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# United States Patent [19]

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Walsh

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[54] SYSTEM AND METHOD FOR ACOUSTICALLY IMAGING AN UNDERGROUND TANK

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

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[58] Field of Search ..... 367/7, 908, 99; 181/124; 340/621; 73/290 V

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[57] **ABSTRACT**

A vertical acoustic array system and method for acoustically imaging the contents of a partially or completely buried tank which can contain radioactive solids and may not be entirely filled. The transducer array is placed proximate a side of a tank in a vessel such as a tube filled with water. Dirt or other filler material located between the tube and the tank is saturated with water, allowing the acoustic signal to propagate through the side of the tank and into the tank. The vertical array consists of one or more transmitting units and receiving units set in a vertical array including dipole receiving elements which allow horizontal directionality. The signals are analyzed by a field unit which includes a portable self-powered trailer providing signal transmitting and analysis devices. The field unit can transmit signals to a second unit which provides further signal analysis.

17 Claims, 3 Drawing Sheets

