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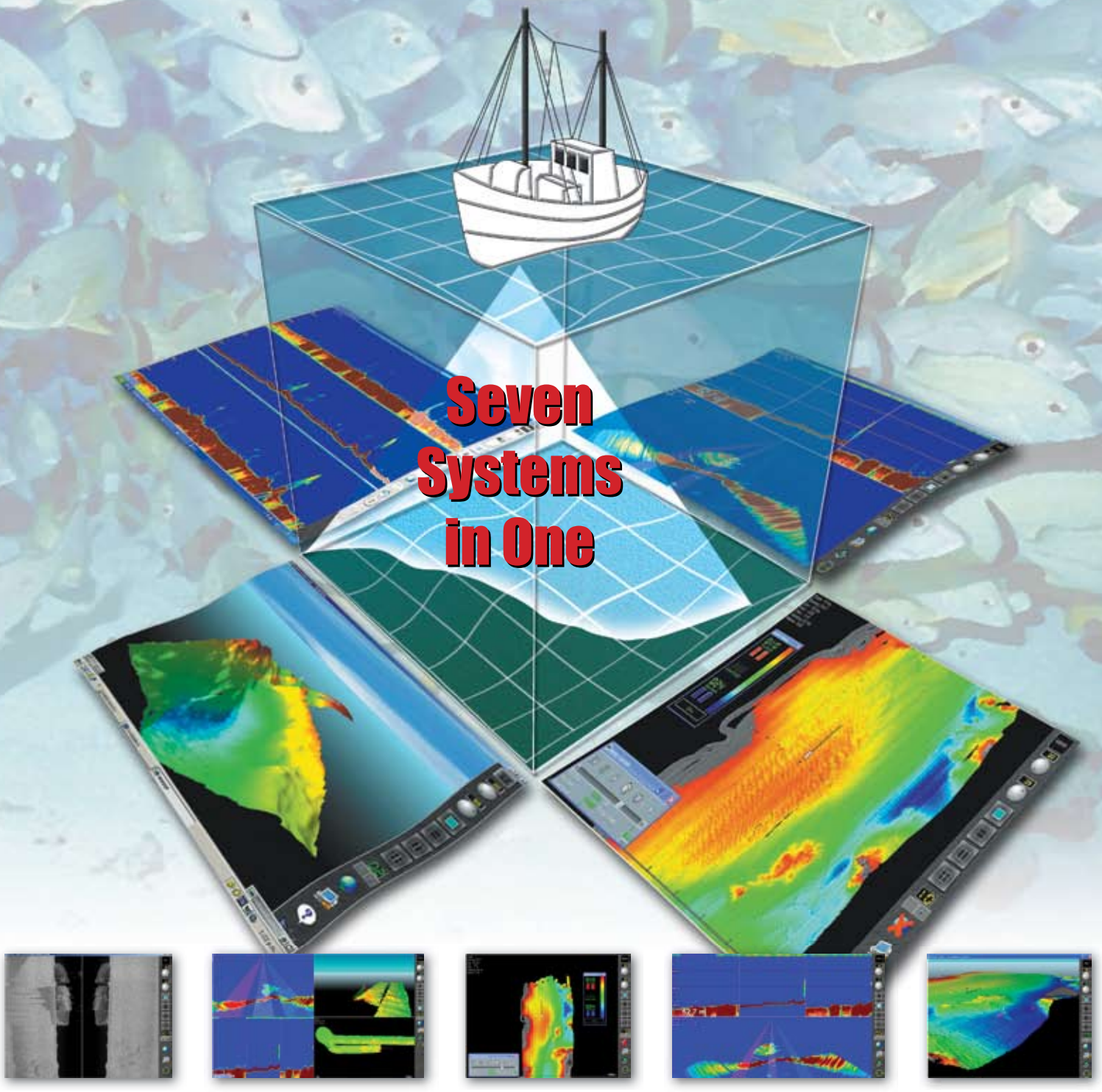
Leading Through Innovation

WMB-160F

Multi-beam Fishing System

Take away the guess work and see what's REALLY below your boat!



Doc. P/N: BR_WMB160F_SCR Version: V1.0 Issue Date: 2 May 2007

WMB-160F Screen Shots

The WMB-160F is a multi-beam sonar that has been designed to provide users with high definition fish and water column targets as well as detailed information about the seafloor. It uses five viewing modes displayed on four easily selectable screen displays to view the multi-beam data it collects. The screen displays are optimised to view fish and water column targets, to profile the seafloor, or to provide combinations of water column and seafloor profiles.

