



Norsk olje&gass

Egil Thorstensen
Leader PAF

P&A Seminar October 18th 2018

- Agenda

08:00 – 09:00 Registration, mingling and coffee

Introduction and P&A Regulatory Updates

09:00 - 09:15 Welcome & Safety - Egil Thorstensen, PAF leader & Harald Hornberg, Hotel

09:15 - 09:30 Opening Statements - Karl Johnny Hersvik, AkerBP

09:30 - 09:50 NORSOK D-010 Status New revision – Ole-Petter Holmvassdal, NORSOK

09:50 - 10:05 Unconventional barriers in P&A - Johnny Gundersen, PSA

10:05 - 10:20 Discussion of acceptance criteria for risk-based P&A design - Øystein Arild, NORCE

10:20 – 10:45 Coffee Break / Networking / Stand Views

P&A and the environment/challenges/CO2 cost

10:45 – 11:10 P&A and the environment – Anneli Bohne-Kjersem – Equinor, Lars Hovda CoP

11:10 – 11:30 Understanding leakage rates in permanently abandoned wells by studying natural hydrocarbon seepages - Mari Røstvig Tveit, Master student

11:30 – 12:30 LUNCH

P&A Experience Transfer – “Rigless”

- 12:30 - 12:55 JOTUN B experience – Jan Tore Helgesen, Halliburton
12:55 - 13:25 Intervention based cementing methods for rigless P&A - Bård Marius Johansen, Equinor
13:25 - 13:50 Experience MacCulloch LWI campaign – Ali Agnew, ConocoPhillips

13:50 – 14:10 Coffee Break / Networking / Stand Views

P&A Experience Transfer – “Rig based”

- 14:10 – 14:30 Varg P&A experience and learnings – Helge Vindheim/Sigvald Hanssen, Repsol
14:30 – 14:50 Improved P&A Performance on Valhall - Martin Straume, AkerBP
14:50 – 15:10 Dual casing challenge - Alexander Watson, Shell UK

15:10 – 15:30 Coffee Break / Networking / Stand Views

P&A Technology needs

- 15:30 - 15:50 Casing Deformation- Caliper – 3D drawing of tubing – Thomas Dale/ Steve Helmore, ConocoPhillips/Epidot
15:50 - 16:10 Tailored P&A fluid for PW&C operations - Gunnar Lende, Halliburton/Duncan Clinch, Baroid
16:10 - 16:30 RePlug – P&A the eternal and affordable way - Astri JS. Kvassnes, Jill Clausen ReStone

16:30 – 16:40 Wrap-up - Steinar Strøm, PAF member

P&A Seminar - 2018

Experience transfer

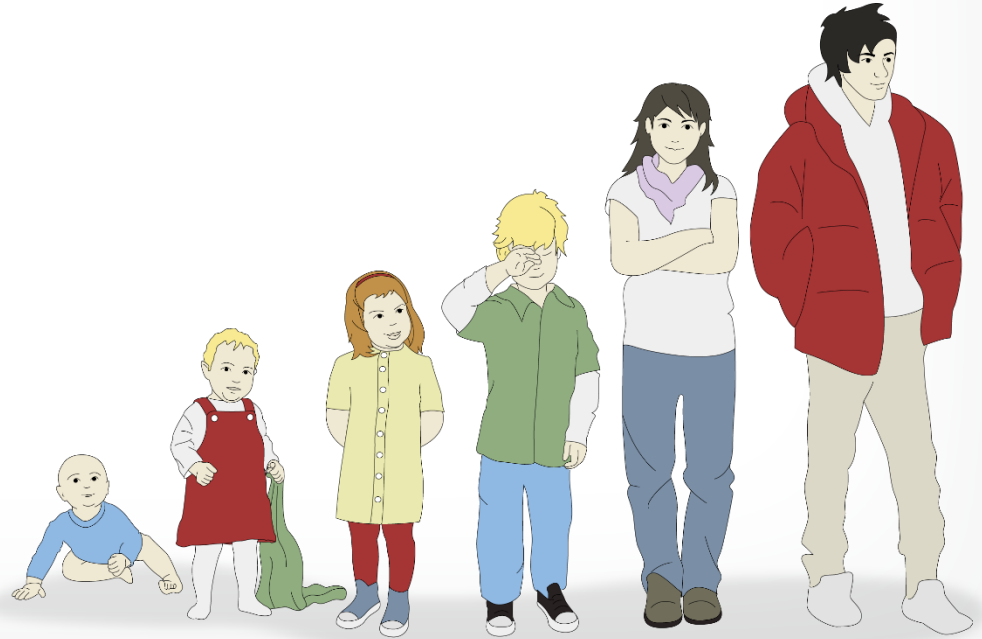
- P&A Regulatory Updates
- P&A and the environment
- “Rigless” P&A experience
- “Rig based” P&A experience

