

Bibby HydroMap Undertakes Geophysical and UXO Survey off British Coast



Bibby HydroMap was commissioned by ScottishPower Renewables to undertake a geophysical and UXO survey across a UK site to ensure items which could pose a risk to construction operations were identified. Located off the coast of Norfolk and Suffolk, the East Anglia offshore wind area has been earmarked for future development. The first area, developed by ScottishPower Renewables, was awarded a licence as part of the Round 3 category. Referred to as 'East Anglia ONE', it covers an area of approximately 200 square kilometres and is located towards the south of the development area.

At present, the £2.5 billion East Anglia ONE will consist of 102 Siemens Gamesa 7MW wind turbines, giving an overall generating capacity of up to 714 megawatts, which is enough for over half a million homes. An offshore substation platform and its foundations

are being built to collect the electricity from the turbines and transform it to a form suitable for transfer to shore for connection to the National Grid.

Two seabed export cables, each around 73km in length, will transfer the electricity to a landfall site at Bawdsey, Suffolk.

The objectives of the survey were to provide detailed information on:

- Seabed bathymetry, morphology and features across the site
- Man-made or geological hazards that could impair the installation phase
- Seabed conditions or hazards to the installation
- Any objects that model as potential UXO

The survey was carried out by Bibby HydroMap's own survey vessels Bibby Athena, Bibby Tethra and Lia. FeliX, a dedicated survey vessel owned and operated by iXblue, also carried out survey operations across the site.

Survey design

With challenging seabed morphology and significant tidal currents across the site, ScottishPower Renewables approached Bibby HydroMap to ensure survey data was acquired, processed and delivered as soon as possible. To complete the survey within the short timeframe, four specialist survey vessels were mobilised to site, each of which were mobilised with dual-head multibeam echosounder systems, high resolution side scan sonar towfish and a multiple magnetometer array. All sensors were acquired simultaneously to ensure maximum coverage.

The main challenge came in the form of how to obtain full, accurate UXO data coverage across the site, given the difficult site conditions. Equipping Bibby Tethra, Bibby Athena and FeliX with multiple EIVA ScanFish Katria ROTV systems enabled multiple magnetometers to be flown at a fixed height above the seabed. The terrain following mode of the ScanFish, coupled with the unique deployment and towing configuration, enabled high quality data to be collected with limited need for infill, despite the difficult environmental conditions.

Data Processing

Following successful acquisition, all data was processed and interpreted in-house using Geosoft's Oasis Montaj UX Detect. With a long track record in UXO survey data handline, Bibby HydroMap have worked closely with Geosoft to develop a number of specialist algorithms to ensure the highest quality UXO data processing and delivery. All data was appraised and processed in conjunction with Scottish Power Renewables dedicated UXO consultant, RPS Energy, to ensure that all data met the high quality required for UXO detection.

Rather than moving whole heartedly towards automated target picking, we are certain that our manual technique using highly trained processing geophysicists has reduced the number of false positives, reducing valuable inspection time and offering a high success rate of detection.