Case study: Offshore Western Australia

XP Spear and Selectable Packoff single trip system saved 11 hours and $300k USD per well

A major offshore operator in Australia was planning to cut and pull 9 5/8 in. casing as part of a decommissioning campaign to permanently plug and abandon 10 x subsea wells on a high-spread semi-submersible rig.

Conventional cut and pulls on a semi-submersible rig are typically done with two separate trips. The first trip involves a cutting BHA (bottom hole assembly), and the second trip utilizes a spear and packoff run to pull the casing free and circulate out the annulus of the casing.

Baker Hughes challenged the status quo and developed the technologies to enable this cut and pull operation to be performed reliably in a single trip.

The Baker Hughes team deployed and executed the operation successfully with a combined BHA consisting of a marine swivel**,** Selectable Packoff™, XP Spear™**,** full function valve, and a multi-string cutter.

The result was a seamless operation where the casing cut, casing annulus flush, well displacement, pull-test, and casing recovery to surface were all performed in a single trip.

The XP Spear is a rotational spear developed by Baker Hughes specifically for optimized P&A operations to be part of the casing cutting BHA. Its simple, on-demand activation feature allows for precise control and unlimited sets. Once engaged in the casing, a test pull can be conducted to confirm the casing is free. Subsequently, the spear can be relocated to a joint below the hanger to safely pull the casing to surface.

The Selectable Packoff is designed to remain dormant during cutting operations then activated on-demand after the cut is completed. Activation of the XP Spear allows overpull to be applied to SPO creating a 5,000 psi rated seal against the casing ID above the cut. High-rate circulation down the drill string can then commence, ensuring that 100% of the flow passes through the cut and up the casing annulus. Sustained circulation will remove all debris, barite, and residual cement from behind the casing, allowing it to be pulled free.

The multi-string casing cutter is hydraulically operated and dressed with METAL MUNCHER™ Advanced Milling Technology (AMT) carbide that provides the industry's most durable, and effective cutting tungsten-carbide to cut or mill even the toughest steels.

By using the XP Spear and Selectable Packoff single trip system, the customer saved a total of 11 hours of

Challenges

- Plug and abandon well on a high-spread semi-submersible rig
- Casing had to be cut and pulled, with casing annulus displaced prior to retrieval to surface

Results

- Saved 11 hours of rig time equivalent to $300k USD of spread cost per well
- Successfully cut and retrieved the 9 5/8 in. casing and displaced the annulus all in a single run

rig time, equivalent to $300k USD of spread cost. The enhanced operational efficiency achieved through this technology has led to plans for its continued use throughout the remainder of the campaign.

9 5/8 in. casing retrieved to surface with the single trip cut and pull BHA.

XP Rotational Spear (left) and Selectable Packoff (right) post-run.