Involvement in higher education

Helge Hodne/Kjell Kåre Fjelde
Content

• 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/Advises from the audience?
A new master specialization within Well engineering (2012-2014)

- 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.

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.

Seadrill

MPD Weatherford

Drillscene IRIS

Baker Hughes

Wireline – Aker Solutions

Subsea

P& A Norsok D010
Initial steps - including P&A in teaching

- 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

<table>
<thead>
<tr>
<th>First year</th>
<th>Second year</th>
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<tr>
<td>1 Sem</td>
<td>2 Sem</td>
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<tr>
<td>Basic Science and Petroleum Engineering 10 STP</td>
<td>Petroleum Production and Multiphase Flow – 10 STP</td>
</tr>
<tr>
<td>Geology and Petro-physics for Drilling Engineers – 5 STP</td>
<td>Advanced Drilling Technology and Engineering 15 STP</td>
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<tr>
<td>Well Engineering 15 STP</td>
<td>Management, Economy &amp; Operations’ 5 STP</td>
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Official start 2013
Well Intervention and Plug & Abandonment (2013)

- 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

- 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

- 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

• 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


Teaching/Research at UiS

- 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

- The basis for this project is an ongoing study regarding the effect of CO$_2$ 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$_2$ 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

- 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.
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.
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

Suggestions and input concerning:

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