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Medeiros

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[54] WIDE-ANGLE, FORWARD-LOOKING BATHYMETRIC MAPPING

[57] ABSTRACT

[75] Inventor: Michael R. Medeiros, Tiverton, R.I.

A system for generating a wide-angle, forward-looking bathymetric map of the an region ensonified by single ping. A transmitter generates a large angle transmit pulse. An array of acoustic transducer elements operates to transmit the pulse, receive acoustic return signals and convert the returns into digital acoustic data. A receiver matched filters, shades and steers the data through a series of horizontal angles. For each horizontal angle steered to, the receiver generates vertical beams and identifies detections as those vertical beams having magnitudes greater than a detection threshold. Vertical beam forming and detection identification is repeated for each time slice in a series of time slices over the ping cycle. The identified detections are refined using a curve fitting analysis and stored in equal angular vertical bins. A bottom profile is generated from the refined angles and magnitudes. The profile is filtered to remove outliers in magnitude and space to obtain a bottom map for the horizontal steering angle. The bottom maps from each horizontal angle are compiled into a single wide-angle, forward-looking map.

[73] Assignee: The United States of America as represented by the Secretary of the Navy, Washington, D.C.

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[51] Int. Cl.⁶ G01S 15/89

[52] U.S. Cl. 367/88; 367/103; 367/119

[58] Field of Search 367/88, 103, 119

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