

SPE Aberdeen Well Decommissioning Symposium

Offshore Lightweight Modular Rig Technology
Smart Workover and P&A

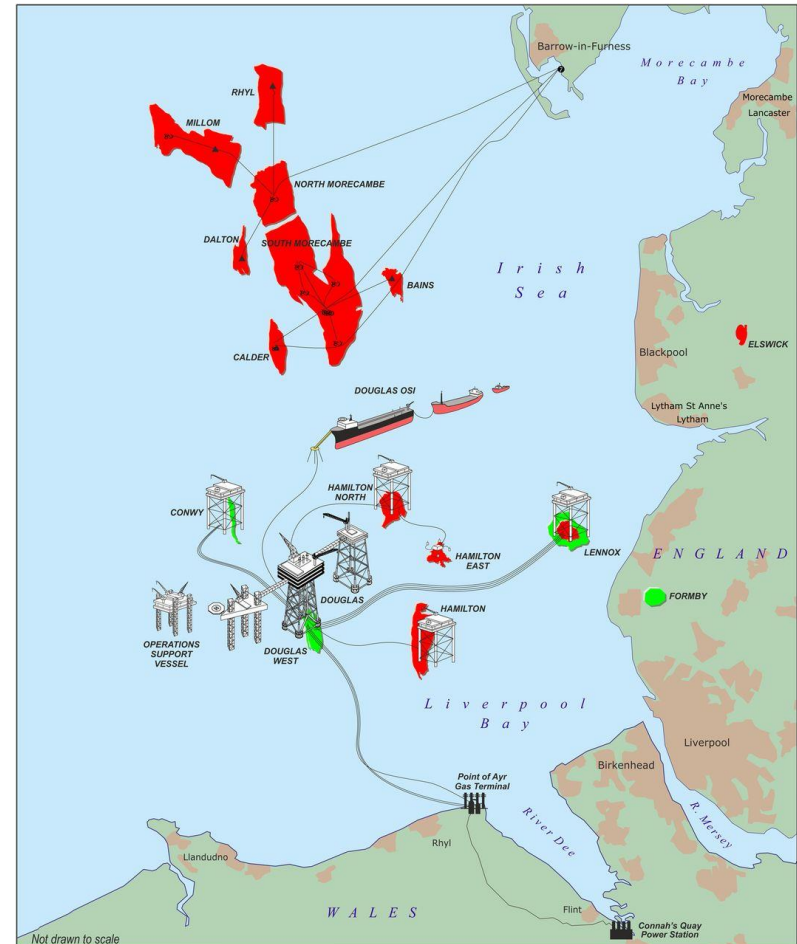
May 13th 2021



Dennis Vollmar, Herrenknecht Vertical GmbH

AGENDA

- › Field: Location & Challenges
- › Integrated P&A Project
- › Herrenknecht Group
- › Managing Project Lead-time
- › Operational Field Highlights
- › Performance & Lessons Learned
- › Conclusions

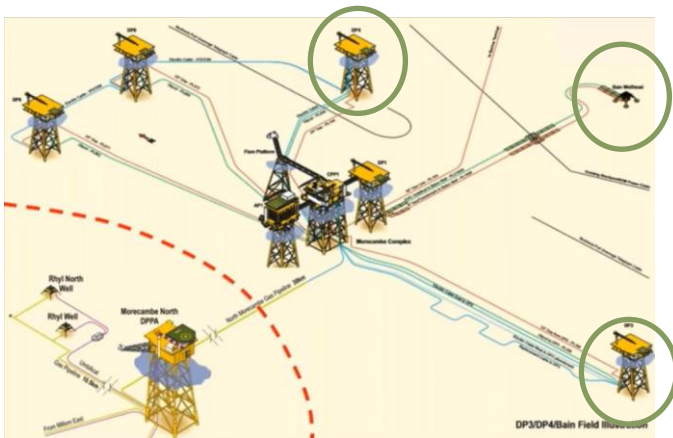


UKCS FIELD LOCATION & CHALLENGES

12 wells on two EIS platforms (9 slanted & 3 vertical)

➤ 2 platforms + 2 tiebacks

➤ Directional drilling challenges (reservoir depth only 900m!)