The following are a selection of screen shots taken during actual sea expeditions highlighting some of the many functions of the WMB-160F and divided into the following groups:

Sonar fish school and water column targets

To display fish schools and water column targets, the WMB-160F has three viewing modes available. These are:

- **Sonar View**. A 120° port–starboard view of the water column that is updated every ping.
- **Single Beam / Triple Beam**. This is similar to a traditional sounder, except that the beams can be dynamically adjusted by the user.
- **Fish Overlay**. Fish and water column marks (in colours showing depth) are overlaid onto a grey scale 2-D seafloor contour view.

See Figures 1 to 7 for sample screen shots.

Figure 1 – Sonar view with fish school 29 m to vessel port.

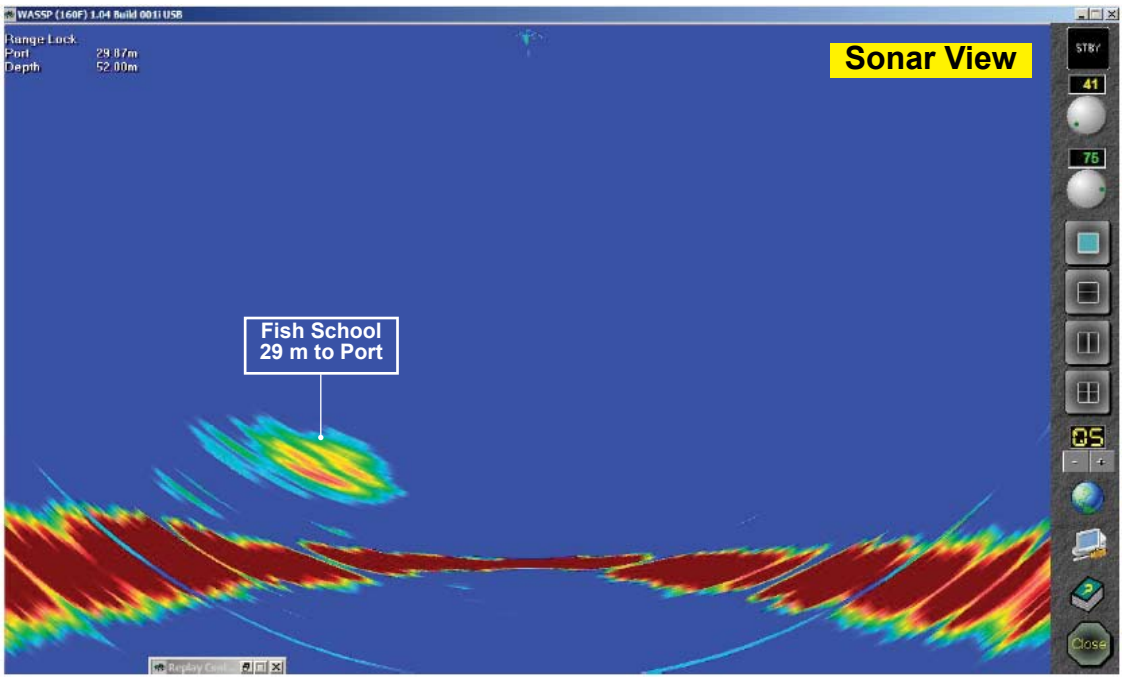


Figure 2 – Sonar and single beam sounder views of fish in the water column.

