

# Silver Arts

**Artist's Name:** Nancy West-Brake  
**Title of Entry:** Should Seismic Testing  
be Allowed off the North  
Carolina Coast?  
**Category:** Literary Arts  
**Sub-Category:** Essay  
Down East Senior Games

---

“Should Seismic Testing Be Allowed Off The North Carolina Coast?”

Essay

Nancy West-Brake

## Should Seismic Testing Be Allowed Off the North Carolina Coast?

You've probably heard about Seismic Testing; it's been the topic of recent court orders and lawsuits from environmental groups who say it will hurt marine life along the Atlantic coast. Proponents, including the Trump administration, say it's a necessary step towards offshore oil and gas drilling, which will benefit the national economy and reduce our dependence on foreign oil. Let's take a look.

Seismic Testing, also called Seismic Blasting, or G&G (Geological and Geophysical) Surveying, consists of the release of pressurized air blasts every ten seconds from compressed air guns on ships called seismic vessels. The sound waves generated can penetrate up to 10,000 feet below the ocean floor. When the sound waves bounce back, they are read by sensors towed behind the ships. The data is used to produce detailed maps of underground geological features. Is this a new technology? No. It has been used for decades in the Gulf of Mexico, which also has existing offshore drilling and pipelines, and off the coasts of other continents such as South America and Africa.

How loud is the sound produced by Seismic Blasting? It's loud. Underwater, it's between 200 and 240 decibels, 230 at the source. In air, that would convert to between 140 to 180 decibels. A jet engine is 140 decibels. Seismic blasts can be detected hundreds and thousands of miles from their source. As long ago as 2004, bioacousticians at mid-Atlantic whale study sites reported airgun noise interference from South America. A single seismic vessel may tow up to ninety-six airguns, firing five or

six shots per minute, which equates to 7,000 shots in twenty-four hours. Testing is usually done for weeks or months at a time in a grid pattern.

The big question is: what does Seismic testing do to marine life? A three-year study (“Marine Seismic Surveys: A Study of Environmental Implications”) was done in Australia between 1996 and 1999. It was commissioned by the Australian Petroleum Industry and focused on Humpback Whales, Sea Turtles, and fish. All were subjected to seismic blasts of different strengths at different distances at sea, and captive turtle and fish populations were also studied in contained areas.

Migrating whales responded to the blasts between seven and twelve kilometers away, most turning in the other direction. This was not perceived as damaging unless the pods were mothers and calves, which could not maintain typical pod speed. Those were seen to stay on the surface “an inordinate amount of time”, the sound waves being of less intensity on the surface. One cow in the immediate area of an airgun breached immediately. The report advised that “any repetitive displacement or disruption of animals on calving rounds may have serious consequences at the population level.”

Between 35 and 40% of all the sea turtles on the planet live on the North American Atlantic coast. The same study reported that sea turtles, whose world population is considered “threatened,” showed alarm behavior two kilometers from the air guns’ source. The turtles’ behavior “became more erratic and noticeably increased their swimming activity, possibly indicating the turtles were in an agitated state.” The turtles were seen to “spend more time swimming as the air gun levels increased.”

As for fish, their response was noted at between two and five kilometers. The study included dissection of specimens of both fish and sea turtles, which showed

“evidence of damage to the hearing system for constrained fish” and a “lessening of startle response through time from hearing loss.” In addition, exposure to sound blasts of 120 decibels “limit fish egg viability, decrease larval growth and increase embryonic mortality.” In other words, fewer fish eggs hatch, fewer larvae live, and more embryonic fish die if exposed to blasts of sound.

A 2014 article in *Marine Science* today concurred, relating that the blasts can cause “temporary or permanent hearing loss in marine mammals which can result in stranding or even death.” Since marine mammals use sound for communication involving feeding, mating, rearing of young, and echolocation, seismic blasting could conceivably cripple entire populations.

Of special concern is the North American Right Whale, a baleen whale that migrates along the east coast from Nova Scotia to Georgia, where its calving grounds are. They are critically endangered, with only one hundred left in the North Pacific and an estimated four hundred off the Atlantic coast. According to Jane Davenport of Defenders of Wildlife, the Right Whales “already face effective extinction within a few short decades... (and) simply cannot withstand the direct harm and habitat degradation seismic blasting will cause.”

Others disagree, arguing that seismic testing can be done safely. Robert Bradley, the CEO for the Institute for Energy Research, says there are “proper risk mitigation measures”, such as using acoustic monitoring on the seismic vessels to indicate when marine mammals are near, along with visual observers on the ships that can call a halt to testing when whales and dolphins are sighted. He also recommends “slowly ramping up air guns, giving fish and whales plenty of time” to move. Bradley said in a 2017 *Forbes*

article that there is “no documented scientific evidence that air guns pose harm to marine mammals,” but earlier studies belie that.

The article “Seismic Surveys: Advantages and Controversy” in the June 2015 edition of Coastal Review Online hints darkly at more destruction: “Although there have been coincidental reports of injured and dead marine mammals during seismic surveying, proponents of the methods point out there have been no peer-reviewed studies establishing a link.”

Another concern for Right Whales is their migratory distance from the east Atlantic shore. A Cornell University Bioacoustics Research program found Right Whales much further off the coast than had been previously known: specifically, 65 nautical miles from shore. Current plans to limit the impacts of seismic blasts allow for seasonal closure of up to 20 nautical miles, meaning that many of the whales would be migrating outside the protected area.

