

Summary

A laboratory experiment was designed and performed to ascertain the difference in underwater response to sonic boom laboratory between flat and wavy surface models and their depth-dependent rule overpressure attenuation. Waveforms of overpressure were recorded in a water-filled tank, fitted with a surface-wave maker, during over-flight of the supersonic projectiles.

Sawyers' (1968) theory for the flat interface has been validated to a depth of at least four signature lengths. The theory of Cheng and Lee (2000) for a wavy surface has been confirmed in several respects. Firstly, the predicted overpressure attenuation with depth to the one-half power has been found to be correct over depths up to four signature lengths. Secondly, the predicted frequencies and the fore-to-aft frequency shift have been confirmed by these laboratory-scale experiments.