

**Statement of Richie Miller
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Before the

**Committee on Natural Resources
Subcommittee on Energy and Mineral Resources
U.S. House of Representatives**

Hearing on

**“The Science behind Discovery: Seismic Exploration and the Future of the Atlantic OCS”
January 10, 2014**

Chairman Lamborn, Ranking Member Holt and Members of the Subcommittee: Good Afternoon. I appreciate the opportunity to be here today to discuss the need for America to access offshore oil and gas resources, specifically those in the Atlantic.

My name is Richie Miller. I am President of Spectrum Geo, Inc. (Spectrum), a company providing multi-client geoscience data to oil and gas exploration and production (E&P) companies worldwide. We are headquartered in the US. We are a member of the International Association of Geophysical Contractors, the trade association of the global geophysical industry and also a member of the National Ocean Industries Association. I would like to thank the Subcommittee on Energy and Mineral Resources for the opportunity to testify at this oversight hearing regarding “Seismic Exploration and the Future of the Atlantic OCS.”

We are pleased that Congress is looking into this most important matter for the nation’s continued progress toward energy independence, economic vitality and energy security. Although the US is set to surpass Saudi Arabia and Russia to become the world’s top oil producer by 2015, in order to meet continued demand we must make new areas of the federal outer continental shelf (OCS) available for oil and gas exploration. The US has been successful in producing its oil and gas resources because we have historically been willing to explore new areas.

Today, I would like to focus my comments on the need to better understand the resource base of the Atlantic OCS and the challenges in providing policy makers and regulators with the information they need to make informed decisions based on the best available data. Also, I think it is critical to clearly explain the relationship between acquiring new seismic data for the mid and south Atlantic OCS and the development of the next Five Year OCS Leasing Plan (2017-2022).

I would first like to give a broadened description of my company, Spectrum Geo. Our company is engaged in acquiring non-exclusive seismic data, processing it and licensing these products to oil and gas companies. That means we do the work (and take the financial risks) needed to deliver oil and gas companies the ability to use modern seismic imaging to explore an area new to them (or new to the entire industry). We repeatedly license the seismic data to oil and gas companies for a fee, but retain the underlying ownership. By acquiring the data once and making it available to any oil and gas company, our industry avoids duplicating these surveys. We also provide the same products to Bureau of Ocean Energy Management (BOEM) for their use in evaluating the OCS resource base, ensuring they receive fair market value when they lease OCS lands, and making the many conservation decisions required of them as they administer their obligations under the OCS Lands Act.

Atlantic Programmatic EIS and the Five-Year Lease Sale Planning Process

Whether in private business or government, the best decisions are generally made when we have the best available data. This is true of our nation's oil and gas resources. It only makes sense for us to understand what the resource base and resource value is.

BOEM is currently in the process of producing a Programmatic Environmental Impact Statement (PEIS) to evaluate “potential significant environmental impacts of multiple geological and geophysical activities on the Atlantic Outer Continental Shelf.” It is very important to note that these G&G activities will not only be used to identify potential oil and gas resources, but also to identify suitable areas to place offshore renewable energy facilities. Seismic surveys enable our nation to reach its full energy potential by truly using an “all-of-the-above” approach. A draft PEIS was published in the Federal Register on March 30, 2012, and underwent a 90-day comment period.

A record of decision (ROD) was initially proposed to be released in October 2013; however, we now understand that the ROD is scheduled for March or April 2014. We are concerned about potential delays in the issuance of an ROD as these delays create difficulties in scheduling for permits and vessels. Having sufficient new seismic data to inform future Atlantic leasing decisions is critical. With DOI's initial work on the next Five Year Plan for 2017-2022 beginning later this year, time is of the essence.

It will take at least a year after the EIS is issued before new seismic data is in hand. This is because industry must first obtain permits from NOAA (under the Marine Mammal Protection Act); await BOEM's statutorily required consultations with all the impacted coastal states (under the Coastal Zone Management Act); secure an actual G&G permit from BOEM; and then go about conducting the surveys and interpreting the data. So with the EIS delayed into 2014, we are very unlikely to have any new data in hand until well after the Department has already begun scoping for the 2017-2022 Five Year Plan. However recent public statements from BOEM officials indicate that this delay in obtaining new seismic data does not preclude them from ultimately including new areas such as the Atlantic in the 2017-2022 Five Year Plan. We appreciate this perspective and agree that the next Five Year Plan should be guided by modern survey data.