Environmentalists are not the only ones who oppose Seismic Testing and Offshore Drilling. The United States Military, in the form of the US Department of Defense, released reports in 2015 and 2016 about the possibility of offshore drilling “disrupting training and putting military readiness at risk”. The reports said seismic testing would interfere with the Navy and NASA operations taking place off the Atlantic Coast. Three military water regions specific to North Carolina, South Carolina, and Virginia would be affected if testing and/or drilling ensue.

What about coastal tourism? North Carolina has 30,000 related jobs that produce annual revenue of three billion dollars. Look to the Gulf of Mexico. Offshore drilling, pipelines, and drilling infrastructure is “driving away tourists and their dollars,”

according to the Southern Environmental Law Center. Those coastal areas in Texas, Louisiana, Mississippi and Alabama saw their tourism revenue drop in half since offshore drilling went into place. “The risks outweigh the benefits,” says NC Governor Roy Cooper.

What effect could Seismic Testing and offshore drilling have on commercial fishing? As stated earlier, sound blasts disrupt fish behavior and increase egg mortality. Commercial fishing nets ninety-five billion dollars a year for the North Carolina economy. 500,000 fishing families, 42,000 businesses, and more than two hundred and forty municipalities along the East Coast are opposed to offshore drilling.

What are the anticipated economic benefits, then? A 2013 report by the American Petroleum Institute predicts offshore drilling could produce 280,000 consumer-driven jobs by 2035, adding \$23.5 billion to the nation’s economy by that time and boosting federal tax revenue by \$51 billion.

Here’s a timeline of events. Ten companies applied to the Bureau of Ocean Energy Management (BOEM) to conduct seismic tests off the Atlantic coast by 2015. Four of those wanted to test off the NC Coast. President Trump signed an executive order to streamline government permits of seismic surveys in April 2017. These surveys would permit the “disturbance of marine mammals otherwise protected by federal law.” The President also signed an executive order to expand offshore drilling, opening an area stretching from New Jersey to Florida for the underwater mapping of fossil fuels. By December 1, 2018, The National Oceanic and Atmospheric Administration (NOAA) Fisheries Department authorized five companies to “incidentally, but not intentionally, harass marine mammals” as they conduct geophysical surveys. How many mammals are

specifically allowed to be “harassed”? 50,000 dolphins for one company, an additional 20,000 for another. Certain conditions were attached: that “the testing have defined geographical limits, protections for endangered Right Whales, and did not explicitly allow for the killing of any marine mammals.” Visual and acoustic monitoring for mammals was dictated before seismic blasts could begin, and third party observers were required to ride along.

By December 11, 2018, eight leading conservation groups filed suit in South Carolina asking for a court order to prevent airgun blasting. The suit claims that the testing is not only unethical, but unlawful, specifically violating three federal laws: the Marine Mammal Protection Act, the Endangered Species Act, and the National Environmental Policy Act. The suit says “If allowed, seismic airgun blasting would harm marine life, including whales, dolphins, fish and zooplankton, the foundation of the ocean food web.”

As of February 20, 2019, Sixteen South Carolina coastal communities have also filed lawsuits, as has the South Carolina Small Business Chamber of Commerce. The motion for the preliminary injunction was filed in federal court in Charleston, contending that the Trump administration’s approval for five companies to test is illegal.

As of March 29, 2019, a U.S. District Court judge for Alaska, Judge Gleason, overturned President Trump’s push to open 128 million acres in the Arctic and Atlantic to oil and gas drillers, but those are specific underwater canyons running from New England to the Chesapeake Bay that have commercial fishing value. The rest of the Atlantic Coastline is not affected by the ruling.

An April 5, 2019 report from the North Carolina Coastal Federation says the final 2019-2024 National Outer Continental Shelf (OCS) Oil and Gas Leasing program is currently being developed by the Bureau of Ocean Energy Management and is recommending that more than ninety percent of US Waters be opened for oil and gas exploration.

“Better three hours too soon, than a minute too late,” said William Shakespeare, in The Merry Wives of Windsor. It is not too late for seismic testing and offshore drilling off the North Carolina coast to be stopped. Add your voice to Governor Roy Cooper’s, who says “It’s a bad deal for our state.” Cooper joined with the governors of South Carolina, Virginia, Maryland, Massachusetts, Delaware, Connecticut, Rhode Island and New York to ask for the prohibition of Seismic Testing and Offshore Drilling off the Atlantic Coast. Their December 2018 letter to Commerce Secretary Wilbur Ross and Interior Secretary Ryan Zinke says “these activities pose an unacceptable and unnecessary threat to our coastal ecosystems and coastal economies.”

Should Seismic Testing Be Allowed Off the North Carolina Coast? Yes. When Hell freezes over.

#### **Resources:**

“A Review Of The Impacts of Seismic Airgun Surveys On Marine Life.” 2013.

“April Offshore Oil and Gas Activity Update.” 2019.

“Groups Seek Court Order Blocking Atlantic Seismic Blasting.” 2019.

“Groups Sue Feds To Stop Seismic Airgun Blasting In Atlantic Ocean.” 2018.

“Marine Seismic Surveys: A Study of Environmental Implications.” 2000.

“Seismic Blasting in the Atlantic: The Real Story.” 2014.



“Seismic Surveys”. 2018.

“Seismic Surveys: Advantages and Controversy.” 2015.

“Survey Says... Offshore Seismic is Safe.” 2017.

“Trump Said to Advance Seismic Tests for Oil in Atlantic Waters.” 2018.

“U.S. Approves Seismic Tests Despite Dolphin, Whale Concerns.” 2018