

Abstract Submitted
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Underwater Radiated Noise from Coastal Ferry Vessels: The Influence of Propellers and Operating Conditions DUNCAN MCINTYRE, WALTFRID LEE, University of Victoria, HELOISE FROUIN-MOUY, DAVID HANNAY, ALEX MACGILLIVRAY, JASCO Applied Sciences, PETER OSHKAI, University of Victoria — Cavitation-induced noise from propellers dominates the underwater radiated noise (URN) from ships the largest source of underwater noise pollution worldwide. Vessel noise has often been related to travel speed, and slow-downs been found to be effective in reducing overall noise in high-traffic areas. However, radiated noise is not universally correlated with travel speed. We investigated field-measured radiated noise levels from eight coastal ferry vessels each operating at a range of speeds, and considered the relationships between noise at individual 1/3-octave band levels and vessel operating conditions in order to uncover the physical mechanisms and characteristic acoustic markers of the specific noise behaviors. We considered a gamut of propeller parameters including depth, pitch, and slip and determined that only speed was reliably related to URN. Among vessels for which speed and noise were anti-correlated at most frequencies, all of which used controllable pitch propellers, acoustic markers were found that indicated a change in the noise generation regime when the propellers were under-loaded. The acoustic signatures of these regimes appear to correspond to different types of propeller cavitation.

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