METHODS TO REDUCE LATERAL NOISE PROPAGATION FROM SEISMIC EXPLORATION VESSELS

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ABSTRACT

This paper covers the development of methods and equipment for reducing lateral noise propagation from seismic exploration vessels operating in the Alaskan Beaufort and Chukchi Seas. Oil exploration activities are currently taking place or are planned, and there is a need for creating methods and equipment to reduce lateral noise propagation from seismic exploration.

This project is supported by the U.S. Minerals Management Service, which has the responsibility and authority to ensure that oil and gas exploration and production activities are conducted in a safe and environmentally sound manner.

This research effort includes a literature synthesis and review to identify existing seismic exploration technologies (airguns) and involves developing promising methods and technologies that could potentially reduce the lateral propagation of sound from those airguns. Three principal areas have been explored: (a) Attenuating lateral noise with air bubble curtains, like has been shown in the literature, or with some special bubble curtain material, acting as a more solid curtainlike barrier, (b) Making arrays more directional, and thus narrow the cone of sound, and (c) Changing the structure of the airguns to reduce high frequency sound (noise) while maintaining the strong source signal needed for exploration purposes.

This paper (a) describes our preliminary findings in each of the above areas and (b) shows that deploying bubble curtains outboard of the seismic arrays towed by the same exploration vessel can potentially produce the sought-after noise reduction, while the minimizing impact on the traditional seismic exploration operations.

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