

Information Technology Laboratory

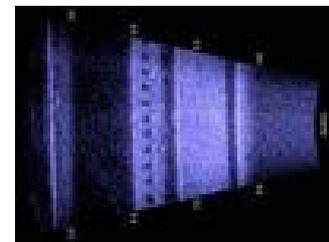
High-Resolution Acoustic Imaging System

Background In the past, divers have been used during the inspection, maintenance, or construction of underwater projects. Lack of visibility in turbid waters can subject them to dangerous operational conditions and severely reduce their effectiveness. A high-resolution acoustic imaging system developed by the Applied Physics Laboratory of the University of Washington is being adapted and enhanced by Information Technology Laboratory engineers to offer a safer and more effective method of inspecting underwater structures and positioning tools for construction or maintenance. In field demonstrations conducted jointly with the St. Louis and Louisville Districts, the camera allowed clear viewing of small (about ½ inch) structural details of steel and concrete structures in turbid water.

Technology This high-resolution acoustic imaging system includes an acoustic video camera with a 1- to 1.8-MGHz range, a boat with environmental controls, at least one remotely operated vehicle, global positioning system, roll-and-pitch equipment, and side-scanner sonar.

Applications The high-resolution acoustic imaging system can be used to:

- Expedite construction, repair, and maintenance of underwater structures.
- Provide safer conditions for employees engaged in environmental, wet construction, and structural inspection activities.
- Enable identification of endangered species and detection of cultural artifacts prior to construction projects.
- Determine proper placement of riprap.
- Inspect levees for failure sites.
- Enable the user to immediately and permanently log underwater images from inspections.



Acoustic image of casing end-plate

Benefits The high-resolution acoustic imaging system will:

- Expedite construction, repair, and maintenance of underwater structures.
- Provide safer conditions for employees engaged in environmental, wet construction, and structural inspection activities.
- Enable identification of endangered species and detection of cultural artifacts prior to construction projects.

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