Op's challenges



80's

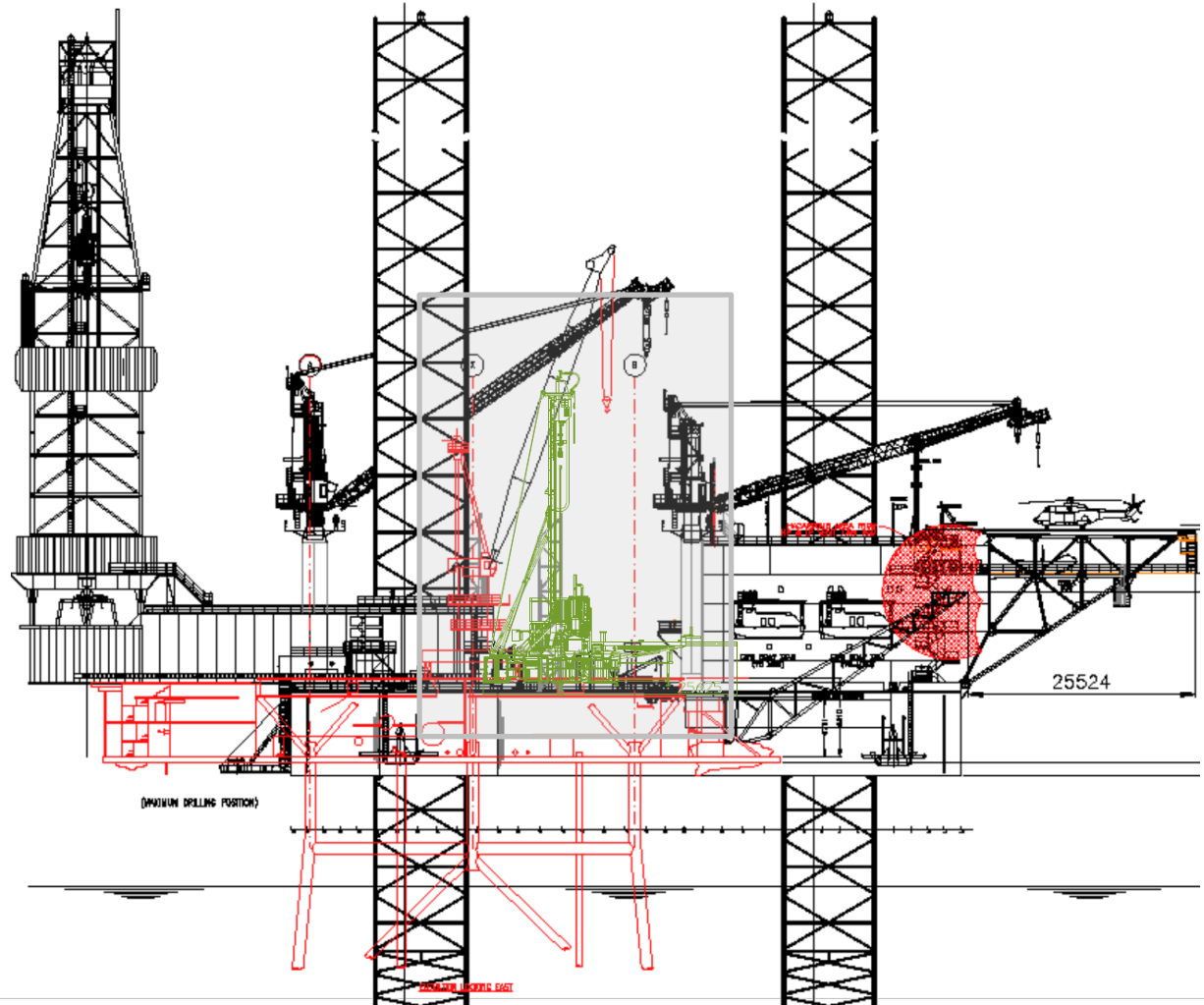
The original slant drilling rigs no longer exist.

To support the cementing, pumping, personnel, beds and crane requirements, a jack-up support vessel was required alongside to assist 24 hr operations.