Estimated P&A- Norwegian Continental Shelf: 2019 – 2025

P&A Technology needs

Key technical challenges

P&A Wave – P&A Activities many years ahead



Estimated P&A- Norwegian Continental Shelf: 2019 - 2025

October 2018

Company	Estimated number of P&A 2019 → 2025	Estimated number of Slot Recovery 2019 → 2025	Estimated number of Sub Sea P&A 2019 → 2025	Contact person
AkerBP	14	30	2 subsea P&A	Egil Thorstensen
ConocoPhillips	+/- 50	+/-20		Ann Elin Mikalsen
Eni Norge	2	0	2 subsea P&A	Jan Terje Svendsen
Equinor	173	70/year		Steinar Strøm
Neptune Energy	0	1		Mehryar Nasserri
Faroe Petroleum	3-5	0	subsea P&A	Dan Sturdee
Lundin Norway	4	2	4 subsea P&A	Jakob Mo
Norske Shell	9	1	subsea P&A, LWI	Kjetil Skjeldestad
Repsol Norge	35	1		Øystein Østerhus
Total Norge	1-2	0	Subsea P&A	Johan Kverneland
Spirit Energy	0	0-1		Atle Knudsen
Wintershall	+/-6	+/-20		Mark van Aerssen
Point Resources	0	11	Subsea P&A	Sigve Krohn Næsheim

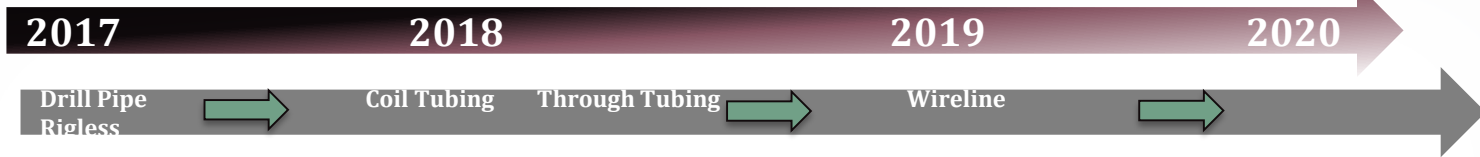
Key technical challenges:

Subsea P&A, Platform P&A, Dual casing strings across P&A zone, Slot recovery, Rigless P&A, Verification of cement / formation outside casing, Removal of tubing / casing, Challenge to set 50m plugs, Tubing access/collapse, verification methods, corroded tubulars, cross-department. Through tubing PWC, Logging through two strings, Deformed casing/tubing

Technical needs:

Dual string cross sectional plugging, Cutting/milling in large casing, Pull tubing, Logging challenges, PWC, Reliable and efficient barrier verification methods, Dual casing bond logging, Alternative plugging solutions, Rigless P&A

Roadmap for New P&A Technologies



Optimize Perf Wash & Cement	Alternatives to cement: - Creeping shale/Formation effects - Sand/Rock/Natural materials - Chemical materials - Steel	Rigless P&A: - High Capacity CT System - High Energy Solutions (Melt/Burn)/Extreme Concept
Optimize Milling		
Tubing left in hole		
LIV CT Pilothole drilling/cementing	Well Intervention technology for P&A	Wireless technology (subsea wellheads)
Rig/Process optimization	Improved Verification / Logging methods	
Ctrl line left in hole	Dual string: Cement bond logging Perf, Wash & Cement, Milling	
Ctrl line left in hole	Tender Support P&A rigs/Modular Rigs	

Focus areas for 2017 – 2020
 Many projects - ongoing

Focus areas for 2017 – 2020
 Work started