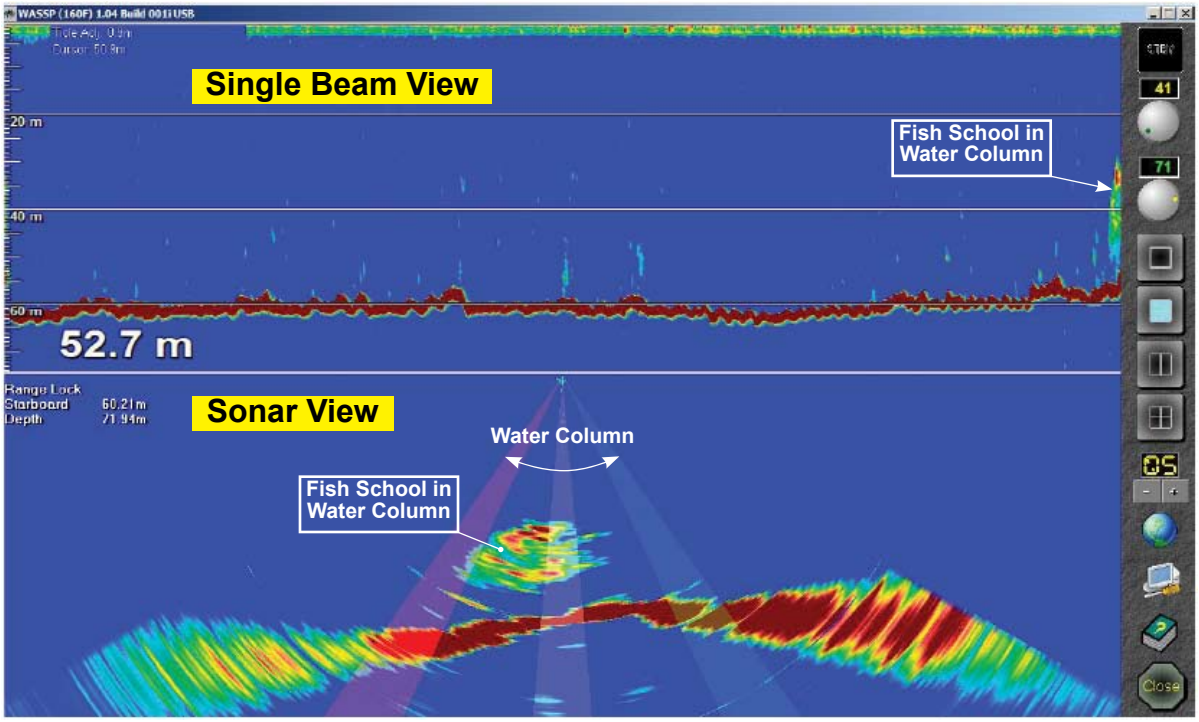


Figure 3 – Sonar and triple beam views of fish in the water column.