Because acquiring and interpreting modern seismic data provides a greater understanding of where oil and gas reserves exist and how much are likely in place, having modern seismic data prior to a lease sale will allow industry to make more informed bids. This will likely result in more bids and higher bids (and thus more revenue to the federal Treasury) since industry is reluctant to bid on blocks where there is little or no seismic data. Modern seismic imaging consistently brings more players to bid on offshore leases, creating more competition and driving the cost of leases higher. This is a phenomenon we are seeing globally as occurred recently in Uruguay with the government receiving \$1.2 billion lease bids and in Brazil where \$2.0 billion in lease bids were received. Oil and gas producers have the capital to explore frontier areas and are always looking for new opportunities.

Why new seismic is needed for the mid and south Atlantic OCS

It is very clear that seismic surveys are greatly needed in the Atlantic. It has been more than 30 years since geological & geophysical (G&G) surveys were conducted in Atlantic waters. BOEM currently estimates that the mid and south Atlantic OCS holds at least 3.3 billion barrels of oil and 31.3 trillion cubic feet of natural gas. While these estimates are impressive, it is widely believed that modern seismic imaging using the latest technology will show much greater resources than the 30-year-old estimates. Thus, current estimates are outdated and, in all likelihood, grossly inaccurate.

For the Atlantic OCS, we need to update our understanding of the resource, and modern seismic imaging is needed to make this evaluation. Better information enables the government's evaluation of the potential resource base as well as for prospecting for oil and natural gas reserves offshore. Older, low tech data that exists does not image medium to deep plays, and does not image the basin's architecture, which is imperative to understanding the Atlantic Margin play. The industry's array of new tools in the toolbox—reflection, gravity, magnetics, electromagnetic—can better help us understand the potential resource. By utilizing these tools and by applying increasingly accurate and effective interpretation practices, we can better locate and dissect prospective areas, identify the types of plays we are locating, and evaluate the potential resource base. Seismic surveys are the only feasible technology available to accurately image the subsurface and help us better understand what lies below the surface of the Earth before a single well is drilled.

It is an amazingly useful scientific tool that allows us to accurately image the earth's crust down to depths in excess of 40,000 feet, or more than eight miles, below the ocean floor. Today, seismic surveys that use modern data acquisition techniques and then process that data by applying the massive computing power are able to produce sub-surface images which are much clearer and more accurate than those from decades ago, or even five years ago.

There are reasons why geologists and geophysicists believe that the Atlantic OCS could have much more abundant oil and gas resources than we previously believed. First, the Atlantic Margin is proving to be quite productive in hydrocarbon production in areas like West Africa, Brazil and Nova Scotia.

Second, exploration and development activities generally lead to increased resource estimates. For example, in 1987 the Minerals Management Service estimated only 9.57 billion barrels of oil in the Gulf of Mexico. With more recent seismic data acquisition and additional exploratory drilling, that estimate rose in 2011 to 48.4 billion barrels of oil — a 500 percent increase.

The benefits of modern seismic surveys are numerous. They make offshore energy production safer and more efficient by greatly reducing the drilling of “dry holes” (where no oil or gas is found). We no longer explore with the drill bit. Without seismic surveys, we would again be relegated to that. Because survey activities are temporary and transitory, it is the least intrusive and also the most cost-effective way to understand where recoverable oil and gas resources likely exist in the mid and south Atlantic OCS. Additionally, it is expected that the early surveys will be non-exclusive or multi-client, meaning they would be shared by all E&P companies. The data gathered in a one-time process could be used again and again.

For the energy industry, modern seismic imaging reduces risk - both economic risk of exploration and production and also the associated safety and environmental risks. It also provides greater certainty by increasing the likelihood that exploratory wells will successfully tap hydrocarbons and helping us avoid drilling for oil and gas in areas where we won't likely be successful. It reduces the number of wells that need to be drilled in a given area, thus reducing the overall footprint for exploration.

