APPLICATION NOTE

LocatingLostUnderwaterMooringsWithHighResolutionSideScanSonar

CUSTOMER APPLICATION

Underwater search and relocation of lost mooring packages using a high resolution side scan sonar

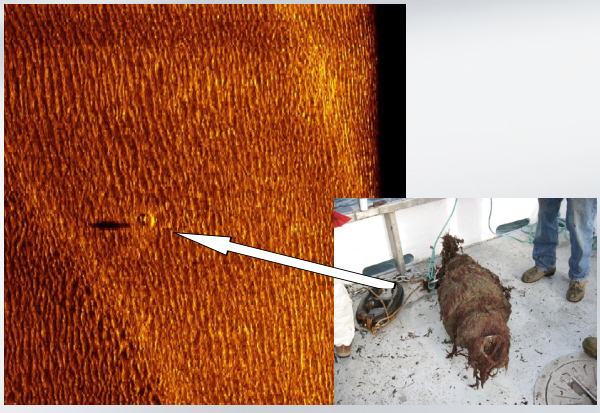
SOLUTION

EdgeTech 4125 Side Scan Sonar

EQUIPMENT

Underwater Equipment:
4125 Side Scan Sonar Towfish with:
- Dual simultaneous 400/900 kHz freq
- Pitch, roll, heading & depth sensors
- Rugged portable transport case
- 50m multi-conductor Kevlar tow cable

Surface Equipment:
- 4125 Portable Topside Processor
- Splashproof Laptop Computer
- DISCOVER Software



Scenario

Underwater moorings are used extensively throughout the world by oceanographic researchers, oil & gas firms, fisheries departments and military organizations. Many projects include oceanographic studies utilizing ocean sensors or equipment deployed on the sea floor in autonomous mooring packages. These moorings rely on acoustic releases or grappling lines for retrieval at a later date. While normally there are few problems locating and recovering these moorings, occasionally some assistance is required when circumstances outside the control of the users occur. A common example is when a subsea mooring is dragged some distance from its original deployment location by an unwary fishing vessel. These unfortunate and potentially costly events are trying for all personnel, scientists and engineers who are relying on the data and underwater instrumentation that has often been deployed for many months.

Recently, on one such occasion, a leading international research organization was unable to retrieve an important mooring off the Atlantic coast after a six month deployment. The equipment was not located or retrieved by normal dragging and grappling means and it became apparent the team needed a broad “view” of the underwater area to try and relocate the valuable device.

The research organization contacted EdgeTech in hopes of resolving this dire situation. With a high resolution side scan sonar it was thought the small underwater mooring and equipment could be “seen” and then physically brought to the surface. The first and most important criterion was to locate the small object in the vast expanse of the ocean. The EdgeTech 4125 proved to be the perfect tool for the job.

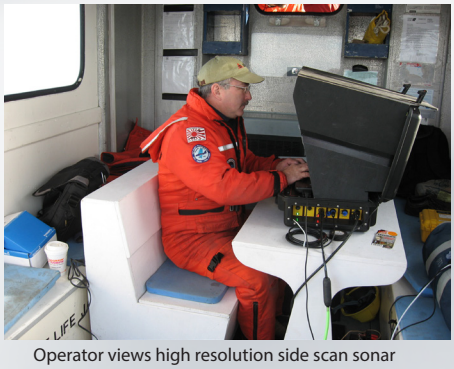
Locating Lost Underwater Moorings With High Resolution Side Scan

Solution

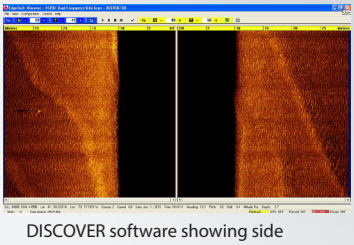
The new EdgeTech's 4125 Side Scan Sonar System is a rugged, portable, easy-to-use system that provides ultra high resolution underwater imagery. The 4125 utilizes EdgeTech's Full Spectrum® CHIRP technology, which provides higher resolution imagery at ranges up to 50% greater than many other systems on the market. This translates into more accurate results and faster surveys, both critical components for missions such as mooring recovery. The 400/900 kHz frequency set provides an excellent combination of long range search capability and high resolution images for detection of very small objects like the researcher's mooring in this case. The 4125 can be powered by both AC and DC and in this case was running off a standard 12V car battery on the vessel. EdgeTech's easy-to-use Discover acquisition software (depicted in the photos on this page) is included with the system and includes both Target Logger and Coverage Mapper modules. The standard 50m multi-conductor Kevlar tow cable was used to tow the systems behind the boat at approximately 7 meters off the sea floor.

Using the 4125, operator Rob Morris, was able to locate the lost underwater object within one hour of searching the suspected area. As seen in the images here the mooring was visible in the high resolution imagery and was easily identified.

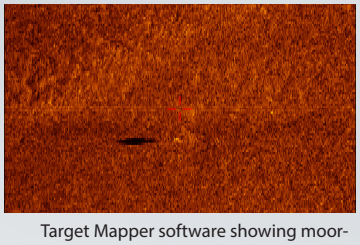
The use of the 4125 side scan sonar successfully enabled the location and recovery of an important underwater mooring. This cost effective tool can be an important savior for anyone deploying and retrieving autonomous subsea moorings. When one considers the cost of equipment and, perhaps even more importantly, the cost of the data that is collected over many months or even years, it is easily recognized that the 4125 side scan sonar is a cost-effective insurance policy that every user should have at their disposal.



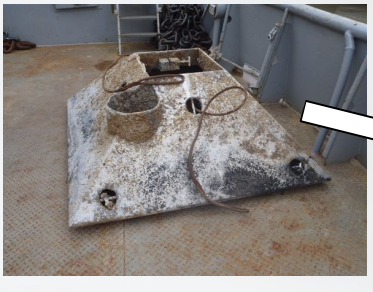
Operator views high resolution side scan sonar data in real time for quick identification of targets



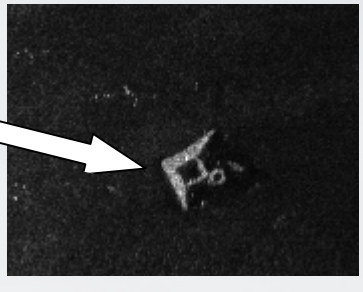
DISCOVER software showing side scan image



Target Mapper software showing mooring and shadow



Another lost mooring located by the 4125 side scan sonar



4125 side scan sonar image of lost mooring underwater. Approximately 4 meters deep and 15 meters off to the side of the boat.