ROVs – A Customer’s perspective

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Introduction

This presentation gives a high level overview on ROV operations, subsea execution methodology selection drivers and improvement opportunities from BP’s perspective.

- Why do we use ROVs?
- What do we use ROVs for?
- ROV & tooling reliability
- Hydraulic leaks
- ROV & tooling efficiency
Why do we use ROVs?

• The ROV is an essential tool to maintain safe, compliant and reliable oil and gas production from offshore assets

• Other means of completing subsea tasks include:
  - Divers
  - Platform/Vessel deployed remote tooling
  - Autonomous vehicles
Importance of ROVs

- ROVs play a central role in the entire life cycle of a subsea oil and gas production asset
  - Construction
  - Commissioning
  - Integrity Management
  - Fault finding, repair, maintenance
  - Emergency response
  - Decommissioning
  - Monitoring of decommissioned assets
Subsea Execution method selection

• Working on a performance basis – we specify the task, the contractors develop an appropriate solution

• Selection factors, which may include but not limited to:
  - safety
  - environmental
  - asset integrity
  - water depth
  - commercial
  - strategic
  - technical feasibility
  - quality

  execution methodology

• There is no general preference for any particular methodology

• Selection is driven by safety, integrity and commercial risk reduction
What do we use ROVs for?

- Typical Inspection requirements:
  - Structural Inspections (platform jackets, caissons & risers, FPSOs & moorings)
  - Pipeline Inspections (Visual and Side Scan)
  - Specialist Inspections (defect mapping, screening sections of pipelines & risers)
What do we use ROVs for?

• Valve operations
• Subsea connections
• Control module & choke change outs
• Seabed stabilisation / excavation
• Repairs of subsea equipment
• Decommissioning
ROV Reliability

- ROVs are one of the main sources of breakdown time on projects
- Contractor owned vs. subcontracting ROV & tooling
  - reliability issues with hire equipment (ROVs and tooling)
  - maintenance, sparing, operational windows
- Wet testing
  - full function checks in water (at depth if possible)
- Implementation of more rigorous vehicle assurance pre-mobilisation
Hydraulic leaks from ROV

- BP has a high focus on leak reduction
- Regulatory requirement to report leaks
- Leak reduction is a function of system reliability to be considered in design and maintenance
ROV operational efficiency

• Challenge:

  We want the job to be done, maintaining a high standard of safety, integrity and quality in the shortest possible time

• Thorough planning, simulation and testing of activities

• Design to reduce tooling changeover times, maintenance times and repair times

• Competence and training – mobilise the right crew for the vehicle, task and tools
Where can we do better?

- Increase operational window – waves, winds & currents
- Apply reliability methods* to ROV design and operation
- Standardisation on vehicles, components and interfaces
- Reduction/ elimination of hydraulic leaks
- Continue to contribute to raising the next generation of ROV enthusiasts (MATE competition)
- Automation of simple tasks

*API RP 17N - Subsea Production System Reliability and Technical Risk Management
Summary

Implement a reliability culture to ‘get it right first time’

• Improve ROV operational efficiency
• Increase vehicle up-time