

Development and Implementation of an Underwater System for Interface Wave Measurements

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ABSTRACT

Measuring shear wave velocity profiles has become integral to geotechnical site investigation both on land and offshore. Obtaining accurate near-surface profiles in soft marine sediments can be expensive and time consuming using conventional intrusive methods. This work includes the development and field testing of an underwater source capable of generating surface wave energy for the determination of shear wave velocity profiles with resolution in the top foot to depths up to 20 feet.

A portable and remotely fired underwater impact source was developed. Dispersion curves generated using conventional surface wave methods and instrumentation for shallow testing on land were compared to those obtained using the source. Additionally, underwater measurements using both contacting and non-contacting receivers were performed. Underwater measurements showed that Scholte waves could be generated wavelength range of interest. Non-contacting interface wave measurements were compared to contacting measurements and show promising results with a need for further investigation.