INTEGRATED P&A PROJECT

Morecambe Bay Field: Services setup

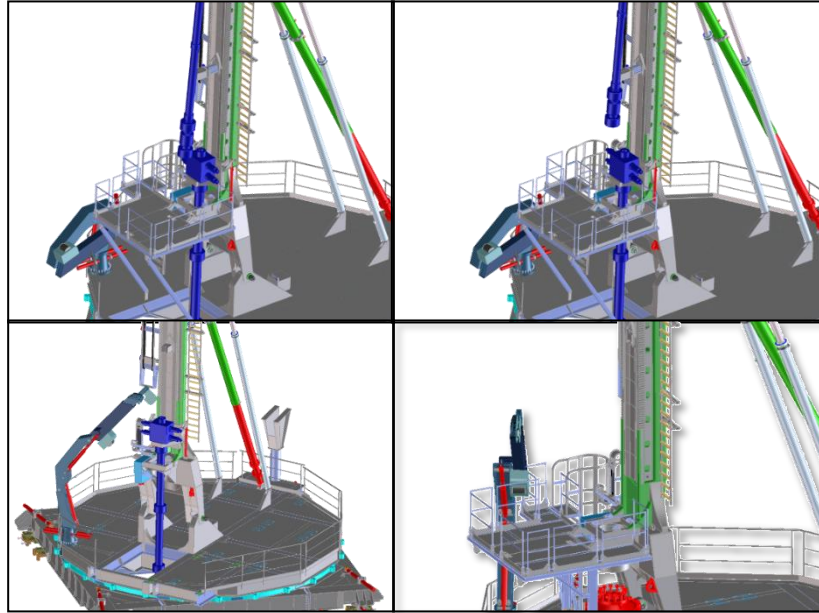
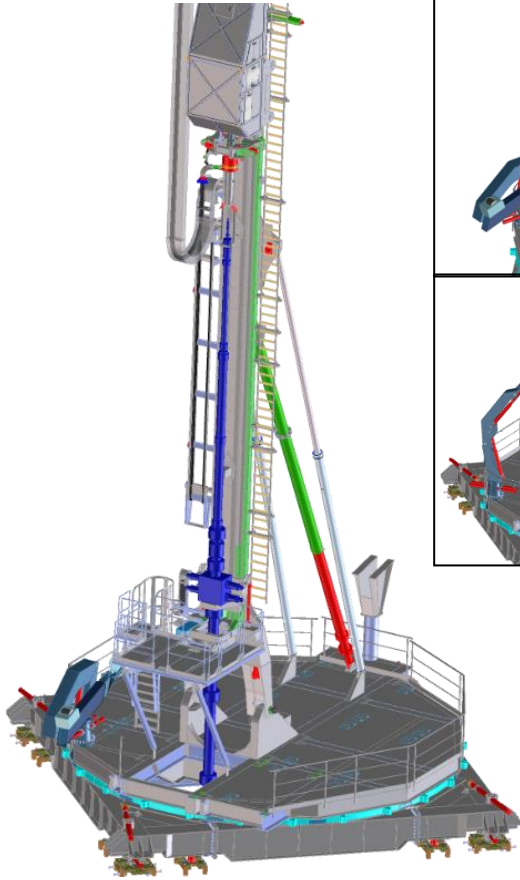
- Tender Assist
 - Mud flow
 - Well control
 - Crane logistics
 - Wireline



