International Association
IAGC
of Geophysical Contractors

March 13, 2015

Curtis M. Joyner
Manager, Coastal Zone Consistency Regulatory Division
Ocean and Coastal Resource Management
1362 McMillan Avenue, Suite 400
Charleston, SC 29405

Dear Mr. Joyner:

As your state considers consistency determinations for geophysical surveys proposed offshore South Carolina's coast, the International Association of Geophysical Contractors ("IAGC") appreciates the opportunity to provide background on the geophysical industry's activities and impact to recreational and commercial fisheries, and other coastal resources important to your state, such as sea turtles. IAGC is the international trade association representing the industry that provides geophysical services to the oil and natural gas industry. IAGC member companies play an integral role in the successful exploration and development of offshore hydrocarbon resources through the acquisition and processing of geophysical data.

IAGC members have expressed interest in conducting geophysical activities on the Atlantic OCS, and several members have applications pending consistency review in your state now. Our members realize that South Carolina's interest is in protecting its recreational and commercial fisheries and the sea turtle population that nests along its beaches. IAGC members take concerns related to the potential impact of their surveys seriously and are committed to conducting their operations in an environmentally responsible manner. The geophysical industry operates in every region of the world and works very closely with local governments to ensure that geophysical operations do not disturb local marine life and coastal communities. Experience shows that seismic and geophysical survey activities, tourism, fisheries, and marine life can and do coexist successfully.[1]

## I. DESCRIPTION OF GEOPHYSICAL SURVEYS

Geophysical surveys are the only feasible technology available to accurately image the subsurface before a single well is drilled. The U.S. Bureau of Ocean Energy Management ("BOEM") currently estimates that the Mid- and South Atlantic OCS holds

[1] *See, e.g.*, BOEM, *Final EIS for Gulf of Mexico OCS Oil and Gas Eastern Planning Area Lease Sales 225 and 226,* at 2-22 (2013) ("Within the [Gulf of Mexico Central Planning Area], which is directly adjacent to the [Eastern Planning Area], there is a long-standing and well-developed OCS program (more than 50 years); there are no data to suggest that activities from the preexisting OCS Program are significantly impacting marine mammal populations.").

International Association
of Geophysical Contractors

*office* +1 713 957 8080
*US toll free* +1 866 558 1756
*fax* +1 713 957 0008

www.iagc.org

1225 North Loop West, Suite 220
Houston, Texas 77008 USA

at least 4.72 billion barrels of oil and 37.5 trillion cubic feet of natural gas. Although these estimates are impressive, it is widely believed that modern seismic imaging using the latest technology will enable BOEM to more accurately evaluate the Atlantic OCS resource base. The industry's advancements in geophysical technology – including seismic reflection and refraction, gravity, magnetics, and electromagnetic – will provide more realistic estimates of the potential resource. By utilizing these tools and by applying increasingly accurate and effective interpretation practices, IAGC's members can better locate and dissect prospective areas for exploration.

Currently, three types of surveys are proposed in the Atlantic OCS: 2D seismic surveys, a 3D seismic survey, and an airborne gravity and magnetic survey. These surveys are described in more detail below.

A. Seismic Surveys – Towed Streamers

For the energy industry, modern seismic imaging reduces risk by increasing the likelihood that exploratory wells will successfully tap hydrocarbons and decreasing the number of wells that need to be drilled in a given area, reducing associated safety and environmental risks and the overall footprint for exploration. The use of modern seismic technology is similar to ultrasound technology—a non-invasive mapping technique built upon the simple properties of sound waves. Because survey activities are temporary and transitory, it is the least intrusive and most cost-effective means to understanding where recoverable oil and gas resources likely exist in the Mid- and South Atlantic OCS.

To carry out these surveys, marine vessels use acoustic arrays, most commonly as a set of compressed air chambers, to create seismic pulses. A predominantly low-frequency sound pulse is generated by releasing compressed air into the water as the vessel is moving. The pulses are bounced off the layers of rock beneath the ocean floor. The returning sound waves are detected and recorded by hydrophones that are spaced along a series of cables that are towed behind the survey ship. Seismologists then analyze the information with computers to visualize the features that make up the underground structure of the ocean floor. Geophysical contractors often have proprietary methods of data acquisition that may vary depending on their seismic target and data-processing capabilities, making each contractor's dataset unique. Once the data is processed, geophysicists interpret it and integrate other geoscientific information to make assessments of where oil and gas reservoirs may be accumulated. Based largely on this information, exploration companies will decide where, or if, to conduct further exploration for oil and gas.

