

Subsea Resident ROV Eliminates Vessel Requirements and Provides Substantial Cost Savings for Client

Liberty™ E-ROV deployed as stand-by, emergency support during well workover activities



Project Overview

In late 2019, a major operator was completing well workover activities on a template offshore Norway using a semi submersible drilling rig. The operations included pulling a high pressure cap and there was potential for the release of pressure and a subsequent gas leak. In order to mitigate this risk, an additional safety barrier and intervention method was required to ensure the safety of

the rig, those on the rig, and the environment. The intervention would require the opening of a flapper valve located 16km away. By opening the flapper valve, the pressure on the gas line could be bled down safely. Oceanneering provided a very lean and cost-effective solution to support operations with its Liberty E-ROV system.

Issues

The location of the flapper valve and its distance from the rig put it out of reach of the ROV mobilized on the rig and dictated the requirement for an additional ROV. There was, however, uncertainty around the exact timing of the removal of the high pressure cap. This scheduling unknown meant that the added requirement for a second ROV and its associated vessel could potentially be very costly.

The Oceaneering Solution

To meet the on-call requirements in the event of a pressure release or failed seal post pressure cap pull, an ROV was required to be on-site at the flapper location. Oceaneering identified its Liberty E-ROV system as the perfect fit for the work scope.



The Liberty E-ROV is a self-contained, battery-powered, work class ROV system controlled from an Onshore Remote Operations Center via a surface communication buoy and only requires a support vessel during deployment and recovery. Once the Liberty E-ROV garage is deployed to the seabed, the electric ROV can perform work class ROV tasks within a 1000m working radius of the garage

location. By eliminating the requirement for a surface vessel and mobilization of personnel offshore, the operational cost was projected to be a fraction of that of a conventional ROV supported by a vessel topside.

Execution Plan

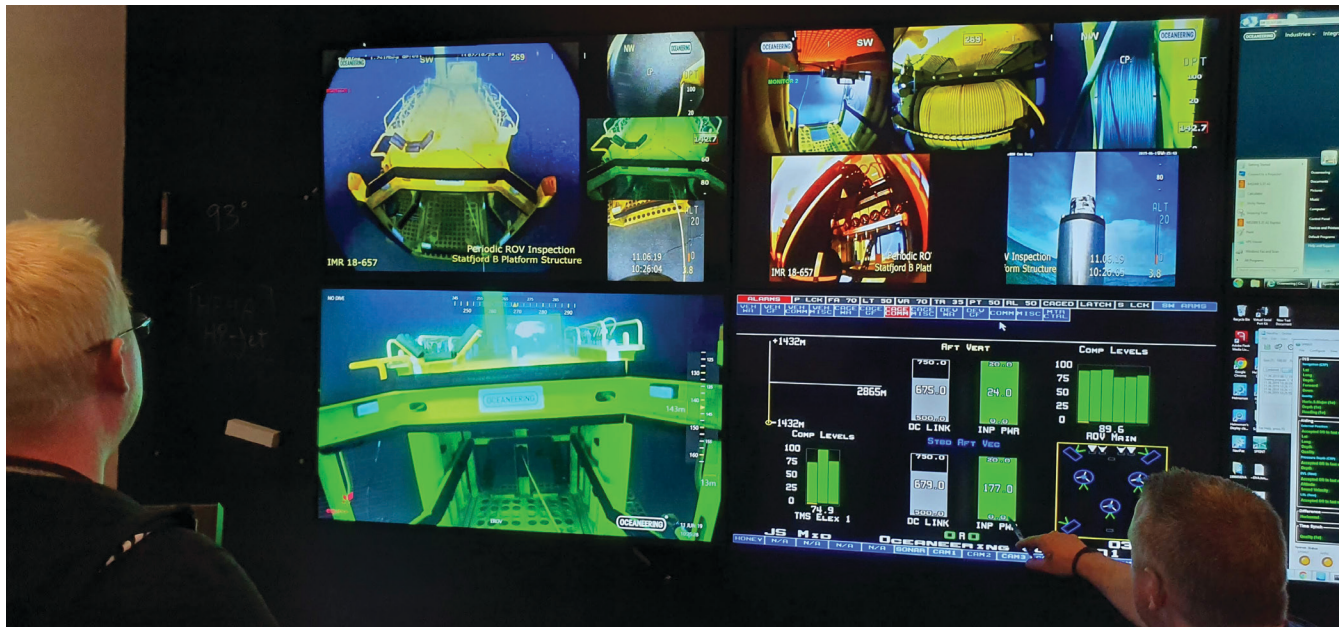
The client's IMR vessel collected the Liberty E-ROV system from its offshore location where it had completed a periodic inspection work scope. It was then transported and deployed at the flapper valve location prior to the high pressure cap being pulled. With the relative low cost associated with the Liberty E-ROV operations, this could be done at a convenient time in the IMR vessel's busy work program.

Once subsea and on location, the ROV docked onto the flapper valve using its electric class-4 torque tool, ready to turn the valve, if needed. The Liberty E-ROV system was crewed 24/7 by onshore personnel located at Oceaneering's Onshore Remote Operations Center in Stavanger.



Challenges

The drilling rig was, as often happens, delayed in completing the critical high pressure cap pulling operations. Because the operator had deployed the Liberty E-ROV and did not require the support of a surface vessel to maintain the safety barrier, this delay had very limited cost implications.



Equipment Highlights

- » The Liberty E-ROV is a revolutionary ROV concept that comprises of several boundary pushing technologies:
- » 500 kWh Li-Ion battery power bank situated in the subsea garage
- » Surface communications buoy equipped with high bandwidth low latency 4G LTE and satellite communication
- » All-in-one deployed and recovered ROV, garage, winch, and buoy system
- » Automatic buoy handling system
- » Onshore Remote Operations Center support with full Remote Piloting and Automated Control Technology (RPACT) capacity
- » The combination of these technologies makes the Liberty E-ROV a very cost effective subsea tool.

Results

The Liberty E-ROV system was deployed for a total of two weeks during which a support vessel was only required for launch and recovery operations, freeing the vessel to complete other pressing operational needs.

The use of the Liberty E-ROV system rather than a conventional vessel-supported ROV system is estimated to have saved our client seven days of IMR vessel time, equating to a cost savings in the range of USD 1 million. Luckily for the client, the operation went to plan and the flapper valve never needed to be opened.

This use case for the Liberty E-ROV was a major milestone, proving the system potential for tremendous cost saving when used for single operations that traditionally require a support vessel for the ROV. This demonstrates a new method of working, opening avenues for flexible solutions and innovative approaches to the application of remote subsea operations.



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