

# Methodology for Seismic Vessel Tracker

## Summary

Oceana's "We're Watching" map displays near real-time activity of vessels capable of conducting seismic airgun blasting for oil and gas exploration. Oceana identified vessels that are affiliated with offshore exploration companies, including those seeking Geological and Geophysical (G&G) permits for oil and gas exploration in the Atlantic Ocean. While these vessels are capable of seismic airgun blasting for oil and gas, they can perform surveys for other activities as well. Using the technology of Global Fishing Watch, Oceana's map displays Automatic Identification System (AIS) data to show where seismic vessels are located over the past 30 days in the Northwest Atlantic Ocean and eastern Gulf of Mexico.

## Data Acquisition

Oceana identified vessels owned by or affiliated with offshore exploration companies, including those with G&G permit applications submitted to the Bureau of Ocean Energy Management (BOEM) for the Atlantic Outer Continental Shelf (OCS) Region. The seismic companies with [Atlantic permits](#) currently under review with BOEM include: TGS-NOPEC Geophysical Company, ION/GX Technology Corporation, WesternGeco LLC, CGG Services (US) Inc., Spectrum Geo Inc., Petroleum Geo-Services (PGS) and TDI-Brooks International, Inc.

Oceana identified vessels owned by or affiliated with seismic companies by searching company fleet lists and public holding records. The map displays AIS data from the entire catalog of vessels we found to be owned by or affiliated with seismic companies when they are operating in the northwest Atlantic Ocean or eastern Gulf of Mexico. Vessels displayed may or may not be conducting seismic activity for oil and gas at any given time, but apparent seismic activity can be identified based on the behavior of the vessel. Apparent seismic activity will appear on the map as successive parallel or grid-like lines. While this movement is characteristic of seismic airgun blasting for oil and gas, vessels shown on the map can perform other offshore survey activities as well.



Five of the seismic companies listed above have also submitted [Incidental Harassment Authorizations \(IHAs\)](#) to the National Marine Fisheries Service (Fisheries Service), a necessary step in the approval process for seismic airgun blasting in U.S. waters. These five seismic companies include TGS-NOPEC Geophysical Company, ION GeoVentures (a division of ION/GX Technology Corporation), WesternGeco LLC, CGG Services (US) Inc. and Spectrum Geo Inc. While the Marine Mammal Protection Act entirely prohibits harm to marine mammals, an [IHA](#) is an exemption from this prohibition that authorizes companies to harass (i.e., any act of pursuit, torment, or annoyance which has the potential to disturb or injure) a "small number" of marine mammals during seismic airgun blasting activities for up to one year, provided the activities will have a "negligible impact" on the marine mammal species. Before BOEM approves any G&G permits, the corresponding IHAs also need to be approved and seismic vessels cannot conduct any seismic blasting until the environmental analysis required under the Marine Mammal Protection Act as well as other statutes, including the Endangered Species Act and the National



Environmental Policy Act, is complete. This means that only those vessels authorized by both the Fisheries Service (via an IHA) and BOEM (via a G&G permit) are approved to conduct seismic airgun blasting in the specified [survey area](#) off the East Coast.

As of October 2018, approximately 150 seismic vessels were identified. Because not all the seismic companies with current permit applications had readily available information about their fleets and the companies that did list vessels may not have publicly disclosed all seismic vessels under their ownership, the data set includes vessels affiliated with additional seismic companies. While the list is neither exclusive nor exhaustive, including vessel information from other companies allows for a more all-encompassing view of potential seismic blasting activity in the Atlantic OCS. For example, if one of the companies with a pending permit application outsources a vessel to conduct seismic airgun blasting, the third party owned vessel may still be captured by the map's database. Vessels affiliated with offshore exploration companies may perform survey activities other than seismic airgun blasting for oil and gas at any given time.

Oceana will continue to research and find new vessels owned by or affiliated with seismic companies and add their AIS data to the map. The map will include the most complete and up-to-date information known about the companies that have applied for seismic airgun blasting permits in the Atlantic and other offshore exploration companies.

## Map Details

The Seismic Vessel layer (colored according to vessel) of this map is the final output of vessel activity drawn from our entire catalog of seismic vessels; however, vessels will only be shown on the map when they are active in the eastern Gulf of Mexico or the Atlantic Ocean. Although AIS regularly streams from these vessels, data shown on the map is roughly 72 hours delayed from real-time transmission. Real-time data for vessels can be viewed at [www.marinetraffic.com](http://www.marinetraffic.com).

Oil and gas exploration activities have a common visual signature. [Click here](#) to see an example of apparent seismic activity.

The Blast Zone layer (solid red line) is the aggregate area covered by all five applications currently submitted to the Fisheries Service for IHAs. The Areas Off-Limits to Drilling layer (shaded red) shows the regions where the federal government restricted offshore drilling (as of October 2017). Specifically, there is a [Congressional moratorium](#) on oil and gas leasing within most of the eastern Gulf of Mexico (125 miles off the gulf coast of Florida) until June 2022. Additional [areas restricted](#) from drilling are presidential withdrawals under Section 12(a) of the Outer Continental Shelf Lands Act or National Marine Sanctuaries. The EEZ Boundaries layer (solid grey lines) shows the U.S. Exclusive Economic Zone (EEZ), an area that extends from state waters up to 200 nautical miles offshore. The U.S. EEZ is the area in which the United States has sovereign rights over both living and nonliving natural resources.

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