Cost efficient and reliable removal of subsea wellheads in the North Sea

Jarle Hvidsten & Ole Petter Nipen, Technical Support Advisors

Copyright 2019 Baker Hughes, a GE company, LLC ("BHGE"). All rights reserved. The information contained in this document is company confidential and proprietary property of BHGE and its affiliates. It is to be used only for the benefit of BHGE and may not be distributed, transmitted, reproduced, altered or used for any purpose without the express written consent of BHGE.
Agenda

- SCOPE OF WORK
- CURRENT TECHNOLOGY
- DEVELOPMENT OF THE NEW WELLHEAD RECOVERY SYSTEM
Scope of work
Subsea P&A phases

**Minimize / Optimize time spent in phase 2**

**Phase 1**
- **Wireline / Coil tubing:**
  - Check Wellheads
  - Kill wells
  - Wireline / Slickline
  - Set primary barrier and or prepare for X-mas tree removal
  - X-mas tree removal

**Phase 2**
- **Drill pipe / simultaneous:**
  - Recover X-mas tree
  - Recover Tubing / casing strings
  - Set barrier plugs
  - Set shallow barrier plug
  - Optional Phase 3 scope

**Phase 3**
- **Drill pipe:**
  - Placement of surface plug
  - Recover wellhead and decom structures.
Subsea P&A operation overview

**Conventional P&A**
- Start P&A
- Place primary & secondary barrier in 9 5/8” casing
- Cut 9 5/8” casing
- Pull wear bushing
- Pull 9 5/8” seal assembly
- Pull 9 5/8” casing
- Set surface plug inside 13 3/8”
- Pull BOP
- Cut & Pull WH
- Finish P&A

**Optimize P&A**
- Start P&A
- Place primary & secondary barrier in 9 5/8” casing
- Cut 9 5/8” casing & recover wear bushing
- Pull 9 5/8” seal assembly & 9 5/8” casing
- Set surface plug inside 13 3/8”
- Pull BOP with main rig, Cut & pull WH in AUX
- Finish P&A

**Rig & vessel operations**
- Start P&A
- Place primary & secondary barrier in 9 5/8” casing
- Cut 9 5/8” casing & recover wear bushing
- Pull 9 5/8” seal assembly & 9 5/8” casing
- Set surface plug inside 13 3/8”
- Pull BOP
- Cut & Pull WH
- Finish P&A

---

Copyright 2019 Baker Hughes, a GE company, LLC (“BHGE”). All rights reserved.
Technology
Combined runs

Pull Wear bushing & cut casing in a single run:
- **WBRRRT** - Wear bushing running/retrieving tool
- **MS**- casing cutter and Ultra X-treme motor
  - METAL MUNCHER™ Advanced Milling Technology (AMT) carbide knives

Pull seal assembly & pull casing in a single run
- **SRT** – Seal Running Tool
- **Hydraulic casing spear with pack-off**
  - Allow to circulate out mud in annulus & observed for gas via kill / choke line
Wellhead cutting & surface plug

Vessel deployed multiple circulation / cement tool
- WASP – Well Abandonment Straddle Packer
- Perforation Guns
  - Placing surface plug by vessel

Cut & Pull Wellhead
- UWRS – Universal Wellhead Retrieving System
- Hercules Multi String Cutter
  - Cutting can be performed offline on rigs with dual derricks

- Average cutting time: 4 hours, Quickest cut: 43 minute, 27 cuts in less than 2 hours
- 73 wellhead successfully recovered
The NEW wellhead recovery system
The new wellhead recovering system

Overview:

• Vessel deployed system – Marine operation
• Combine legacy products to create new systems
• Low cost subsea removal option
• Applicable for exploration and production wells
• No depth restrictions
• No surface deck spread
The new wellhead recovering system

Development progress:

• Project kicked off Q4 2018
• Order all parts – Finish Q1 2019
• Test program and objective defined - Finish Q1 2019
• Interface check of equipment – Finish 13.June 2019
• Cut 20” X 36” wellhead, planned two cuts unsupported and two cuts in cemented – Ongoing June – August 2019
Contact info

Jarle Hvidsten
Baker Hughes, a GE company

M +47 936 25 527
E Jarle.Hvidsten@BHGE.com

Ytrebygdsveien 215 N-5258 Blomsterdalen

Ole Petter Nipen
Baker Hughes, a GE company

M +47 908 94 387
E ole.nipen@bhge.com

Ytrebygdsveien 215 N-5258 Blomsterdalen