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**Title: Acoustic Detection of Ice Hazards for Tidal Power Development in Minas Passage**

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**Category: Marine Renewable Energy**

Minas Passage is a hotspot for tidal power development. The necessary subaquatic infrastructure is, however, subject to risks presented by the dynamic marine environment. Ice blocks with massive sediment inclusions that are released from tidal rivers surrounding Minas Basin can be negatively buoyant, where they are prone to collide with the generator's turbines. Our research is focused on characterizing the structure of these ice blocks, using acoustic observations and models that can be developed to remotely sense ice near the turbines. Preliminary observations of acoustic backscatter from sediment-laden ice fabricated in the laboratory suggest that ice block size and the variation in its sediment content could be detected acoustically. However, understanding the composition of the ice blocks found in-situ is necessary to properly model the scattering from them. Ice blocks collected from the Kennetcook River and Debert Beach have been used to characterize the structure of naturally occurring sediment-laden ice and these data will be used to make realistic ice blocks for future scattering experiments. This research is part of a project conducted in partnership with Nova Scotia Power Incorporated to employ acoustical technologies for loss prevention in marine industries.