*2D Seismic Surveys*

Two-dimensional surveys are so-called because they only provide a 2D cross-sectional image of the Earth's structure. These surveys are typically used for geologic research, initial exploration of a new region, and to determine data quality in an area before investing in a 3D survey. 2D towed-streamer surveys are acquired with a single vessel usually towing a single air source array and a single streamer cable. The streamer is a polyurethane-jacketed cable containing several hundred to several thousand sensors, most

commonly hydrophones. The air source array directs energy downward towards the ocean floor. An integrated navigational system is used to keep track of where the air sources are activated, the positions of the streamer cable, and the depth of the streamer cable. The end of the cable is tracked with global positioning system (GPS) satellites, and tail buoys are attached at the end. Radar reflectors are routinely placed on tail buoys for detection by other vessels, and automatic identification system (AIS) devices are also routinely integrated into the tail buoys.

Ships conducting 2D surveys are typically 30-90 m (100-300 ft) long and tow a single-source array 200-300 m (656-984 ft) behind them approximately 5-10 m (16-33 ft) below the sea surface. The source array often consists of three subarrays, with six to twelve air source elements each, and measures approximately 12.5-18 m (41-60 ft) long and 16-36 m (52-118 ft) wide. Following behind the source array by 100-200 m (328-656 ft) is a single streamer approximately 5 to 12 or more km (3.1-7.5 mi) long. The ship tows this apparatus at a speed of approximately 3 to 5 knots. Approximately every 10-15 seconds (i.e., a distance of 23-35 m [75-115 ft] for a vessel traveling at 4.5 kn [8.3 km/hr]), the air source array is activated. The actual time between activations varies depending on ship speed and the desired spacing.

Typical spacing between ship-track lines for 2D surveys, which is also the spacing between adjacent streamer line positions, is greater than a kilometer. Lines can transect each other and can be parallel, oblique or perpendicular to each other. 2D towed-streamer surveys are normally regional, covering a large area of ocean so that activity is not always limited to a particular area. 2D surveys can provide high resolution imaging with tight line spacing intervals in shallow areas.

2D surveys can cover a larger area with less data density in less detail, resulting in a lower cost per area covered. While surveying, and after a prescribed ramp-up of the output of the array to full-operation intensity, a vessel will travel along a linear track for a period of time until a full line of data is acquired. Upon reaching the end of the track, the ship takes typically 2 - 6 hours to turn around and start along another track, varying depending on the spacing between track lines, the length of track lines, and the objectives of a specific survey. Some 2D surveys might include only a single long line. Others may have numerous lines, with line spacings of 2 km in some cases, and 10 km in other cases. Data acquisition generally takes place day and night and may continue for days, weeks, or months, depending on the size of the survey area. Data acquisition is not, however, continuous. A typical seismic survey experiences approximately 20 to 30 percent of non-operational downtime due to a variety of factors, including technical requirements or mechanical maintenance, standby for weather or other interferences, and performance of mitigation measures (e.g., ramp-up, pre-survey visual observation periods, and shutdowns).

*3D Seismic Surveys*

3D towed-streamer seismic surveys enable industry to image the subsurface geology with much greater clarity than 2D data because of the much denser data coverage. The quality is such that 3D data can often indicate hydrocarbon-bearing zones from water-bearing zones. Because 3D seismic data has been continuously and rapidly improving

since its introduction in the 1970's, areas covered by 3D data shot only a few years ago may be reshot with current, improved technology, offering greater clarity than previous surveys. In addition, areas already covered using 2D techniques may be resurveyed with 3D. Further, 3D surveys may be repeated over producing fields at successive calendar times (at 6-month to several-year intervals) to better characterize and record changes over producing reservoirs. These 4D, or time-lapse 3D, surveys are used predominantly as a reservoir monitoring tool to detect and evaluate reservoir changes over time. Conventional, single-vessel 3D surveys are referred to as narrow azimuth 3D surveys.

The current state-of-the-art ships conducting 3D surveys are purpose-built vessels with much greater towing capability than the vessels conducting 2D surveys. While these vessels are generally 60 - 120 m long, with the largest vessels over 120 m (ft) in length and greater than 65 m (230 ft) wide at the back deck. These seismic ships typically tow two parallel source arrays 200-300 m (656-984 ft) behind them. The two source arrays are identical to each other and are the same as those used in the 2D surveys described previously. Following 100-200 m (328-656 ft) behind the dual source arrays are the streamers.

