



## Search and Recovery (SAR) Sonar System

**“Sending a police officer underwater in zero visibility without scanning sonar is like sending an officer on patrol without a bulletproof vest.”**

Sgt Rob Riffle, Dive Team Supervisor,  
Winnipeg Police Services

With more than 80 MS 1000 Scanning Sonar systems currently being used by police and public safety dive teams tasked with body and evidence search operations, this sonar has a world-wide proven record of success. Ideally suited for independent use from a boat, the MS 1000 is easy to use and can be effectively deployed, operated and recovered by a two-man team.

Unlike side-scan sonar that must be towed to obtain a readable image, scanning sonar is typically tripod-deployed and the operator has the advantage of time to interpret multiple scans of the same target at different scale ranges. Once a likely target is identified, the system can then be used – even in zero visibility – to efficiently guide a diver or ROV to any target of interest.

The MS 1000 software operates on a PC using a Windows™ platform, and can be powered by either an AC or DC voltage supply. The MS 1000 also supports the input of GPS data and automatically allows the operator to determine the real-world coordinates of any target.



“Typical” MS 1000 SAR System with a 100m (330') Kevlar operations cable.



Image courtesy *FBI Dive Team* (NY).

*FBI* and *New York State Trooper Dive Team* body search operation

*US NAVY* diver and MS 1000 system during *Space Shuttle Columbia* search and recovery operations





