

# Oceaneering Sets First Inertial Offset Well West of Shetland

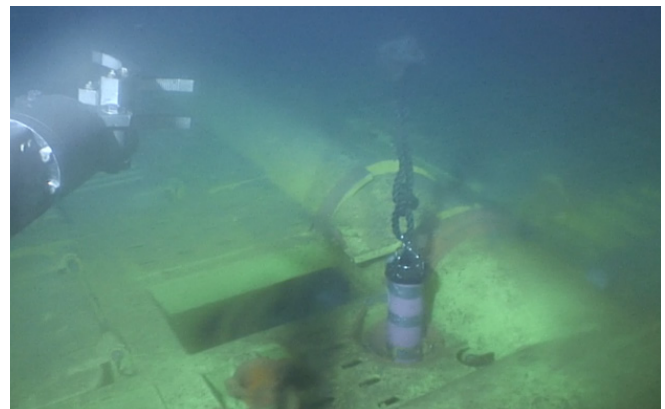
**Oceaneering provided an unconventional approach to position a new well in 300 meters of water relative to an existing subsea manifold slot**

## Project Overview

A client requested that Oceaneering provide technical input on the best approach for positioning a new well relative to an existing subsea manifold slot. Oceaneering successfully positioned the new well using a new inertial positioning solution using acoustic aiding — or position aiding from a known point on a fixed structure — as the primary positioning system.

## Issues

Installation accuracy was critical, and conventional surface positioning and sub-surface acoustic methods would not achieve the  $\pm 1$  meter positioning tolerance required. One alternative solution was the conventional long baseline (LBL) acoustic approach. However, the time required to install and calibrate the subsea array would have extended the project duration by up to a full day, and Oceaneering faced a tight project schedule. Typically, an LBL array installation and calibration takes 12 to 24 hours and is completed using a support vessel, not from the rig, which would add to the cost.



## The Oceaneering Solution

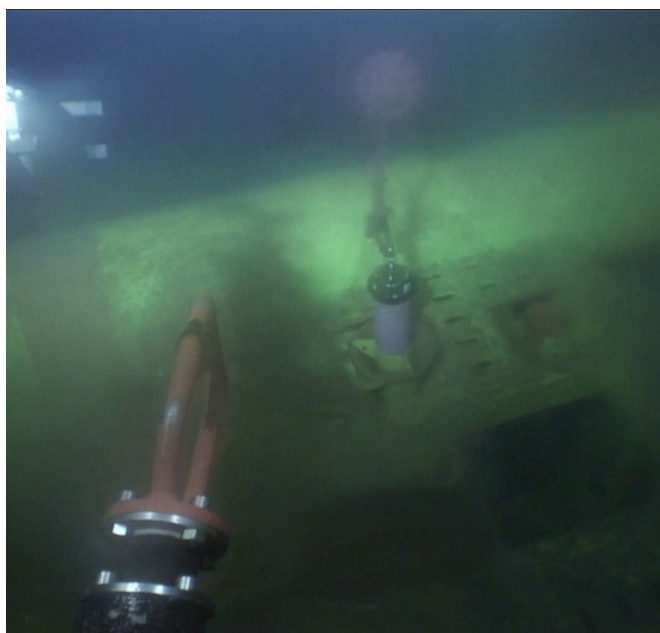
Based on its previous experience with this solution, Oceaneering determined that an inertial well set would be the quickest and best option. In 2017, Oceaneering set a 4 marker buoy pattern with an alternate inertial product for another client's well in the Gulf of Mexico. The pattern provided guidance for where drill casing should be installed on the seabed.

A project management team was established, necessary surface and subsea positioning equipment procured from a third party manufacturer, operational task procedures written and approved, and the crew assembled.

## Execution Plan

The offshore team commenced the project with the installation of the surface equipment on the Stena Don semi-submersible drilling rig. The equipment was interfaced to the rig with a ultra-short baseline system to accurately position the ROV. After establishing the area's environmental conditions, the ROV then deployed two acoustic transponders onto the existing manifold and one in a stand on the seabed to be used as positioning aids in the inertial solution. With these in place, the ROV was guided to the well location with the inertial system, and the well demarcation steps of setting the marker buoys executed. Upon successful confirmation of the installed position of the marker buoy pattern, the rig commenced well setting operations.

Oceaneering was formally awarded the contract in late April 2018. The project spread was mobilized in May 2018, and the rig arrived on site the same month. The inertial offset well demarcation was completed by the end of May and the new well spudded.



## Challenges

Oceaneering faced a challenge in setting the well position relative to an existing live well from the rig without causing any rig delays in drilling or damage to existing assets. The chances of an incident occurring in this situation are highly unlikely, but still probable. With risk mitigation, the risk is reduced to zero.

## Equipment Highlights

Surface equipment included an Oceaneering remotely operated survey system with C-Nav<sup>®</sup> 3050 differential global navigation satellite system receivers. The third party subsea equipment included the iXBlue RAMSES, iXBlue inertial navigation system/doppler velocity log and iXBlue Canopus transponders. The use of the Canopus transponders marked the first time this technology has been deployed in oil and gas operations.

A remotely operated excursion monitoring package—a surface spread operating as a remotely operated suite—was also deployed and used by rig crew during drilling operations.

## Results

The well was positioned and installed as per design and in tolerance.

## Project Highlights

The well marked the first inertial offset well both for the Oceaneering client and for the West of Shetland area. The deepwater nature of the West of Shetland environment — and the time and cost savings that can be realized with the inertial offset approach — make it likely this method will be used more often.