Most 3D ships can tow eight or more streamers at a time, with the total length of streamers (number of streamers multiplied by the length of each one) exceeding 80 km (50 mi). The theoretical towing maximum today is 24 streamers, each of which can be up to 12 km (7.5 mi) long, for a total of 288 km (179 mi). Towing 8-14 streamers that are each 3-8 km (1.9-5 mi) long is normal practice. Towing 10 streamers that are separated by 75-150 m (246-492 ft) means that a swath 675-1,350 m (2,215-4,429 ft) wide is covered on the sea surface in one pass of the ship along its track line. Other streamer configurations (number of streamers and their separation distance) can produce narrower or wider swaths. The survey ship tows the apparatus at a speed of 3 to 5.5 kn during production. Approximately every 11 - 15 s (i.e., a distance of 25 m [82 ft] for a vessel traveling at 4.5 kn [8.3 km/hr]), one of the dual air source arrays is fired. The other array is fired 11 - 15 s later. To achieve the desired spacing, the time between firings depends on the ship speed. While surveying, a ship travels along a track for 12-20 hours (i.e., a distance of 100-167 km [62 - 104 mi] at 4.5 kn [8.3 km/hr]), depending on the size of the survey area. Upon reaching the end of the track, the ship takes 3 to 5 hours to turn around and start along another track. This procedure takes place day and night, and may continue for days, weeks, or months, depending on the size of the survey area. Data acquisition is not, however, continuous. A typical seismic survey experiences approximately 20-to-30 percent of non-operational downtime due to a variety of factors, including technical or mechanical problems, standby for weather or other interferences, and performance of mitigation measures (e.g., ramp-up, pre-survey visual observation periods, and shutdowns).

B. Non-Seismic Gravity and Magnetic Surveys

Both conventional gravity surveys and gravity gradiometry surveys are conducted today, most often by fixed-wing aircraft, or where necessary, by marine vessel deployment. There is no sound source associated with gravity or magnetic surveys. The dimensions of

the gravity instruments and stand are approximately 1 m by 1 m by 1.5 m high (3 ft by 3 ft by 5 ft) and the total weight is approximately 150 kg (330 lb). The survey acquisition grid is similar to ship-based seismic surveys, generally with flight-line spacing of 0.5-3 km (0.3-2 mi). Surveys of 500 sq. km (180 sq. mi) can be completed in a few hours, with the aircraft flying at an altitude of 70-300 m (230-1,000 ft). The objectives of the survey will determine the flight-line spacing (distance between flight lines) and the altitude at which the survey will be conducted.

Measurements of the earth's magnetic field are useful in helping to determine geologic structures and stratigraphy in the subsurface in frontier exploration areas, such as the Atlantic OCS, and as a complement to existing seismic data. There are at least five types of magnetometers, three of which are commonly used in airborne magnetic surveying. In addition to the different types of magnetometers, there are also several different configurations that can be used on the aircraft. These configurations include: (1) a single sensor, typically a tail installation; (2) two horizontally separated magnetometers, usually wingtip pod sensors; (3) two vertically separated sensors, usually tail-mounted; and (4) a total magnetic intensity configuration, typically involving three, but potentially four, magnetic sensors. The sensor pods are cylindrical in shape, and typically 1-2 m (3.3-6.6 ft) long and several centimeters (several inches) in diameter.

The objectives of the survey (such as the amount of area to be covered, the desired detail to be obtained, etc.) and the cost determine three of the most important factors to be specified for any given survey: (1) the altitude at which the survey will be conducted; (2) the flight-line separation; and (3) the flight-line orientation, or direction. Recent surveys done in the Gulf of Mexico have been flown at altitudes of 60-300 m (200-1,000 ft), at speeds of 110 knots (250 km/hr), and with line spacings of 0.5-2 km (0.3-1.3 mi). Similar surveys were recently completed offshore Greenland and offshore Honduras.

NOAA's Office for Coastal Management did not find any reasonable foreseeable effects to South Carolina's coastal resources from the aerial gradiometry survey proposed offshore the Atlantic. The proposed survey would be conducted by a fixed wing aircraft with no at-sea activities and no component of the survey being within state or federal waters.

