APPLICATION NOTE

Search & Recovery (SAR) using High Resolution Side Scan Sonar

CUSTOMER APPLICATION

Underwater search and recovery (SAR) using a high resolution side scan sonar

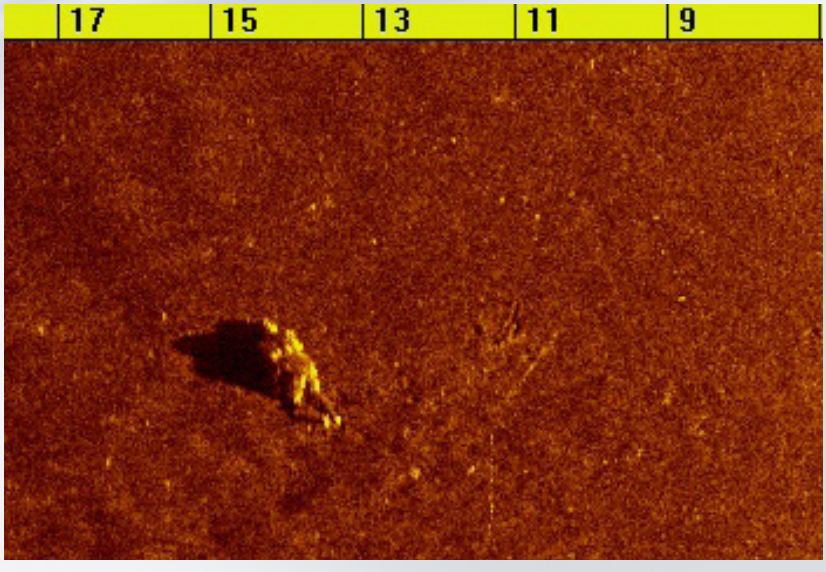
SOLUTION

EdgeTech 4125 Side Scan Sonar

EQUIPMENT

Underwater Equipment:
4125 Side Scan Sonar Towfish with:
- Dual simultaneous 600/1600 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

Every year thousands of people die in open water drowning incidents. This very sad scenario often results in vast and complex searches in challenging environments. Police, fire and specialized search and rescue/recovery (SAR) dive teams often find themselves presented with the daunting task of searching large underwater areas. Adding to the challenge is the fact that many of the lakes, rivers and oceans are often turbulent and murky, making underwater searching by humans alone a dangerous and potentially long endeavor. Visibility in some waters can be less than one meter and changing currents can move targets. Technologically advanced tools such as sonar can make search and recovery timelier and safer for the teams involved.

Recently in lake Dzierżno Duże located in southern Poland a drowning occurred. Presented with the challenge of search and recovery, The Polish Special Divers Group called upon their skills and equipment to efficiently, safely and effectively complete the task. An invaluable part of this solution was the EdgeTech 4125 Side Scan Sonar.

Solution

EdgeTech's 4125 Side Scan Sonar System is a rugged, portable, easy-to-use system that provides ultra high resolution underwater imagery over a relatively large area of interest. 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 SAR missions. The 600/1600 kHz frequency set provides an excellent combination of long range search capability and high resolution images. The 4125 can be powered by both AC and DC and in this case was running off a standard 12V battery on the vessel. EdgeTech's easy-to-use Discover acquisition software is included with the system and incorporates both Target Logger and Coverage Mapper modules. The standard 50m multi-conductor Kevlar tow cable was used to tow the system behind the boat.

Using the 4125, operators can quickly search a suspected area and clearly identify objects. The high resolution imagery resulting from the system is very important. While other sonars may highlight underwater targets, poor imagery can waste valuable time. Sonar equipment that provides less definition can result in added in-water diver time because unclear sonar targets require identification which must be completed by a human. With the 4125 Side Scan Sonar the operators can get a clearer picture helping in the efficiency of diver operations by only having to dive on viable targets. Additionally, the sonar allows the operator to scan the area for any hazards that could have the potential of entangling the divers during their dive. The imagery clearly allows the operators to differentiate other underwater targets such as logs, rock or debris. Using the 4125 objects do not just appear as unidentifiable grey shadows as is common with some other sonar systems. As seen in the images here the body was visible in the high resolution imagery and was easily identified. The entire operation took less than two hours. The team was able to search an area 500 meters by 300 meters quickly and deploy divers in the exact location necessary to retrieve the body.

The 4125 Side Scan Sonar, a high resolution underwater imaging tool, is used in many police, fire and dive team Search and Recovery (SAR) programs. While a sensitive subject, we are glad that the tool can be instrumental in recovering a lost person when the need arises. The image captured with the 4125 Side Scan Sonar is published here so that we may share the results with others in the field of Search and Recovery. As operators of sonar equipment it is often useful to be educated about how underwater targets present themselves in sonar imagery. Information about the 4125 and the resulting sample image may be useful as an educational tool for your local SAR teams.

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