Optimizing Project Design & Cycle-time Reduction for Economic Viability of Offshore Wind Projects

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Commercial success of wind farm operations requires a robust understanding of ground conditions to ensure structural integrity and longevity of wind turbines and their foundations. Having an accurate understanding of seabed and near-surface conditions is key for the development of offshore wind farms. A geophysical summary of the subsurface lithology, living hazards are integrated into a comprehensive ground model that are developed through an iterative cycle of data collection and interpretation, hazard identification and quantification, model updates, and location-specific refinements across the project cycle of site characterization, operation and project decommissioning stages. Traditional methods of soil property estimation often rely on extensive borehole data and cone penetration tests (CPTs), which could be time- and cost-intensive. Early access to 3D seismic data significantly accelerates the creation of a reliable ground model and efficient project design can minimize the project risk and cycle time.

TGS, an integrated energy data and service provider, offers comprehensive datasets and insights to support global offshore wind projects across the complete lifecycle of wind-farm evaluation, development and cable consultancy services. We believe acquiring an integrated Ultra-high resolution 3D seismic survey at the early phase of an offshore wind project cycle is a viable way to simplify the site characterization process and reduce overall cost through optimizing expensive geotechnical sampling campaigns and minimizing offshore survey activities and reducing environmental footprint.

This presentation will focus on our integrated approach to the geophysical survey design/acquisition and processing of all geophysical measurements necessary to characterize the seabed and shallow subsurface structures, properties, enabling reliable and informed decision-making. These geophysical measurements, combined with geotechnical measurements, can be further integrated into our Quantitative Interpretation (QI) workflows, providing an efficient and potentially more accurate alternative for improved project design and cycle time reduction.