## II. MARINE MAMMALS & SEA TURTLES

More than four decades of worldwide seismic surveying and scientific research indicate that the risk of direct physical injury to marine mammals is extremely low, and currently there is no scientific evidence demonstrating biologically significant negative impacts on marine life populations.[2] As BOEM stated in its August 22, 2014 *Science Note,* "To date, there has been no documented scientific evidence of noise from air guns used in

[2] *See, e.g.,* 80 Fed. Reg. 9509, 9521 (February 25, 2015) (proposed issuance of regulations for Cook Inlet, Alaska seismic survey activities ("To date, there is no evidence that serious injury, death, or stranding by marine mammals can occur from exposure to air-gun pulses, even in the case of large air-gun arrays."); LGL Ltd., *Environmental Assessment of a Low-Energy Marine Geophysical Survey in the Northwestern Gulf of Mexico,* at 30 (Apr.- May 2013) ("[T]here has been no specific documentation of [temporary threshold shift] let alone permanent hearing damage, i.e., [permanent threshold shift], in free-ranging marine mammals exposed to sequences of airgun pulses during realistic field conditions.").

geological and geophysical (G&G) seismic activities adversely affecting marine animal populations or coastal communities. This technology has been used for more than 30 years around the world. It is still used in U.S. waters off of the Gulf of Mexico with no known detrimental impact to marine animal populations or to commercial fishing."

In addition, the best available science indicates that seismic surveys, even in preexisting active OCS programs in the Gulf of Mexico, do not result in any significant impact to sea turtles. *See supra* note 1 at 2-23 ("no significant cumulative impacts to sea turtles would be expected as a result of the proposed exploration activities when added to the impacts of past, present, or reasonably foreseeable oil and gas development in the area, as well as other ongoing activities in the area"); BOEM, *Final EIS for Gulf of Mexico OCS Oil and Gas Western Planning Area Lease Sales 229, 233, 238, 246, and 248 and Central Planning Area (CPA) Lease Sales 227, 231, 235, 241, and 247,* at 4-235, 4-741 ("[T]here are no data to suggest that routine activities from the preexisting OCS Program are significantly impacting sea turtle populations."). Furthermore, sea turtles are not as sensitive to sound as marine mammal species. *See* PEIS, Appx. I. Regardless, seismic surveys shutdown for sea turtles detected within a designated exclusion zone and work with NMFS to employ any necessary protective measures, such as the time-area closure for nesting sea turtles off of Brevard County, Florida.

Seismic energy sources are predominantly low frequency, below the hearing range of many marine species. In addition, the seismic sound source is engineered to direct its energy downward, rather than laterally, which the National Marine Fisheries Service has determined is in itself a mitigation measure.[3] For any sound that is transmitted horizontally, the signal strength decreases rapidly and even in these unusual circumstances, is at such low frequency that it does not cause injury to marine mammals. Sound that is below 100 dB in water – even if it travels hundreds or thousands of km – is about the equivalent to a whisper, since normal baseline sound levels in the ocean, at frequencies below 200-300 HZ, are generally 80-90 dB (in some areas such as the busy ports of the Atlantic coast, ambient sound may be as high as 110-120 dB due to ship noise).[4]

What evidence there is of potential behavioral disturbance from seismic operations suggests minor and transitory effects, such as temporarily leaving the survey area, and these effects "have not been linked to negative impacts on populations."[5] Nevertheless, industry

---

[3] *New Jersey v. National Science Foundation*, 3:14-cv-0429 (US Dist. Ct. New Jersey), Federal Defendants' Brief in Opposition to Plaintiffs' Motion for Declaratory and Injunctive Relief at 25 (July 7, 2014).

[4] Richardson WJ, Greene Jr. CR, Malme CI, and Thomson DH. 1995. Marine Mammals and Noise. Academic Press, NY. *See also* Acoustic Ecology Institute, *Seismic Surveys at Sea: The contributions of airguns to ocean noise.* August 2005 (An air source array with a source level of 200 – 230 dB "drops quickly to under 180 dB (usually within 50- 500 m depending on source level and local conditions), and continues to drop more gradually over the next few kilometers, until leveling off at somewhere near 100 dB."); IAGC. 2014. Fundamentals of Sound in the Marine Environment (Due to the different environmental properties of water and air, "62 dB must be subtracted from any sound measurement under water to make it equal to the same sound level in the air."), available at: http://www.iagc.org/files/5043/; University of Rhode Island, *Sound levels of common sounds in air re 20 μPa,* 2013, available at: http://www.dosits.org/science/soundsinthesea/airwater.

