

# Ørsted Marine Affairs: Survey Activity



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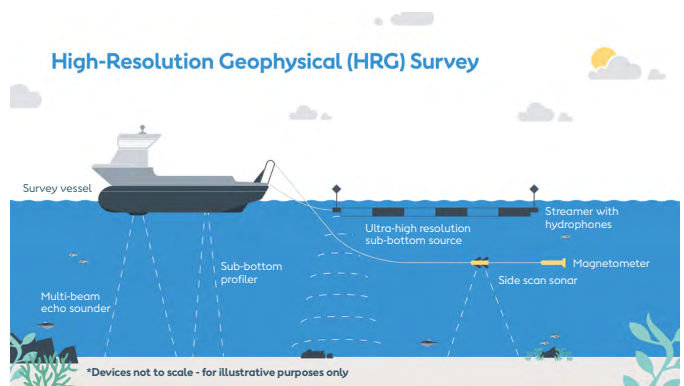
## Types of Offshore Survey Work

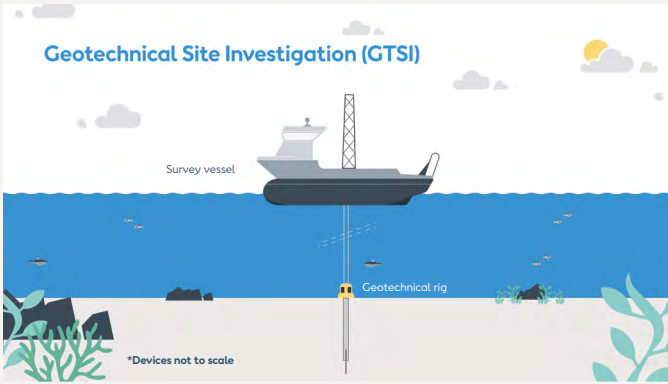
Just as you would survey the land and soil below before building a home, offshore wind developers survey the seafloor and soil below in lease areas and along proposed cable routes before building a wind farm. These surveys are not only used for project design but also for state and federal permitting. Benthic habitats important to marine life and archaeological resources important to indigenous people are mapped to minimize project impacts. A variety of small nearshore and larger offshore vessels are used during survey campaigns prior to the construction of a wind farm. Two of the most common types of pre-construction survey activities are geophysical and geotechnical surveys.

## Geophysical Surveys

High-Resolution Geophysical (HRG) surveys are conducted to map the seafloor, the geology beneath the seafloor, and to identify debris left by other ocean users. Equipment used during these surveys includes both acoustic equipment using varying frequencies of sound and passive sensors that do not emit sound. The sensors are either hull-mounted or towed above the seafloor behind the vessel. During HRG survey operations, vessels typically move at a low speed, between 2-4 knots (3-5 mph) transiting along straight survey lines.

Of the HRG equipment that emits acoustic signals, only a few of those sources produce frequencies detectable to marine mammals. Federal agencies have considered a significant body of scientific research to determine that injury to marine mammals or protected species is not anticipated from these sources. The sources used in offshore wind that are detectable produce much lower energy and travel far shorter distances from the vessel than those used by oil & gas for exploration miles below the seafloor. The terms “seismic testing” and “seismic blasting” refer to powerful sound sources such as air guns used in oil & gas exploration and are not used in HRG offshore wind surveys.





## Geotechnical Surveys

Geotechnical Site Investigations (GTSIs) collect data from the seafloor and up to 200 feet below to assess the mechanical behavior of soil and rock. Measurements of soil properties are recorded, and physical soil and rock samples are collected for laboratory testing onshore. Federal agencies have determined that GTSIs do not produce any significant acoustic noise and therefore do not pose a risk to marine mammals. Farther offshore GTSIs are performed from vessels utilizing dynamic positioning to maintain location when testing and sampling. Nearshore where the water depth is shallower, smaller vessels with anchors or lift boats with stabilizing spuds are used to collect the geotechnical data.

## Universal Precautions

Offshore wind development activities implement measures to protect marine wildlife during pre-construction, construction and operation of a wind farm. In addition to specific mitigation measures for Geophysical and Geotechnical surveys, all Ørsted vessels utilize certain universal precautions.

## Vessel Speeds

To reduce the risk of interaction with marine mammals and protected species, Ørsted survey vessels operate under a 10-knot speed restriction during transit and operations.

## Observers On Board

While conducting survey operations, all Ørsted-contracted vessels have trained observers onboard to watch for marine mammals and protected species. In compliance with regulations set by the National Marine Fisheries Service (NMFS), these observers actively look for whales, dolphins, other marine mammals, and protected species in the vicinity of the vessel and direct the vessel to conduct an array of mitigation measures, where appropriate, to prevent impacts. This includes a change of course or work shutdown of the relevant sound sources.

Observers are equipped with visual technology, such as thermal imaging, that enhances detection ability, especially during periods of low visibility. A vigilant watch for marine mammals and protected species is also maintained 24 hours a day by trained observers when vessels are underway to and from survey sites to ensure that vessel strike avoidance procedures are followed. All observations of marine mammals and protected species are tracked and recorded throughout our survey operations.

**Ørsted makes every effort to share accurate schedules of pending and on-going survey operations with interested maritime stakeholders.**



Please access our Mariners Briefings for updated information by scanning the QR code.

**For questions, please contact Ørsted's Marine Affairs team**

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