

His Excellency Mr. Alexis Tsipras,
Prime Minister of the Hellenic Republic,
Prime Minister's Diplomatic Cabinet,
Vasilissis Sofias 5,
106 71 Athens,
Greece

Monday, 17 June 2019

Dear Prime Minister Tsiparis,

I am writing on behalf of the International Association of Geophysical Contractors (IAGC). Founded in 1971, the International Association of Geophysical Contractors (IAGC) is the global trade association for the geophysical and exploration industry, the cornerstone of the energy industry. With more than 80 member companies in 50 countries, our membership includes onshore and offshore survey operators and acquisition companies, data and processing providers, exploration and production companies, equipment and software manufacturers, industry suppliers and service providers. The IAGC focuses on advancing the geophysical and exploration industry's freedom to operate. The IAGC engages governments and stakeholders worldwide on issues central to geophysical operations and exploration access, including prioritizing timely, accessible data acquisition throughout the life of the asset; providing predictability & competition; promoting regulatory & fiscal certainty and promulgating risk- & science-based regulations.

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. Geophysical surveys are undertaken to assist that broad range of clients in understanding the subsurface of the ocean in order to make decisions about resource development, the safe location of infrastructure and decisions relating to the delineation of exclusive economic zones.

We understand that the World Wide Fund for Nature (WWF) are leading a call to ban hydrocarbon exploration in the Hellenic Trench. We note that WWF have cited the ecological importance of the Hellenic Trench to a variety of marine mammal and other species, and allege a number of potential impacts as 'direct and severe threats', including anthropogenic noise and ship strikes. While we would strongly disagree with WWF about the environmental risk posed by geophysical surveys and exploration activities, we would first like to take this opportunity to highlight the importance of marine geophysical surveys and the significant lengths the geophysical industry goes to in order to conduct operations in an environmentally responsible manner, reducing any potential risk of impact from geophysical survey operations to negligible levels.

We would also like to highlight the importance of the oil & gas industry to the energy security of Greece, which we understand to be making comprehensive reforms to reinvigorate energy markets.

International Association
of Geophysical Contractors

office +1 713 957 8080
US toll free +1 866 558 1756
fax +1 713 857 0008

www.iagc.org

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

Since the peaks of 2006-2008, oil and natural gas production have declined, though both are understood to be increasing again, according to data from the International Energy Agency. The work of the Hellenic Hydrocarbon Resources Management company is to be commended in helping to make Greece an attractive destination for international investment. IAGC views positively the steps to ensure workable licensing, legal and fiscal regimes in order to encourage operations in both proven and frontier areas.

Marine Geophysical Surveys

By determining geological features below the sea floor, marine seismic surveys are a vital part of exploring for oil and gas. The survey is conducted by sending acoustic waves into the various buried rock layers beneath the sea floor and then recording the time it takes for each wave to bounce back while measuring the various characteristics of each returning wave. In water, the energy source is typically an array of different sized air-chambers, filled with compressed air. The source array is towed behind a seismic survey vessel and releases pressurized air into the water. The returning sound waves are detected and recorded by hydrophones that are spaced out along a series of cables.

Similar to an ultrasound imaging a human body, seismic surveys generate images below the surface of the earth tens of thousands of feet and accurately image the Earth's subsurface before a single well is drilled. 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. Seismic surveys also reduce associated safety and environment risks and the overall footprint of exploration. Because survey activities are temporary and transitory, they are the least intrusive and most cost-effective means to understanding where recoverable oil and gas resources likely exist.

Geophysical surveys have environmental benefits which reduce the overall impact of oil and gas exploration and extraction processes beginning with a reduction in areas to those with only the most prospectively. Any time a well is drilled, either when trying to find oil and gas or when developing a reservoir for production, geophysical technologies can reduce many risks. Images of the earth's subsurface that seismic creates can illuminate potential hazards for drilling to ensure it is as safe, reliable and efficient as possible. For example, analysis of a subsurface in advance of drilling is only available through seismic techniques and supports the design of well trajectories that can reach the oil or gas reservoir while avoiding any hazardous highly over-pressured zones that could cause potentially serious issues.

Before picking an exact drilling location, companies utilize geophysical technology to perform hazard surveys to look for geologic hazards on the sea bottom and in the shallow subsurface that could affect the drilling of a well. Features such as a steeply dipping or unstable sea bottom are hazardous and must be avoided in positioning rigs. Likewise, shallow gas pockets, faults, and/or abnormally pressured sands can cause severe problems during the drilling of a well if not known about in advance. To avoid these problems, high resolution seismic surveys are conducted. The resulting data pinpoints and enables the avoidance of potential hazards.

Geophysical technology enables oil and gas operators to accurately predict the fluid pressures and rock fracture pressures in the subsurface from 3D seismic data and offset well data before a new well is drilled.

This information is critical for the safe drilling of wells with no environmental incidents so that unexpected surges of high-pressure fluids won't get into the well during drilling. Once oil or gas is found, and a reservoir is being developed and produced, seismic images increase the understanding of the reservoir and optimize development plans. More efficient oil and gas extraction requires fewer wells while increasing the production of hydrocarbons.