[5] BOEM, *The Science Behind the Decision: Answers to Frequently Asked Questions about the Atlantic Geological and Geophysical Activities Programmatic Environmental Impact Statement,* August 22, 2014.

funds independent research to further our understanding of the effects of seismic surveys on marine life. This is helping to remove uncertainties about possible effects of seismic surveys.

Finally, site-specific environmental assessments and consultation pursuant to the Endangered Species Act will be conducted for each proposed G&G permit, ensuring the protection of any endangered species including sea turtles, and the permittee must obtain a Marine Mammal Protection Act ("MMPA") authorization ensuring the proposed surveys will have no more than a negligible impact on marine mammal stocks.

## III. FISH & INVERTEBRATES[6]

Marine seismic surveys have been conducted since the 1950s and experience shows that fisheries and seismic activities can and do coexist. There has been no observation of direct physical injury or death to free-ranging fish caused by seismic survey activity, and there is no conclusive evidence showing long-term or permanent displacement of fish. Any impacts to fish from seismic surveys are short-term, localized and are not expected to lead to significant impacts on a population scale.

As discussed in detail above, seismic vessels move along a survey tract in the water creating a line of seismic impulses. As the seismic vessel is in motion, each signal is short in duration, local and transient. Fish will often react to these pulses by temporarily swimming away from the seismic air source, potentially causing a localized reduction in fish catch within very close proximity to the sound source. There is no conclusive evidence, however, showing long-term or permanent displacement of fish. Similar seismic surveys conducted for research in the Atlantic OCS in the past did not result in any noticeable effects on commercial or recreational fish catches (based on a review of NMFS data from months surveys were conducted and noting "there was absolutely no evidence of harm to marine species" nor fish).[7]

Seismic and other geophysical surveys also do not result in closing areas to commercial or recreational fishing. During surveys, the survey crews work diligently to maintain a vessel exclusion zone around the survey vessel and its towed streamer arrays to avoid any interruption of fishing operations, including setting of fishing gear. As with all combined uses of offshore waters, there needs to be a certain level of coordination by all

---

[6] For more information, *see* Science for Environment Policy, Future Brief: Underwater Noise, European Commission, June 2013: http://ec.europa.eu/environment/integration/research/newsalert/pdf/FB7.pdf; "Stocks at a Glance – Status of Stocks" 2011, U.S.Department of Commerce, NOAA: www.nmfs.noaa.gov/stories/2012/05/05_14; Boeger, W.A., Pie, M.R., Ostrensky, A., Cardoso, M.F., 2006. The Effect of Exposure to Seismic Prospecting on Coral Reef Fishes; Brazil. J. Oceanogr. 54, 235-239; 3D marine seismic survey, no measurable effects on species richness or abundance of a coral reef associated fish community. Mar. Pollut. Bull. (2013), http://dx.doi.org/10.1016/j.marpolbul.2013.10.031; Hassel, A., Knutsen, T., Dalen, J., Skaar, K., Lokkeborg, S., Misund, O.A., Osten, O., Fonn, M., Haugland, E.K., 2004. Influence of seismic shooting on the lesser sand eel. ICES J. Mar. Sci. 61, 1165-1173; Pena, H., Handegard, N.O. and Ona, E. 2013. Feeding herring schools do not react to seismic air gun surveys. ICES J. Mar. Sci, http://icesjms.oxfordjournals.org/content/70/6/1174.short?rss=1; Saetre, R. and E. Ona, 1996. Seismic investigations and damages on fish eggs and larvae; an evaluation of possible effects on stock level. Fisken og Havet 1996:1-17, 1-8.

[7] *See, supra,* note 3 at 25-26, citing Exhibit D, Higgins Decl. ¶ 21, Exhibit D, Mountain Decl. ¶ 8.

parties. At sea, coordination is regulated by the U.S. Coast Guard under the International Regulations for Preventing Collisions at Sea (COLREGS), requiring a Local Notice to Mariners specifying survey dates and locations. BOEM has concluded that "there is only a limited potential for space-use conflicts between G&G activities and commercial fishing operations within the area of interest" and any impacts "would be intermittent, temporary, and short term."[8] The fishing community will be hearing more on this during BOEM's upcoming outreach meetings with fishery councils and coastal communities.

While some studies have shown that various life stages of fish and invertebrate can be physically affected by exposure to seismic surveys, in all of these cases, the subjects were very close to the seismic source or subjected to exposures that are virtually impossible to occur under natural conditions. Research does not support speculation that seismic surveys could harm fish, especially eggs and larvae, over long distances. In addition, many marine crustaceans such as horseshoe crabs congregate in bays and nearshore areas where seismic activities are not proposed to occur.