INTEGRATED P&A PROJECT

CT/ Wireline integration for simplified sequential operations

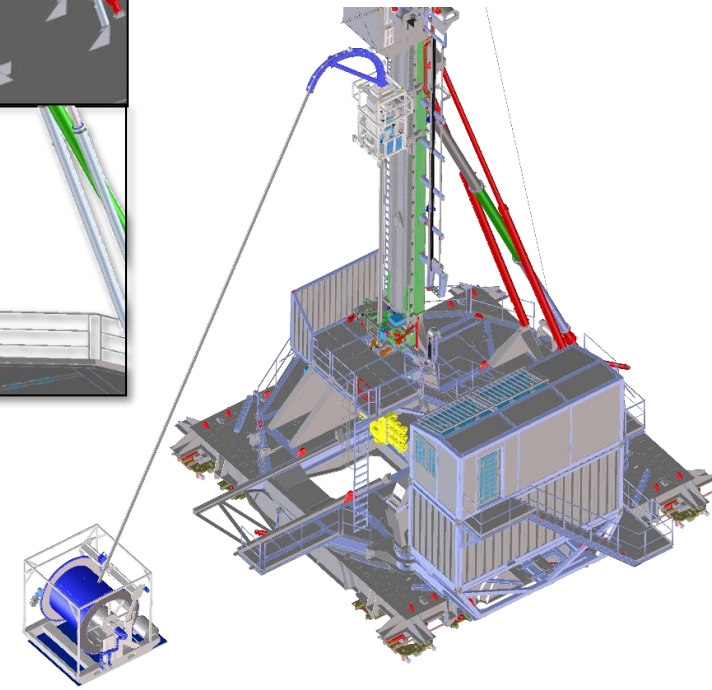
Wireline



„Unforeseen events can be handled by fast operational switch“

Coiled Tubing

„Injector head raised for CT BHA MakeUp by IR“



MANAGING PROJECT LEAD TIME

Achieved by extending the operational envelope of existing rig



Mast Extension:

- › Range 3 Pipe
- › 2x IBOP
- › Tool Joint clamping

3rd Party Service

- › Slickline Support structures
- › Downhole Tool handling
- › Jacking system for conductor

Offline capacity

- › Palfinger crane operations
- › BOP testing/ assembly
- › Partial assembly option

Skidding System

- › 360° Rotation
- › X-Y Skidding
- › Allowable misalignments

Pipe handling

- › A side feeding
- › Rigfloor winch/ crane
- › Automated Slips

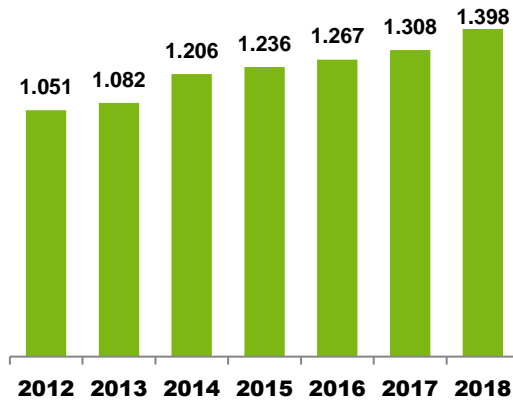


HERRENKNECHT GROUP

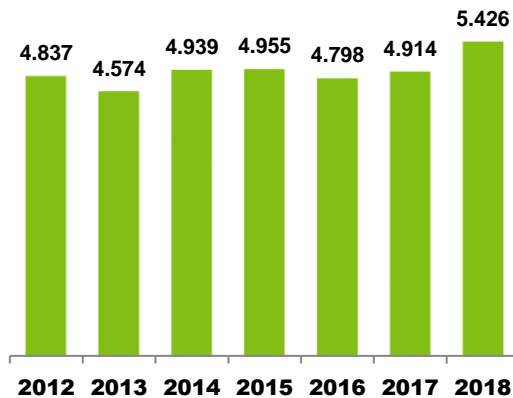
Market leader in tunnelling systems



Sales in billion Euro



Employees *



* w/o trainees, incl. temporary staff

Business units



› Traffic Tunnelling

- › Roads / Railroad / Metro
- › Water / Sewage
- › Hydropower / Electricity



› Utility Tunnelling

- › Water / Sewage
- › Hydropower / Electricity / Communication
- › Shafts / Pipelines



› Drilling Rigs

- › Oil & Gas Onshore / Offshore
- › P&A / Workover
- › Modernization
- › Geothermal



› Mining

- › Exploration
- › Production

MODIFICATION OF EXISTING RIG



OPERATIONAL FIELD EXPERIENCES

Rig assembly & Offshore commissioning

- Assembly finished in less than 10 days + Commissioning 5 days
- 20 lifts in total based on 20mt lift except of mast with top drive weighing 35mt
- Knuckle boom crane is assisting the rigup to speed up the assembly process
- Pipe handling equipment is assembled and commissioning during wireline campaign