**Stonar equipment configuration for SAR operations:**

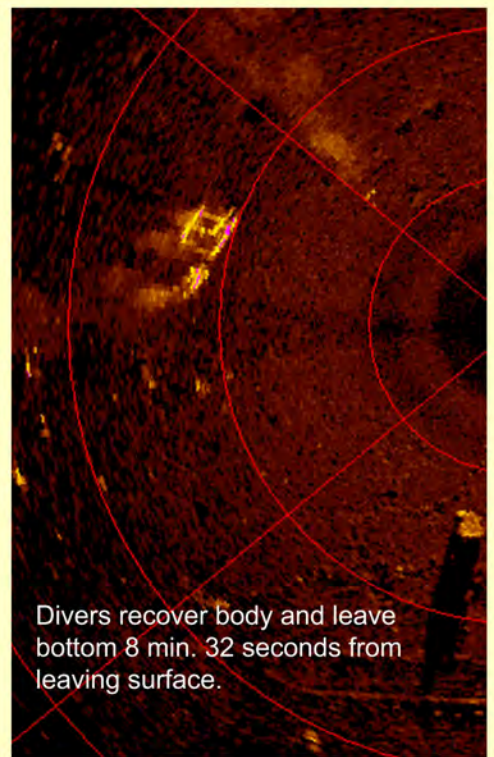
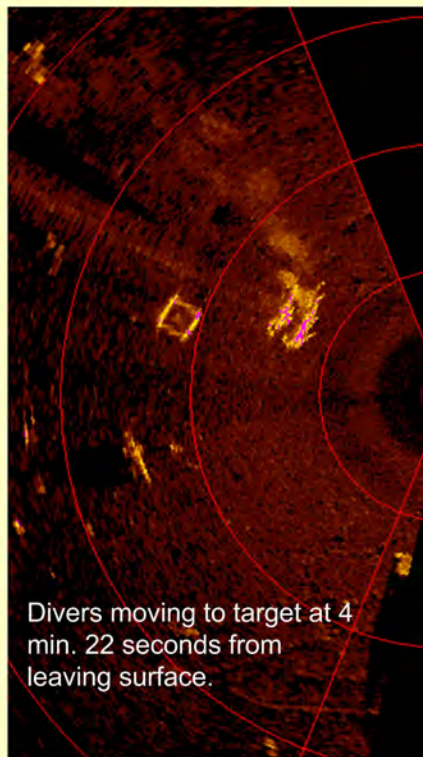
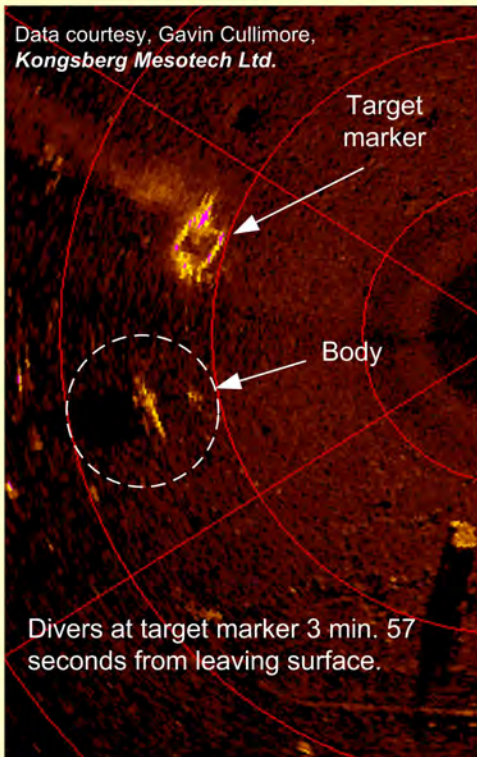
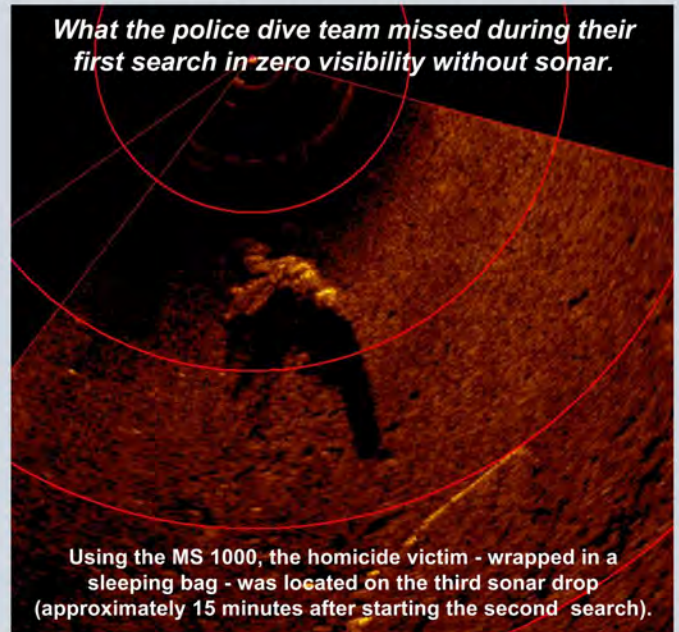
- Computer with MS 1000 PC-based Sonar Software
- "Splashproof" MS 1000 Interface Unit
- Kevlar operations cable (75m-100m [250'-330'] recommended)
- 675 kHz High Resolution Scanning Sonar Head with fan transducer (or Multi Frequency High Resolution Sonar Head) with compass option
- Tripod
- Handcontroller

**Notes:**

Consider using a daylight viewable PC display or having a shade cover to make it easier to observe the screen. A second monitor is also recommended for search operations.

The MS 1000 has a built-in "Trackplotter" module that allows the operator to view sonar coverage and determine the geographic coordinates of targets when a GPS with an output NMEA string is integrated with the MS 1000 program.

The "target marker," shown in the below image, was a 1 X 1 X 0.5m (approximately 3 X 3 X 1.5') PVC frame covered with wire fencing and positioned (dropped) near the victim prior to the dive.



Even with a minor course correction, divers were directed to the target in 75m (246') water depth and confirmed sighting the body at 5 minutes and 38 seconds after leaving surface. In-water visibility was approximately 4m (13.1').

Drawing courtesy *Echoes and Images, The Encyclopedia of Side-Scan and Scanning Sonar Operation*