High resolution geophysical survey techniques are also used in the planning of stages for a variety of offshore infrastructure such as wind turbine generators and other marine renewable energy devices, liquid natural gas (LNG) terminals, as well as port facilities. All such infrastructure requires detailed knowledge both of the seabed topography, and the subsurface in order to plan for the design and safe installation of foundations that maximise the lifespan of any infrastructure. A further application of geophysical survey techniques, often in advance of infrastructure development, is the search and identification of unexploded ordnance (UXO) from wartime bombing campaigns by Allied and Axis forces, sea mines and wrecks of both ships and planes. Such devices pose a risk to a variety of ocean users such as those planning to install infrastructure, as well as fishermen and operators of recreational craft. They also pose a risk to the environment, as any removal needs to be conducted in a controlled manner.

The WWF Declaration

WWF have presented some concerns focused on a number of points to which we provide specific responses:

Auditory injury

The WWF contend that noise from exploration activities, specifically the impulses from the compressed air seismic sources (sometimes referred to as 'airguns') can cause auditory and 'often lethal' injuries to marine mammals. While the potential for auditory injury exists within extremely close ranges to the seismic source (a few metres), it is never directly lethal. Claims of marine mammal beachings similar to those seen due to military sonars have not been substantiated and these claims do not fit the well-known conditions of sonar-related strandings, and thus cannot be discriminated from normal natural patterns of marine mammal strandings. Potential behavioral impacts vary with species, depending on the hearing sensitivity and habits of the marine mammals species of interest in relation to the frequency of the seismic source. Additionally, geophysical surveys implement extensive industry standard mitigation measures which are employed commonly in all areas of the world. An exclusion zone is established around the seismic source, typically of 500m, which encompasses an area within which sound levels drop to levels far below those which could cause even temporary impacts. This zone is monitored through the use of trained biologists as Marine Mammal Observers (MMOs) and Passive Acoustic Monitoring (PAM) technology which is deployed in order to listen for marine mammal vocalisations. Through these methods, the presence of marine species is monitored constantly, enabling the operations to be delayed, or under certain circumstances halted due to the presence of protected marine species which approach the safety zone around the seismic source. Additional measures include the gradual increase in seismic source volume over a period of time, commonly termed the 'soft-start' of 'ramp-up'.

More than five decades experience of worldwide seismic surveying and various research studies 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 mammal populations.

Habitat displacement

Marine geophysical surveys of all types (exploration, hazard assessment, life-of-field monitoring) are routine operations in areas with mature oil and gas sectors including the US Gulf of Mexico and the UK and Norwegian sectors of the North Sea. Geophysical surveys are conducted regularly, with no evidence of detrimental impacts to the healthy marine mammal populations present in these areas.

There is a wide body of research that has demonstrated a variety of potential behavioural reactions to underwater sounds from anthropogenic sources including geophysical surveys. Reactions can include movements away from sound sources, orienting away from sound sources, increased surface behaviour, decreased surface behaviour, etc. There is, to date, no evidence of long-term habitat displacement from the conduct of geophysical surveys which are short-duration and transitory in nature. We firmly believe, through careful management that geophysical operations and healthy marine mammal populations can coexist.

Increased air and marine pollution

The modern geophysical survey vessel fleet is one of the cleanest in operation. The geophysical industry supports the initiatives of the International Maritime Organisation (IMO) to reduce airborne emissions. Vessel operators are reducing emissions of sulphur and nitrogen oxides (SO_x and NO_x) through the use of low-sulphur fuels such as marine gasoil (MGO) and catalytic reduction technologies.

Vessels operators implement comprehensive ballast-water management plans and have sophisticated ballast-water filtration systems in order to eliminate the potential for introducing alien invasive species. All operators follow strict waste management plans and adhere to International Convention for the Prevention of Pollution from Ships (MARPOL) regulations with regard to preventing pollution at sea.

Collision risk

Geophysical surveys typically involve the use of a survey vessel with a large spread of in-sea equipment which includes the seismic source, and a network of cables containing receiver sensors. The presence of a support vessel or vessels is common, in order to interact with other vessel operators in the vicinity, such that they can be made aware of the operation and extent of the in-sea equipment for safety reasons. Survey operations are conducted at very low speeds, typically of the order of 4.5 to 5 knots. This reduces any potential for collisions with marine mammals to very low levels. In addition, the MMOs on board are required to maintain a watch for marine mammals during periods of transit from port to site, again helping to ensure that any potential interactions with marine life are minimised.

Physical damage to benthos

Geophysical surveys do not interact directly with the seabed, except in the case of the deployment of ocean bottom node or cable technology where sensors are temporarily placed on the seabed. This kind of application is not generally used for reconnaissance applications, but during monitoring of mature oil and gas assets. It should be noted that the sensors are sensitive and so are often handled with the aid of Remotely Operated Vehicles (ROVs) in order to 'place' instrumentation on the seabed, making the physical interaction one that is non-destructive. The ROVs are equipped with visual technology, allowing operators to place seismic equipment where they will have minimal impact.

Concluding remarks

The geophysical and exploration industries are committed to responsible environmental stewardship throughout all of its operations. We welcome any opportunity to respond to the concerns of stakeholders and to ensure that our operations, the technology employed, and the steps taken to minimise any potential impacts are understood. We welcome feedback in information exchange with the regulatory agencies in Greece to ensure the best available scientific and factual information is available to your country. We look forward to continuing a productive working relationship with companies seeking to explore the hydrocarbon potential offshore Greece.

Yours faithfully,



Nikki Martin
President
International Association of Geophysical Contractors (IAGC)

Copies to;

Dustin Van Liew
Alex Rivard
Ross Compton