In addition to modern seismic survey techniques, another key technological advancement has come with the help of the computing industry. The development of more powerful computers at diminishing prices allowed us to further leverage this new 3D acquisition tool. Ever greater computing power freed the creativity and innovation of data processing professionals to develop increasingly complex algorithms that address the vast number of challenges offered by the complex earth. And these complex algorithms are now being applied against an ever expanding number of data points.

With substantially larger amounts of data, and with more complex processing techniques that are run on increasingly powerful computers, we are now able to identify with accuracy drilling targets the size of a

parking lot three miles deep into the earth (and sometimes through a mile of water!). This enables the drilling engineers to do what they do best – hit those targets.

Today, we are applying these new techniques in older producing areas – areas that are known to generate and trap oil and gas. We are able to use the fine scale resolution offered by today’s imaging techniques to find reserves that went unseen using the older techniques. Additionally, to maximize production from existing reservoirs, another dimension in technology – 4D – has been recently introduced. By acquiring 3D at the same location repeatedly, it is now possible to have a motion picture visualizing the behavior and evolution of fluids in the reservoir as it is produced.

Environmentally Responsible

The seismic industry has demonstrated for more than 40 years its ability to operate seismic exploration activities in an environmentally safe and responsible manner. Despite recent statements by critics who oppose opening up the Atlantic, the oil and gas industry has demonstrated the ability to operate seismic exploration activities in a manner that protects marine life. In the May 11, 2012, publication of the Federal Register, the National Marine Fisheries Service (NMFS), in response to a public comment associated with a recent industry seismic survey in Alaska (comment No. 9), stated the following: “To date, there is no evidence that serious injury, death or stranding by marine mammals *can* occur from exposure to airgun pulses, even in the case of large airgun arrays.” (NOAA - National Marine Fisheries Service, Federal Register Notice May 11, 2012 -Vol. 77, No. 92 Page 27723.)

The geophysical industry takes a great deal of care and consideration of potential impacts to the marine environment. Because this is a priority, we implement mitigation measures to further reduce any potential impacts to marine mammals. Examples include the avoidance of important feeding and breeding areas, demarcation of exclusion zones around seismic operations, soft starts (gradual ramping up of a seismic sound source), and visual and acoustic monitoring by professionally trained marine mammal observers. Any activity in the Atlantic would be done with at least the same care and consideration for marine life.

Additionally, the industry continues to invest millions of dollars into scientific research to fill any knowledge gaps that may exist in knowing how marine life interrelates to seismic operations. Research studies and operations monitoring programs designed to assess the potential impacts from seismic surveys have not demonstrated biologically significant adverse impacts on marine mammal populations. Industry continually monitors the effectiveness of the mitigation strategies it employs and funds research to better understand interactions between E&P operations and marine mammals.

Economic Benefit of Seismic and Oil and Gas Exploration

What is often understated is the economic benefit that comes from oil and gas exploration. A recent study produced by Quest Offshore for the American Petroleum Institute and National Ocean Industries Association finds that opening the Atlantic OCS to oil and natural gas exploration and development will add billions of dollars annually to the economy by 2035. Federal offshore lease sales under existing laws and regulations would be expected to result in offshore oil and natural gas exploration and production. The new exploration and production activity would require large amounts of investment and operational spending by oil and gas operators – an estimated \$195 billion cumulative between 2017 and 2035, which would be primarily spent inside the U.S. and the Atlantic coast states.

According to the study, by 2035, new Atlantic OCS activity could produce an incremental 1.3 million barrels of oil equivalent per day, generate nearly 280,000 jobs, contribute up to \$23.5 billion per year to the U.S. economy, and generate \$51 billion in federal and state revenue – with most of the accrued state benefits going to Atlantic coastal states.

The nation's energy and economic security demands that these Atlantic resources be safely developed, and that long process begins with acquiring new seismic data.

Conclusion

This nation cannot afford to blindly make decisions regarding the future of oil and gas leasing in the Atlantic. Americans deserve public policy decisions that are made based on the best information possible. Modern seismic surveys provide that information. Let's allow science to help us understand what resources we have.

I hope this information adds a new perspective to your understanding of the contributions from the innovations and applications of geophysical data. Thank you for your time and attention today. I look forward to any questions you may have, and place myself, NOIA and the IAGC at your disposal if we can be of further service. I appreciate the opportunity to testify before the Subcommittee.