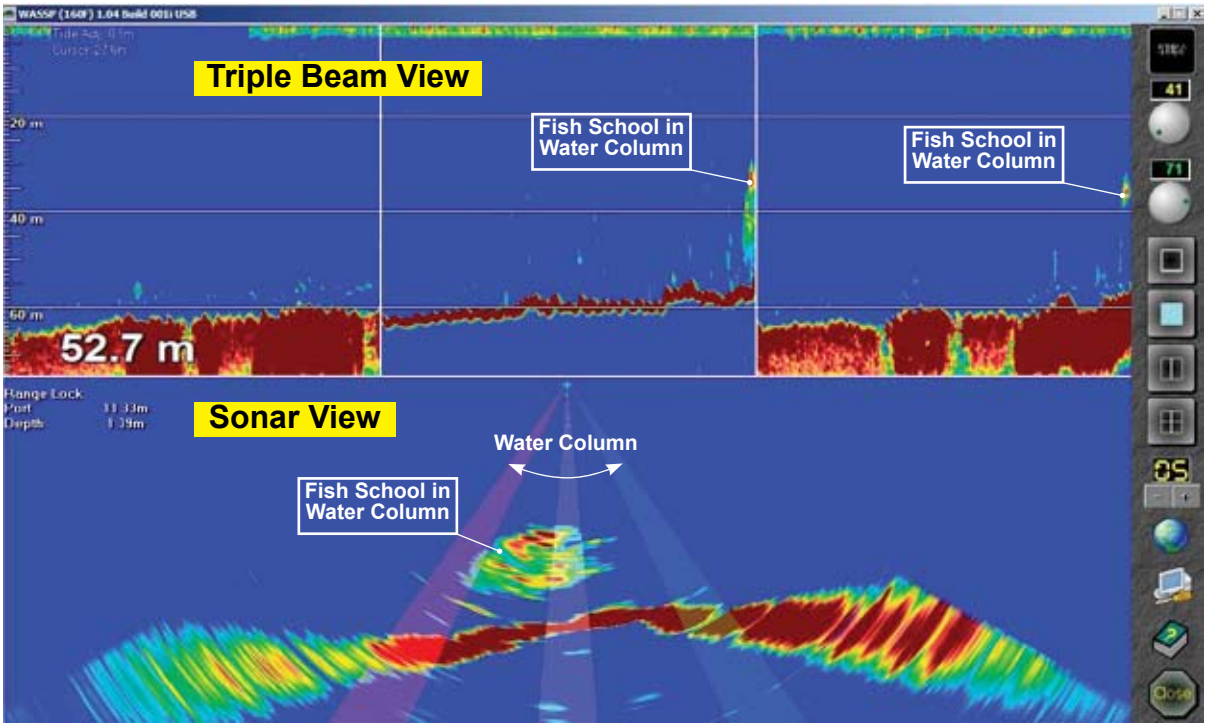


Figure 4 – Sonar and triple beam views of fish in the water column over a shipwreck.

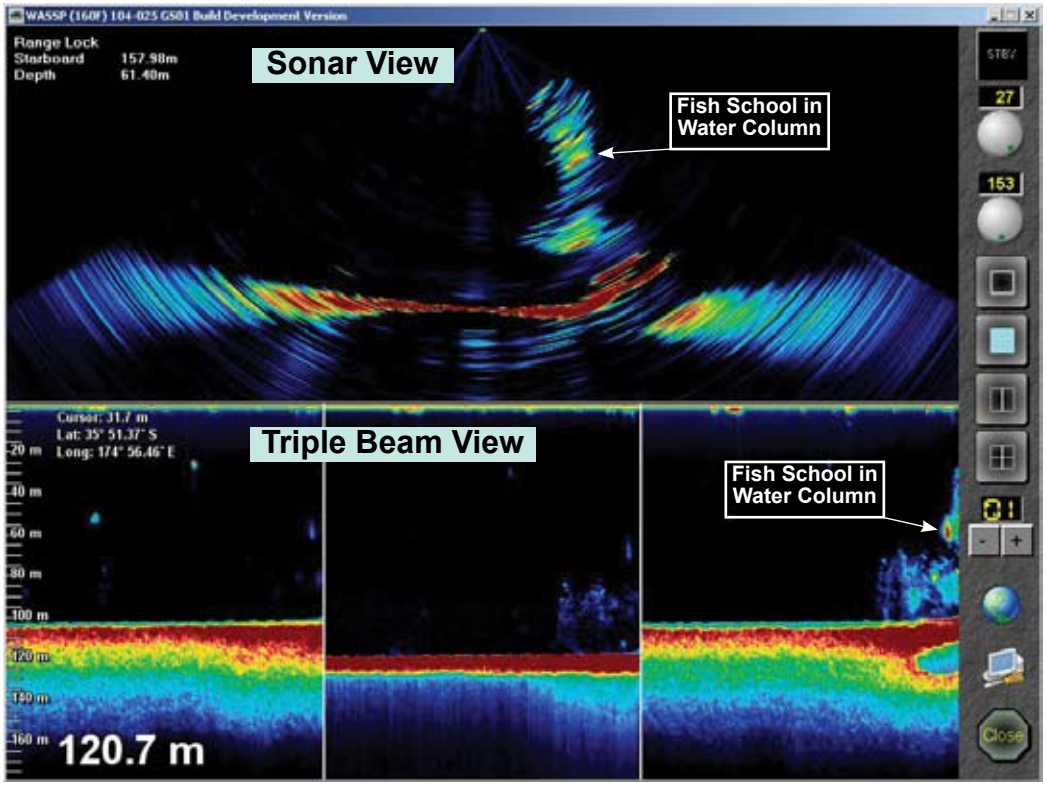


Figure 5 – Contour backscatter, 3-D, triple beam, and sonar views.

