 1) PhD and MSc students will be integrated in the research activities in a way that utilizes the students efficiently in generating the defined research results as well as giving the students an education with high industry relevance.
- 2) In addition to this academic element it is our ambition to provide an opportunity for the industry to cooperate on developing a service for structured continued competence development of their personnel.

NTNU



UiS



# Subproject P3.3 Improved Plugging & Abandonment (P&A)

## *Project objective*

- The goal is to make P&A operations more cost-effective while maintaining or improving well integrity.

## Project leader

- Torbjørn Vrålstad, SINTEF

## *Main focus area*

- *Materials for Improved P&A*
- *Rig less P and A*
- *Two PhD positions planned with funding from SBBU.*
- *Titles:*
- *“Improved materials for optimized P & A performance”, Supervisors Helge Hodne, Arild Saasen, Torbjørn Vrålstad*
- *“Rig less P&A Technology Availability and Cost Effectiveness of Rig Less P & A operations”, Supervisors Kjell Kåre Fjelde (UiS), Torbjørn Vrålstad (Sintef)*

# P&A – Forum - Involvement

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Suggestions and input concerning:

- Topics to cover
- Teaching material
- Lecturers to invite
- ???