OPERATIONAL FIELD EXPERIENCES

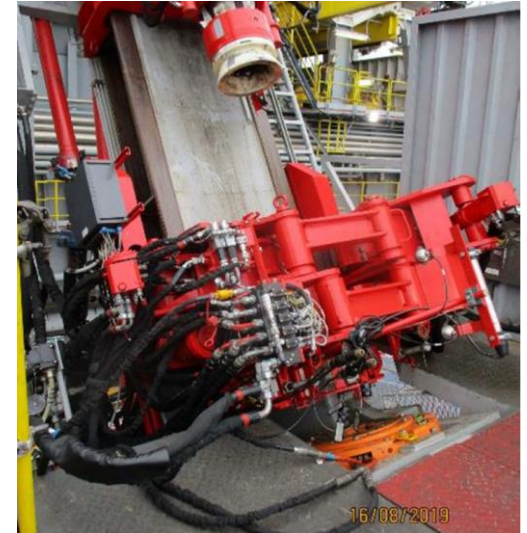
Integrated lubricator handling operations



OPERATIONAL FIELD EXPERIENCES

Slant operational challenges solved in design stage

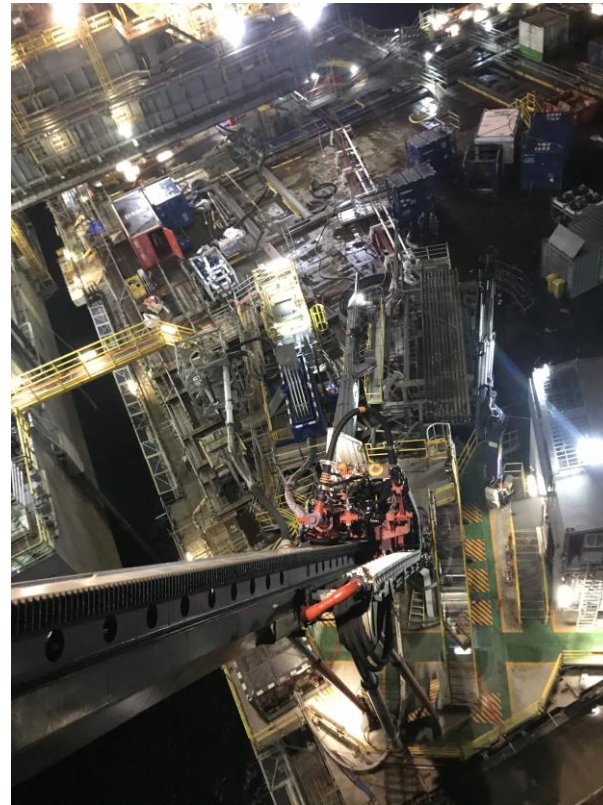
- BOP weight sitting on frame, which is going hands free in position
- Rigid pipe handover and breakup/ makeup reducing manual exposure



OPERATIONAL FIELD EXPERIENCES

Slant operational challenges solved in design stage

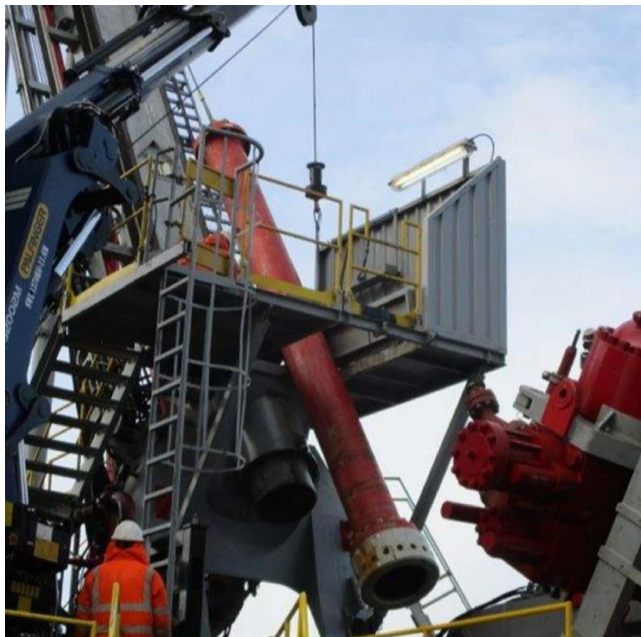
- BHA makeup is supported by knuckle boom crane instead of winch setup
- Drillers cabin is detached from rig floor



OPERATIONAL FIELD EXPERIENCES

Slant operational challenges solved in design stage

- Riser installation by knuckle boom crane through a hatch of the drill floor, which also can be removed for the recovery of the production tree.