Because the sound output from a seismic survey is immediate and local, there is also no contaminate residue or destruction of habitat. However, prior to G&G permit approval in the Atlantic OCS, site-specific environmental assessments will include an Essential Fish Habitat ("EFH") assessment to determine whether the specific activity and location would cause a significant adverse effect to fisheries and EFH.

## IV. MITIGATION MEASURES

IAGC supports implementation of mitigation measures that are commensurate to the potential risk and supported by the best available science, and its members comply with mitigation and monitoring measures required after BOEM and NMFS conduct site-specific environmental assessments. Measures commonly used by the seismic industry include timing seismic surveys to avoid known areas of biological significance, such as whale foraging or breeding areas or avoiding seasonal marine life occurrences and known migration areas, such as the North Atlantic Right Whale time-area closures identified in the Final Programmatic Environmental Impact Statement for Proposed G&G Activities in the Mid- and South Atlantic OCS ("PEIS"). *See* 79 Fed. Reg. 13,074 (Mar. 7, 2014). Before a seismic survey begins, visual monitoring is undertaken to check for the presence of marine mammals and other marine species within a specific precautionary, or exclusion zone, often using dedicated marine mammal observers (MMOs) or protected species observers (PSOs). Soft-start, or ramp-up, procedures provide a gradual build-up of the seismic sound source and allow marine life to swim away before starting the survey. Further monitoring may be conducted using passive acoustic monitoring technology (PAM), which may detect vocalizing marine mammals during periods of low visibility. In the event marine mammals are detected in the exclusion zone, seismic operations will not begin for a certain time period until the marine mammal moves away. Similarly, a seismic survey will shut down if the marine mammal is observed entering the exclusion zone once operations have begun.

---

[8] BOEM, *Final Programmatic Environmental Impact Statement for Proposed G&G Activities on the Mid- and South Atlantic OCS ("PEIS")* at 4-160, 4-161 (March 2014).

The mitigation measures implemented in the Atlantic OCS will be similar, if not more stringent, than measures previously employed by the industry. Those measures have been developed over time and are based on proven methodologies. Conservative acoustic thresholds adopted by the agencies and preventative mitigation measures are intended to prevent any potential impact to marine life. Subsequent environmental impact assessment specific to each pending G&G permit will satisfy NEPA, MMPA and ESA requirements, including evaluation of essential fish habitat and avoidance of disturbance to "special areas, such as sensitive benthic (seafloor) biological communities, national marine sanctuaries, historic and prehistoric sites, and cable or other infrastructure."[9] Extensive mitigation and monitoring efforts will ensure any significant impacts will be avoided and seismic activities will have no more than a negligible impact on marine mammal stocks.

Finally, as you know, a Programmatic Environmental Impact Statement covering all areas in the Mid- and South Atlantic OCS was completed so that geophysical acquisition could occur. G&G permit applications were submitted based on these areas of interest BOEM approved for consideration, and BOEM's Five-Year OCS Draft Proposed Leasing Program has no bearing on this process. These G&G surveys will illuminate the resource potential in the Mid- and South Atlantic OCS. The process of mapping geophysical data involves studying the geology of the region in order to interpret the effect on smaller areas that may contain reserves. It starts with a fairly wide image that gives geologists a baseline of the area and the geophysical forces that formed a specific substratum. The arbitrary 50-mile buffer proposed in the Draft Program also has no bearing on where G&G surveys can occur. Applicants can still survey within this buffer, providing greater understanding of the resources off South Carolina's coast.

Thank you for your consideration of this letter as you contemplate and review consistency determinations for G&G activities proposed off your shores. Should you wish to discuss our comments in more detail please do not hesitate to contact myself or Nikki Martin, Vice President of Government & Legal Affairs (nikki.martin@iagc.org).

Yours sincerely,

Ken Wells
President

CC: The Honorable Nikki Haley, Governor of South Carolina
Jeffrey Payne, Acting Director, Office for Coastal Management

[9] BOEM. Record of Decision, Atlantic OCS Proposed Geological and Geophysical Activities, Mid-Atlantic and South Atlantic Planning Areas, Final Programmatic Environmental Impact Statement, at 2 (August 11, 2014). In addition, BOEM's Record of Decision and PEIS outlines guidance to prevent discharge of trash and marine debris and requires coordination with Department of Defense and NASA to avoid conflicts with military operations.