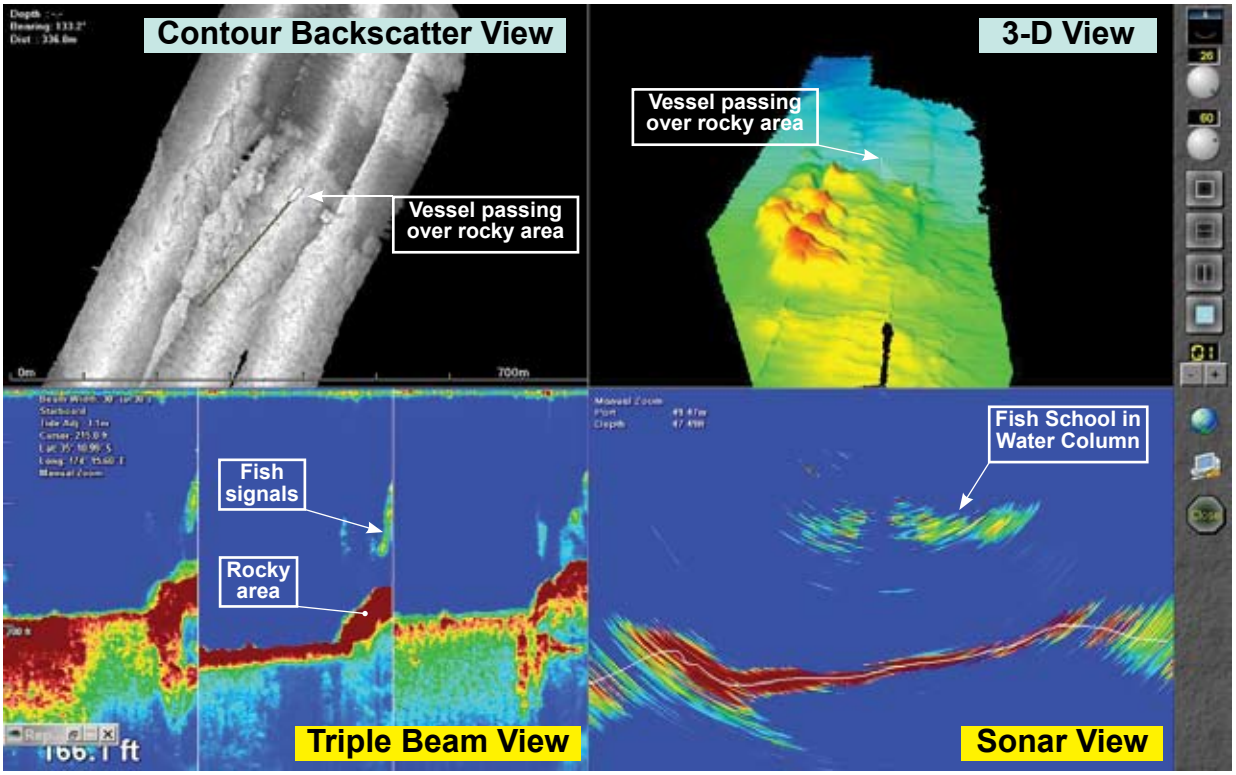


Figure 6 – 2-D contour view with fish overlay mode, where the fish echoes are shown in colour over a greyscale 2-D contour display. The strength of the fish echo is shown by changes in colour set up in the Fish Options box.

