

Case study: Norway Continental Shelf

Terminator system performed industry's first vessel-deployed subsea wellhead mechanical cut

An exploration well in a remote, harsh location offshore Norway had been abandoned, but still needed the wellhead removed, currently sitting on the seabed at 1,181 ft (360 meters) water depth. With a two-year government regulated deadline looming, the operator was in search of a cost-effective solution.

Already planning to have a vessel on location to remove the suction anchor and clean up the seabed, the operator was interested in a vessel-deployed solution. There was a rig on location for other drilling activity, but not relying on a rig to remove the wellhead would allow them to de-mobilize the rig sooner, reducing associated costs.

Baker Hughes recommended its new **Terminator™ vessel-deployed subsea wellhead cutting system**. This one-of-a-kind system includes a hydraulic motor, connector, and industry-proven **Hercules™ cutter** to deliver a simple, efficient wellhead removal solution.

By using a mechanical cutter instead of abrasive water jet cutting methods, the Terminator system eliminates associated risks with high pressures (HP), and only requires 2 versus the 6-8 personnel typically needed to operate an HP water cutter.

The Terminator system offers a much smaller footprint than other vessel-deployed alternatives that take up 100-150 m² for HP cutting equipment and weigh 50-60 tons. Once the Terminator system is deployed overboard, there is no additional equipment on the deck. It also reduces the overall environmental footprint by

burning less fuel, at only 100 hp compared to 1000 hp of HP cutting systems.

Quick, flawless execution

The Baker Hughes team was mobilized on short notice with minimum deployment time, fully prepared to complete the job. The cutting system was guided into the well and the connector latched onto the subsea wellhead. The ROV used an internal HPU to enable rotation of the Hercules cutter. Pressure to the knives' actuator was also adjusted by the ROV to activate them and make the cut. The operation was performed flawlessly without any issues, making the cut in only 35 minutes.



A pressure drop signaled a positive indication that the pipe had been completely cut. This differs from the HP water cutter which does not provide confirmation of a full circumferential cut, leaving uncut areas that make it harder to recover the pipe.

Challenges

- Wellhead removal in remote, harsh environment
- Adhere to government regulated timeline with a cost-effective solution
- Minimize equipment footprint enabling fast mobilization with a vessel

Results

- Delivered the first vessel-deployed subsea wellhead mechanical cutting operation
- Signaled positive indication that the cut was complete
- Required less operational footprint than alternatives with no deck spread and only 2 personnel on board
- Saved 6-12 rig hours compared to traditional rig operations, and at least 4-5 hours compared to other vessel-deployed solutions
- Encountered zero HSE issues

The total operation starting with deployment from the deck to laying down the Terminator system took only 2.5 hours. This saved the operator 6-12 hours compared to standard rig operations, and at least 4-5 hours compared to other vessel-deployed solutions.

The subsea wellhead, conductor, and spudcan were removed immediately thereafter in a separate run from the same vessel.

This operation marked the first mechanical cut wellhead from a vessel. Extremely pleased with the results, the operator plans to use the Terminator system for additional decommissioning projects later this year.



The Terminator cutting system only requires 100 hp and virtually no deck spread space, delivering a simple, environmentally-sound solution for subsea wellhead removal at any water depth.