



# Defence Case Study

Law Enforcement & Security

Search and Rescue (SAR)

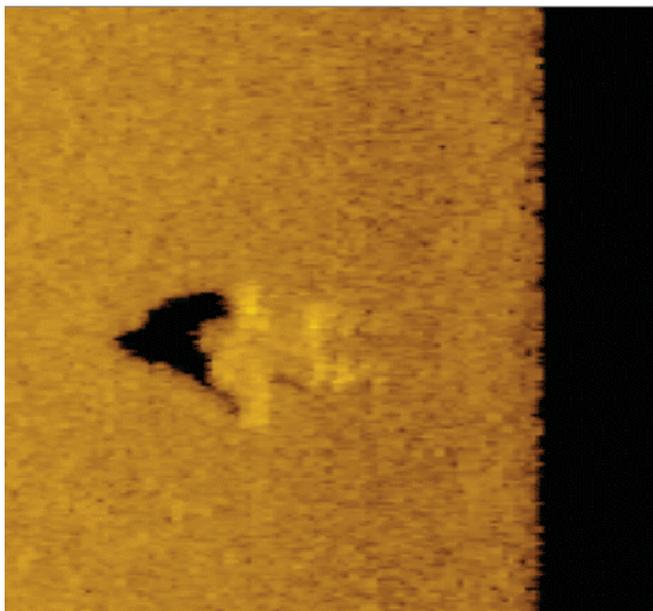
## StarFish 990F

**Tritech's shallow-water side scan provides high-resolution imagery to help locate and identify drowned victims, submerged vehicles, weapons, downed aircraft/ sunken vessels and explosive devices.**

StarFish 990F is the ultimate high-resolution sonar option from the range of compact and lightweight StarFish Seabed Imaging Systems. These high-performance side scan systems do not require pre-installation; allowing them to be easily shared amongst several user groups.

### Customer Background

Due to the sensitive nature of this Search and Rescue (SAR) mission, customer and location details are not disclosed.



StarFish 990F sonar image of the recovered sailor .



### The Need for Side Scan in Rescue Missions

The StarFish 990F was used in a SAR operation for body recovery. Where other sonars had failed to locate the missing person, StarFish 990F's high resolution imagery was able to lead the SAR team to the exact location, enabling recovery of the body. The missing person was a sailor who had drowned and had been missing for over 10 years; recovery of his body gave the victim's family some closure.

### The Challenge of Rescue Missions

Low visibility waters, poor environmental conditions and obstructions can make diving extremely hazardous. In this situation, there was no specific area identified for search. In similar circumstances, a search area may need to be evaluated to identify any potential hazards before dive teams enter the water. The StarFish 990F is used to map the area to determine possible target areas and to guide further search operations. StarFish can cover hundreds of metres of an underwater search area in a relatively short period of time and with the system's GPS receiver accessory providing latitude/ longitude reference, the search teams can pin-point the most suitable locations to enter the water.

# Specifications

## How it Works

StarFish systems operate by transmitting a narrow fan-shaped acoustic pulse into the water, perpendicular to its direction of travel.

Side scan technology works by detecting sound energy reflections back from the seabed and other objects in the direction of the sonar. This information is recorded, alongside the travel time of the returned pulse with its intensity. As sound travels at a known velocity rate through the water, this can be directly related to the range of the target that reflected it. This scan-line of information is then sent to a topside computer for interpretation and display. As the sonar is towed from a vessel, a long, continuous image of the seafloor is created by stitching together data from successive pulses, thus producing an area map to aid location and target identification.

Through the application of Compressed High Intensity Radar Pulse (CHIRP) and digital-signal processing (DSP) techniques, StarFish Seabed Imaging Systems are able to offer greater image and range resolution (compared to conventional fixed-frequency side scan sonars). StarFish systems are powered by user-friendly StarFish Scanline software and a Software Development Kit (SDK) is also available from the StarFish website to allow ease of integration into the users own software package.

*Where other sonars have failed to locate a missing person, StarFish 990F's high resolution imagery was able to lead the rescuers to recover the missing body, a sailor who had drowned and had been missing for over 10 years.*

## Measuring Success

In this case, the rescuers had tried alternative sonars to locate the mission body, with no avail.

The StarFish 990F is vastly becoming recognised as a useful tool for SAR as it is compact, lightweight, and cost effective, and can be easily towed from a vessel to provide detailed seabed image definition and target detection. The StarFish 990F is also a component part of the SARbot™ search and rescue package, a remotely operated vehicle (ROV) from small ROV manufacturer SeaBotix Inc., San Diego.

The SARbot™ package includes Trittech's high-resolution imaging sonar, Gemini 720i. For more information on SARbot™ visit: [www.seabotix.com/products/sarbot.htm](http://www.seabotix.com/products/sarbot.htm).

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