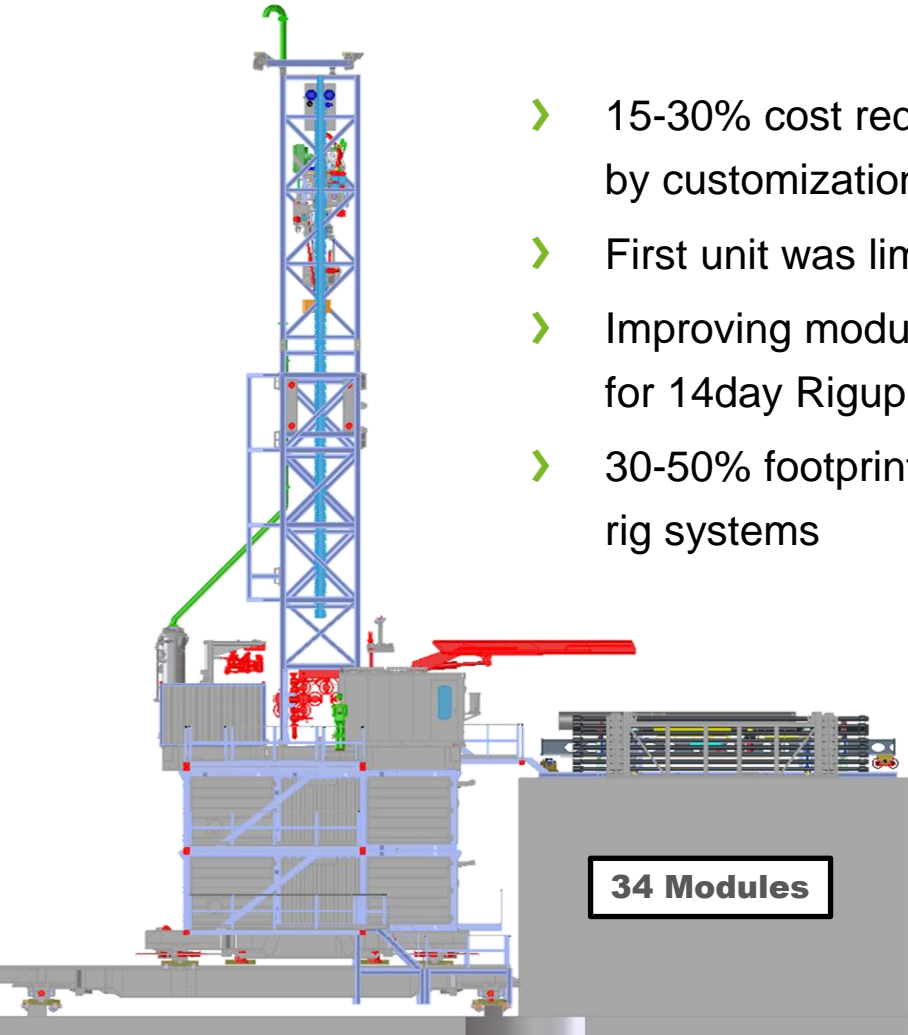
OPERATIONAL FIELD EXPERIENCES

Slant operational challenges solved in design stage

- Detached drillers cabin allows full operational control of pipe handling and hoisting system at 60° & 90°



CONCLUSION



- 15-30% cost reduction through 3rd party integration achieved by customization
- First unit was limited in flexibility due to tight time schedule
- Improving modularity to smaller weights and ISO dimensions for 14day Rigup
- 30-50% footprint and weight reduction compared to existing rig systems

Recommendation:

Early Involvement of manufactures to fully customize based on total integrated cost

SPECIAL THANKS TO



HERRENKNECHT VERTICAL. AUTOMATED RIG TECHNOLOGY.

