



WAVE WASH STUDIES OF FAST FERRIES: ACCURATE AND RELIABLE MEASUREMENTS WITH ASL'S WAVESONAR

ASL Environmental Sciences conducted detailed measurements of the ship wash of a new fast ferry vessel recently put into service in the coastal waters of British Columbia in late 1999 and early 2000. The study was carried out for Sandwell Inc., an engineering company working under contract to the B.C. Ferry Corporation. B.C. Ferries, the owner/operator of three new fast ferries,

passed over the bottom-mounted upward looking sonar instrument. The WaveSonar was operated from a gimballed bottom mount for several days at a time, storing the measurements internally, allowing repeated trials to be carried out on successive day.

Using the detailed measurements (see next page) from the WaveSonar, analysis and

The PacifiCat Ferry, a 400' long catamaran hull having a maximum speed of 37 knots, with a payload capacity of 250 cars and 1000 passengers.



commissioned the study in response to concerns expressed on the possible effects of ferry wash on beach users, small vessels at dock and coastal environments.

modeling of the ship wash can be developed to compute the propagation characteristics, wake height, period and energy density. The nearshore measurements are used to validate the model hindcast results for coastlines.

The measurement program involved two components:

- Detailed measurements of the wake wash in comparatively deep waters (> 70 m) as the ferry travelled past the measurement site at varying distances, speeds and loads;
- Simultaneous measurements of wake wash at shallow (< 10 m) water depths as the wash passed through nearshore waters before encountering the coastline.

For the shallow water measurements, bottom pressure sensors, sampling at 2 Hz, were used to measure the ship wash. In the deeper waters, bottom pressure sensor measurements are not usable due to severe attenuation with depth at the frequency of the ship wash waves.

For the deeper waters, ASL's WaveSonar, provided accurate, linear measurements at 2 Hz sampling rates of the ship wash as it

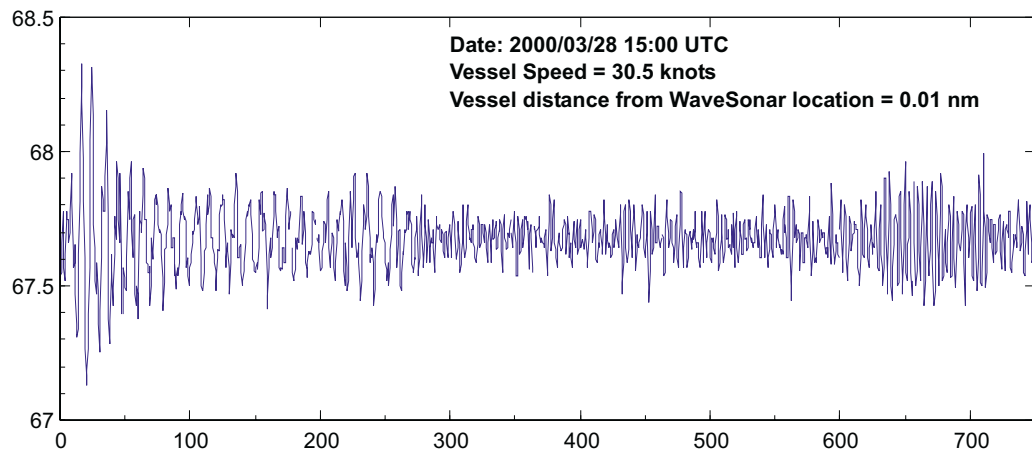


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WaveSonar measurements for one trial of PacifiCat passage.



WaveSonar: Features and Benefits

The WaveSonar instrument offers significant advantages over conventional buoy-based measurement programs:

- Operated from the seabed, the instrument is safe from vandalism and damage due to collisions with ships, towed barges or other types of marine traffic; in fact, the fast ferry can pass directly over the measurement site, and the instrument will provide measurements of the hull and stern wash from the vessel;
- Being located on the seabed, the instrument is operated from a highly stable platform unlike surface or subsurface buoy mounted sensors, where errors can be introduced by the platform motion or tethering forces;
- The WaveSonar features a very narrow acoustic beam of 1.8 degrees offering excellent horizontal resolution; vertical resolution of waves is 2.5 cm;
- Having inherently linear sensor response, WaveSonar measurements are not prone to errors due to the occurrence of steep waves which can be the case for surface buoy instrumentation;
- The WaveSonar can be operated at sampling rates of 2 Hz for durations of 3 months or longer, with its large onboard data storage capacity;
- The WaveSonar is competitively priced at a considerably lower price than a non-directional wave buoy unit;

- The WaveSonar can be optionally equipped with a high accuracy pressure sensor (as well as the acoustic range sensor), to provide additional wave measurement capabilities suitable for mid-depth and shallower water applications.

For more information on the WaveSonar instrument or ASL Environmental Sciences's wave measurement data collection and analysis services, please contact Cindy Kuhnke, Sales & Marketing Manager at ckuhnke@aslenv.com or David Fissel, President and Senior Oceanographer at dfissel@aslenv.com or phone 250.656.0177.



ASL's WaveSonar unit in gimbal bottom mount.

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