Decommissioning and P&A in the Future

Tim Croucher
Decommissioning and Abandonment Manager
ConocoPhillips Norway
Cautionary Statement

• The following presentation includes forward-looking statements. These statements relate to future events, such as anticipated revenues, earnings, business strategies, competitive position or other aspects of our operations, operating results or the industries or markets in which we operate or participate in general. Actual outcomes and results may differ materially from what is expressed or forecast in such forward-looking statements. These statements are not guarantees of future performance and involve certain risks, uncertainties and assumptions that may prove to be incorrect and are difficult to predict such as oil and gas prices; operational hazards and drilling risks; potential failure to achieve, and potential delays in achieving expected reserves or production levels from existing and future oil and gas development projects; unsuccessful exploratory activities; unexpected cost increases or technical difficulties in constructing, maintaining or modifying company facilities; international monetary conditions and exchange controls; potential liability for remedial actions under existing or future environmental regulations or from pending or future litigation; limited access to capital or significantly higher cost of capital related to illiquidity or uncertainty in the domestic or international financial markets; general domestic and international economic and political conditions, as well as changes in tax, environmental and other laws applicable to ConocoPhillips’ business and other economic, business, competitive and/or regulatory factors affecting ConocoPhillips’ business generally as set forth in ConocoPhillips’ filings with the Securities and Exchange Commission (SEC). We caution you not to place undue reliance on our forward-looking statements, which are only as of the date of this presentation or as otherwise indicated, and we expressly disclaim any responsibility for updating such information.

• Use of non-GAAP financial information – This presentation may include non-GAAP financial measures, which help facilitate comparison of company operating performance across periods and with peer companies. Any non-GAAP measures included herein will be accompanied by a reconciliation to the nearest corresponding GAAP measure on our website at www.conocophillips.com/nongaap.

• Cautionary Note to U.S. Investors – The SEC permits oil and gas companies, in their filings with the SEC, to disclose only proved, probable and possible reserves. We use the term "resource" in this presentation that the SEC’s guidelines prohibit us from including in filings with the SEC. U.S. investors are urged to consider closely the oil and gas disclosures in our Form 10-K and other reports and filings with the SEC. Copies are available from the SEC and from the ConocoPhillips website.
Decommissioning and P&A in the Future

Agenda:
- Decommissioning Scope
- Challenges and Goals
- Future Solution Development
- Industry Collaboration
- Conclusions
Decommissioning scope 2016-2055:

- >340 wells to P&A (+/- 50% of total cost)
- 19 facilities to remove and dispose ( +/- 45% of total cost)
Greater Ekofisk Well Plug & Abandonment Scope

**Ekofisk 2/4 B – P&A 22 wells**
- 2 wells 2016 (completed)
- Future 20 wells

**Ekofisk 2/4 C – P&A 23 wells**

**Ekofisk 2/4 A – P&A 23 Wells**
- 23 wells - Ongoing

**Eldfisk 2/7 B – P&A 19 wells**
- Platform Rig - 3 wells 2016 (completed)
- Future 16 wells

**Eldfisk 2/7 A – P&A 27 wells**

**Tor – P&A 12 wells**

---

**Short Term P&A**
- Well Integrity Driven

**Medium Term P&A**
- +/- 70-100 wells
- Structural Integrity Driven

**Long Term P&A**
- > 220 wells
- Economic Life Driven

---

P&A Forum Annual Seminar October 19th 2016
2014 – 2016 P&A Programs (Total 38 wells)

Ekofisk Alpha:
• 23 Wells – Complete by EOY
• Rowan Gorilla VI

Eldfisk Bravo:
• 6 Wells
• Platform Rig

Ekofisk Kilo:
• 3 Wells
• Platform Rig

Eldfisk Alpha:
• 2 Wells
• Maersk Gallant

Ekofisk Bravo:
• 4 Wells
• Rowan Norway
Greater Ekofisk Area Specific P&A Challenges

- Mature Subsurface Environment with large variability in pressure after 30 years of water flooding
- Dynamic Well Conditions with reservoir compaction and overburden subsidence
- Physical condition of ageing wells
- Surface / Platform Constraints
The Long Term Goal

• Two core focus areas:
  • Ensure a robust subsurface barrier management philosophy
  • Drive down future P&A cost through the development of new cost effective solutions
Multiple Parallel Technology Improvement Strategies

- Ensure robust subsurface barrier management
- Reduce Cost

New rig strategy?

- Improve efficiency of current P&A methods
- Specific targeted improvement initiatives

- Improve rig efficiency
- Single market exercise (functional spec)

New Technology

- Step Change improvement through new technology
- Multiple strategically focussed R&D and tech development projects

- Low Cost
- Low Risk
- Early Delivery
- Incremental Improvement

- Medium Cost
- Medium Risk
- 2-4 yr Delivery
- Significant Improvement

- Medium Cost
- High Risk
- 2-6 yr Delivery (from 2015)
- Step Change Improvement
Improved efficiency of current P&A operations

- Testing application of new P&A solutions e.g.:
  - Optimized Perf-Wash-Cement technique
  - Use of formation as a barrier

- Challenged standard P&A practices
  - Improvements in barrier verification
  - Reduced tripping through multi-activity tool combinations

- Improved operational rig efficiency
  - Improved planning enabled more efficient SIMOP’s
  - Optimized pattern skidding

+/- 70% improvement in P&A performance (days per well)
Reducing the Cost of P&A Activities – Rig Cost

- Reduced time per well -> Reduced cost per well
- Reduced burn rates -> Reduced cost per well
- Need dramatic changes in both surface and downhole technical capability
- Paradigm shift in P&A philosophy / strategy

The Future?

Drilling Rig? P&A Rig?

With A Rig? Without a Rig?
Future Solution Development – New Technology

- Understand key solution needs and opportunities
- Consider broad scope of alternative solutions
- “Out of the box” thinking / Open minded approach to solution development
- Communicate needs to the market
- How to improve market interest / understanding?
- How to accelerate development of North Sea P&A Solutions market?
Multiple Potential Solutions and Providers

Key to Success – Collaboration!

- Pan North Sea
- Regional Organizations
  - UK Oil and Gas
  - Norwegian Oil and Gas Association
- Industry JIP’s
- Bi-Lateral / Tri-Lateral Operator Collaboration

Technology Providers
- Spex
- Foro
- Interwell
- GA Drilling
- BiSN
- Nammo
- Sintef
- DNV GL
- DrillWell
- ANT

Needs
- Remote monitoring
- Multi-string bond logging
- Through Tubing Solutions
- Formation Barriers
- Monitoring
- Verify Barrier
- Establish Barrier
- Clean Out
- Regain Wellbore Access
- Remove Steel
- Erosion
- Heat melting
- Explosion pressure
- Corrosion
- Advanced Pugging Materials

Revolutionary P&A Technology

Concepts

Through Tubing Solutions

…. etc.

Multi-string bond logging

Remote monitoring

Formation Barriers

…. etc.
Conclusions

• Two core focus areas to drive improvements in future P&A
  • Acceptable subsurface barriers
  • Acceleration of development of new cost effective solutions

• There is an opportunity for a “Paradigm Shift” in P&A philosophy / strategy

• Need dramatic changes in both surface and downhole technical capability

• There is a huge long term market and there is Win – Win market model!
  • Long term environmental risk assurance at a significantly reduced cost
  • Guaranteed scope of work over a very long period

• Collaboration between Operators and the Market is vital