

Case study: North Sea

Mastiff RIS beat deadline on casing and conductor recovery job

A North Sea operator was facing the removal of the topside platform on one of its offshore assets. With the heavy-lift barge already scheduled to arrive for topside module removal, the operator needed to perform a conductor and casing recovery on 23 wells before it arrived. Given the time constraints, the operator needed to bring in an additional handling system to support the plug and abandonment tasks, without ceasing the ongoing operations on the platform. Further complicating the recovery operation, the casing conductor strings were aged with external marine growth, and the operator was concerned the conductor connections would not support the weight of the conductor during removal.

The operator chose Baker Hughes as their partner for this operation due to the differentiating technology of the **Mastiff™ rigless intervention system (RIS)**. The RIS is a portable, modular system with a self-elevating and pinning mast. This design minimizes working at height and enables efficient assembly and disassembly times. The RIS has full X-Y skidding capability, enabling the system to skid across well slots quickly to improve efficiency.

A fluid handling system was purpose built for this operation to properly manage fluid returns from cutting operations and dirty fluids trapped between the casing strings. As part of the fluid system, a lightweight portable jetting solution was designed and built for external conductor cleaning.

To begin the job, the team assembled the Mastiff RIS and skidded it onto the designated well slot. They deployed a multistring cutter to the desired depth to cut the intermediate and surface casing string above sea level. Fluid circulation continued until clean return fluid was seen in the surface handling system.

Once a successful cut and cleaning was confirmed, they pulled the cutting assembly out of hole and used a fishing spear to latch and pull the casing strings from the wellhead to the RIS floor. The strings were then either broken out at the connection with a casing tong or bored, pinned, and cold-cut with a guillotine saw, depending on recovery configuration. These steps were repeated until all intermediate and surface casing strings were recovered to enable removal of the conductors.

The multistring cutter bottomhole assembly (BHA) was then used to cut through the 30-in. conductors. Once pulled to surface, a fishing spear was run on sacrificial 13³/₈-in. string to keep the conductor in compression, as there was concern that the aged condition of the conductor strings would not support the weight of the string during pulling. The team then pulled 40-ft conductor sections with sacrificial strings to surface, where they bored, pinned, and cold-cut the sections before laying them on the unit laydown bed.

Challenges

- Recover conductor and casing from 23 wells under tight time constraints
- Aged conductor strings could not support their own weight
- Cemented casing strings needed to be cut and pulled together
- Drilling continued during the recovery operation

Results

- Recovered casing and conductor strings from 23 wells ahead of schedule
- Reduced runs by cutting multiple casing strings downhole
- Completed work without interrupting ongoing rig operations, and reduced the required crew size

The Mastiff RIS worked simultaneously alongside the platform drilling derrick, a necessity in accommodating the operator's schedule. At one point, the team had to disassemble the RIS unit to allow the platform drilling derrick to move to the east side well bays. Full package disassembly and reassembly was completed without any HSE issues.

The operation included one triple-string, 18 dual-string, and 18 single-string downhole cuts.

At completion, Baker Hughes had successfully recovered over 28,000 ft (8,534 m) of casing and conductor strings on all 23 wells. The recovery totaled 8 dual strings, 8 single strings, and 9 conductor strings, along with the 13³/₈-in. sacrificial string.

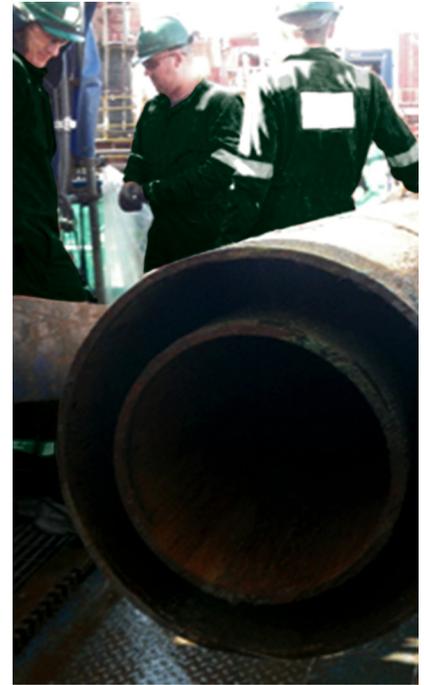
Collaboration was key to the success of the operation. Baker Hughes trained multiskilled engineers ahead of the offshore operation to reduce the total number of crew members needed to deliver a fully integrated solution.



The Mastiff RIS performed casing and conductor recovery on 23 platform wells prior to removal of the topside platform module.



Successfully cut through cemented 13³/₈-in. and 20-in. casing strings downhole.



Successful cut 13³/₈-in. and 20-in. dual-casing strings at surface.