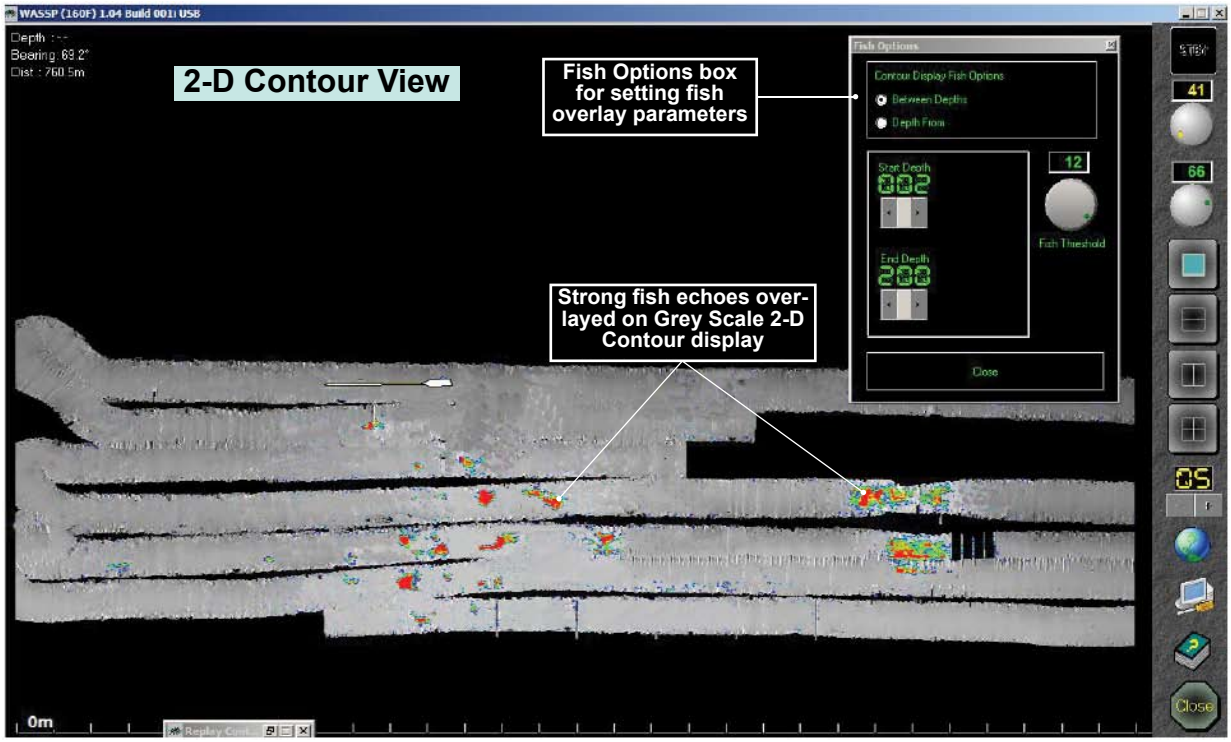
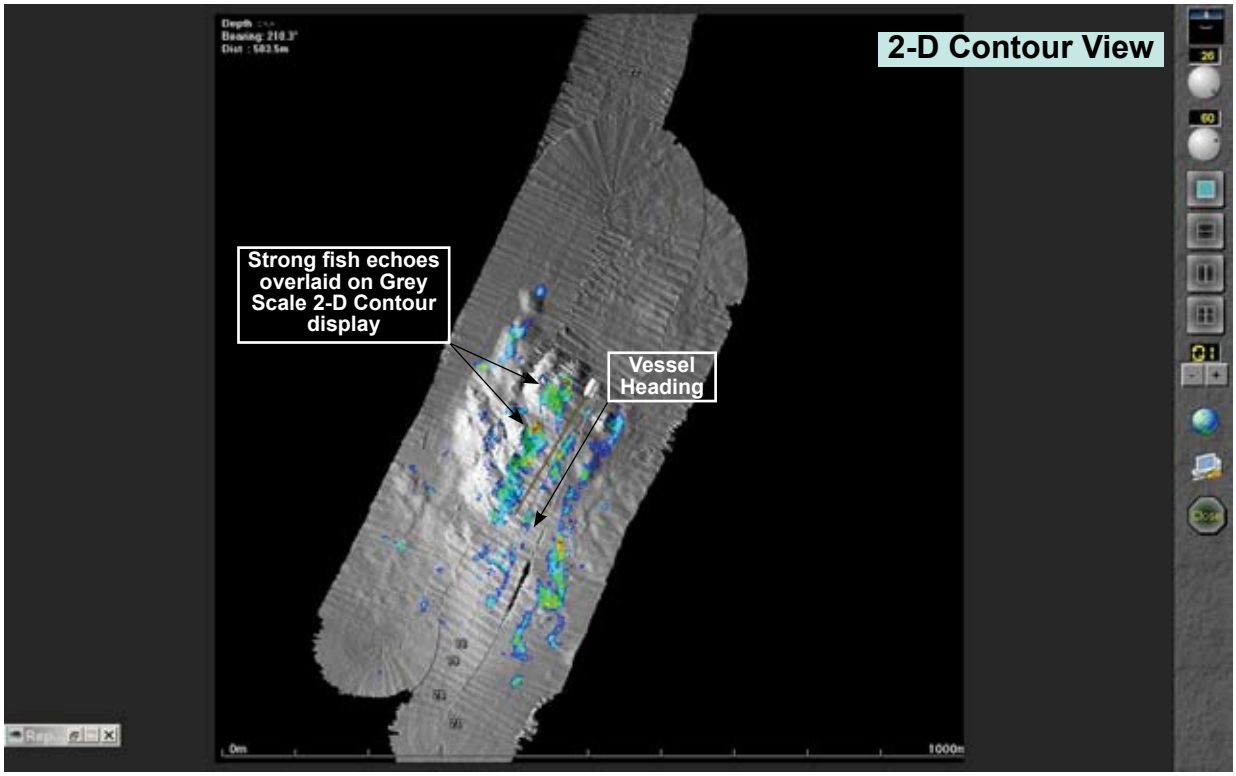


Figure 7 – More fish echoes overlaid over greyscale 2-D contour.



