Remote management of underwater currents

Executing pipeline and cable projects around strong ocean currents at depth requires innovative technological solutions. **Hibbard Inshore**, a specialist provider of unmanned and remotely controlled operations to the oil and gas industry, outlines the multiple benefits of its Sub-Atlantic Navajo and Mohican ROVs.

Mohican ROV live boat configuration for cable lay and bottom surveys.

Whether the final product is oil, gas or electricity, sometimes pipelines or cables need to span areas that are not conducive to underwater inspection and maintenance operations. These products are extremely important and industry-leading companies are constantly improving the equipment and methods necessary to place these assets and keep them in good operating condition, even in the most challenging areas.

Operating around swift ocean currents at depth is one of the tougher challenges presented by the location of many offshore pipelines and cables. Recently, Hibbard Inshore was hired to address the seabed assessment, site selection and cable route survey needs for both subsea inter-island power lines and a potential tidal generation site in North America.

For the tidal project, the eventual installation would consist of two turbines in an area where the currents during slack periods were 1.75kt. The power line project survey area crossed the Georgia Strait between Vancouver Island and mainland Canada where currents were in excess of 2kt. In order to begin each project, the Hibbard Inshore team assesses the survey location for its particular challenges before selecting the optimal vessel, remotely operated vehicle (ROV) and survey equipment spread.

The Sub-Atlantic Navajo and Mohican ROVs

Hibbard Inshore has worked for years to develop appropriate methods and equipment to address a wide variety of marine construction and inspection applications. The unique challenge for the recent projects was that, while the survey areas were not very deep by ocean standards, the tidal currents were extremely brisk. Because of the conditions, the team decided to use smaller ROVs: a Sub-Atlantic Navajo ROV for the tidal generation survey and a Sub-Atlantic Mohican ROV for the power cable survey.

Both vehicles were used in a live-boat configuration, meaning that the ROV was operated without a tether management system (TMS). In each case, the ROV system was coupled with the appropriate navigation and tracking systems for geo-referencing of the data.

Each ROV has a high thrust to size ratio, and the live-boat configuration reduced the available cross-sectional area of the equipment, allowing it to fight the current more efficiently. The live-boat configuration in each case reduced the overall size and weight of the required equipment, allowing the use of a smaller crew and a small vessel of opportunity.

One major advantage was that the vessel did not require either a mooring or a dynamic positioning system to maintain the position of the ROV. Productivity was maximised because time was not spent placing and moving anchors across the survey area, and the ROV could be deployed very quickly to take maximum advantage of the lower current periods afforded by the change in tides. Additionally, the smaller systems and vessels are comparatively easy to mobilise.

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The survey depths during these projects ranged from approximately 50–200m. This sort of ROV and vessel set-up can be advantageous for a survey area as small as a single bottom-placed sensor; alternatively, it can be used over a much larger area, as it was for the Georgia Strait project, which required three passes of the entire route for each cable, a total distance of roughly 250km. Thanks to the selected methods and equipment, the Hibbard Inshore team completed each project successfully, despite the difficult currents. ■

Further information
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