Navigating the present, focusing on the future.

Helix Decommissioning Support

‘New Approach to P&A’

SPE Aberdeen Well Late Life & Well Abandonment Conference

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P&A Overview

Traditional Approach
• Use of MODU & Jack Ups
• Use of 21” Marine Riser
• BOP Stack Use
• One size fits All from simple to complex well abandonments

Alternate Approach
• Use Of the ROAM
• On a Heavy Well Intervention Vessel
• 8.5/8” HP Riser
• IRS Stack (EDP/LRP/TRT)

NOTE: Alternate Abandonment approach is tailored to well type and reservoir need (no requirement for over loading equipment spread).
New Technology - ROAM

Functionality
- Normal Operations = Environmental Containment
  - Annular BOP and circulation lines
- Pressure Test & In-flow test
- Emergency = Well Isolation
  - Dual Shear-Seal Rams
  - EQD functions

Lower overall cost of P&A
- De-risk P&A campaign by using Cost effective HWIV
  - Enable logging behind casing by pulling Upper Completion open water
  - Full Well P&A capabilities by addressing remediation scenario
- Minimize use of Drilling Rig for P&A

Layout
- 18-3/4” Re-entry mandrel
- 18-3/4” 10,000psi Annular BOP
- 18-3/4” 10,000psi Double BOP
  - Shear & Seal rams
- 18-3/4” H4 connector
- Flow spools with 3” stabs
- 2” circulation lines
- Emergency Disconnect
- OneSubsea Subsea Control Module
# P&A Operational Steps w/ROAM

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<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
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<td>Reservoir (lower) barriers</td>
<td>Intermediate (upper) barriers</td>
<td>WH removal</td>
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- **Phase 1**
  - Bullhead tubing
  - Mechanical Plugs
  - Cement plugs on CT/DP

- **Phase 2**
  - Release & Recovery
  - Tubing retrieval
  - Permanent plugs
  - Across/ recover casings

- **Phase 3**
  - Surface Plug
  - Conductor removal
  - Seabed Clearance

**Well Preparation**

- **MODU c/w CWOR**
  - Through Bore

- **MODU c/w BOP**
  - Full Bore

**LWIV**

- Diving
- Well prep (Barriers, injectivity test, drift run)
- Bull heading/ circulation
- Mechanical plugs
- Through tubing cement
- VXT recovery

**HWIV + IRS**

- As per LWI
  + CT mechanical access
  + CT cement placement

**LWIV +**

- Full bore access
- Deployed in parallel over the side
- Unset and pull TH open water
- Enabler for Intermediate Abandonment

**LWIV**

- Open water Services with specialized tooling for cutting
- + Infrastructure Decommissioning
- + Seabed Clearance

**Q7000 + ROAM**
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ROAM

HP riser, annulus pipe, umbilical

IRS w/ SJDF

Circulation Jumper

ROAM E/H Controls

Workstring

Wellhead

ROAM
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All Inclusive Service Offering

• We own the assets
  • Including vessels, SIL, IRS, ROV, Trenchers,

• Have relevant experience
  • In house crew not 3rd party – many with 20yrs+ experience
  • Includes marine, intervention, diving, ROV

• Single contracting
  • Helix Well Ops ↔ Canyon ↔ One Subsea ↔ Schlumberger

• Contractual flexibility
  • Risk/reward, lump sum, qualified TCE etc.

PM & Engineering | Pipeline Survey | Hot tap | Pipeline flushing | Pipeline recovery | Pipeline trenching | Mattress recovery | Sat diving | Jacket diving | Well work | Facility removal | Structure Cutting | Heavy lifts | Wellhead removals | Seabed clean up | Overtrawl | Clearance certificate
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Thank you