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second surface being in contact with a fluid, the ultrasound pulse reflecting between the first surface and the second surface to provide a first ultrasound pulse echo series;
detecting a multiplicity of the ultrasound pulse echoes of the echo series with the transducer; 5
delivering an ultrasound pulse through a shear wave transducer, the shear wave transducer configured to provide a pulse at a predefined angle relative to the interface of said second surface and said fluid to obtain a second 10
ultrasound pulse echo series;

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detecting a multiplicity of ultrasound pulse echo of said second ultrasound pulse echo sound series with said shear wave transducer;
determining a first value from the multiplicity of pulse echoes of the first ultrasound pulse echo series;
determining a second value from the multiplicity of pulse echoes of the second ultrasound pulse echo series; and
determining the velocity of sound and density of the fluid utilizing said first and second values.

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