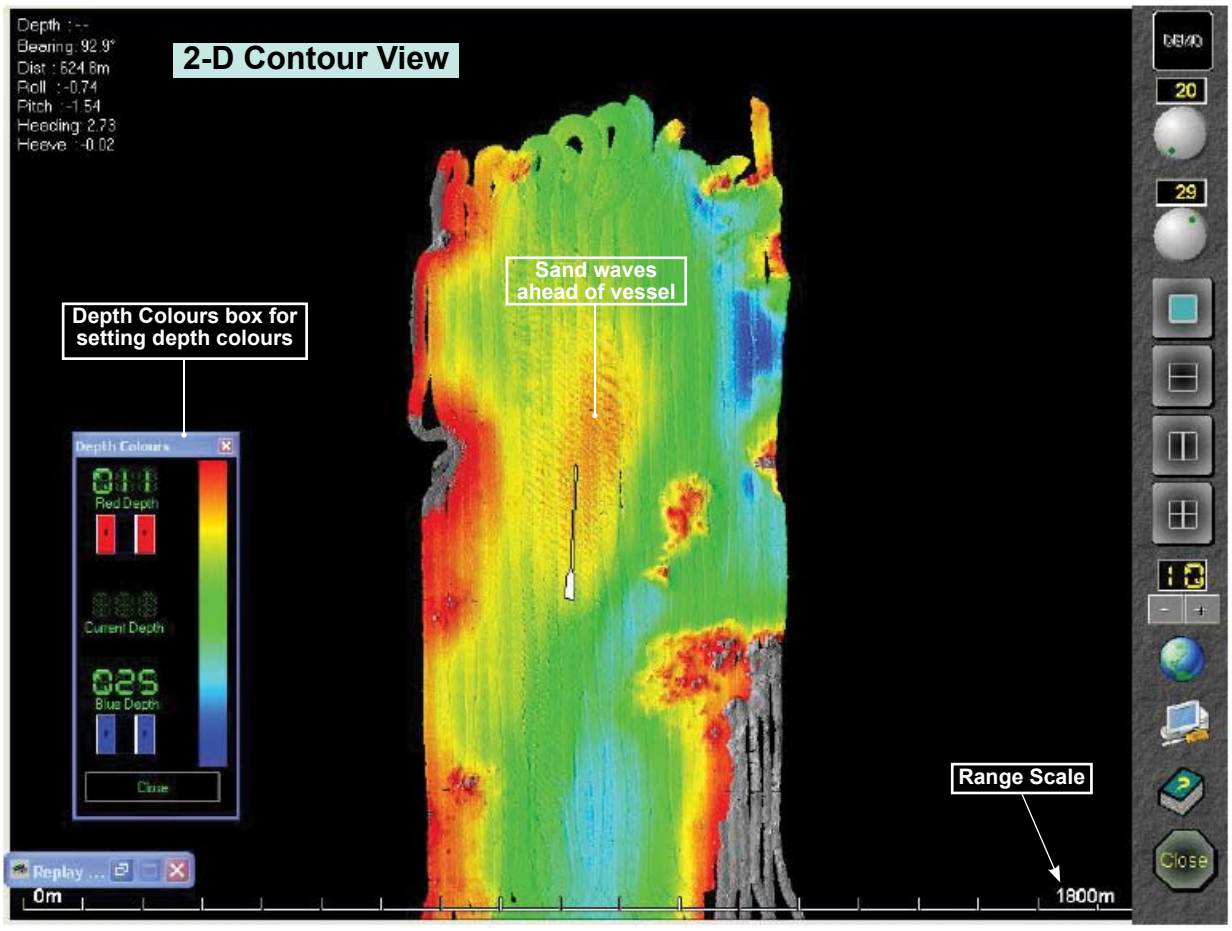
Seafloor profiles

The WMB-160F has a number of viewing modes to show seafloor profiles. These are:

- **Contour View**. Where the seafloor depth is shown in a 2-D view with depth indicated by colour. The colour scale can be manually adjusted using the Depth Colours box to highlight the required depth.
- **3-D View**. Where the seafloor is shown in a 3-D view, with depth again shown by colour. This view can be in **North up**, **Course up**, or **Free rotate**.
- **Backscatter Hardness**. This is a 2-D contour view where a greyscale is used to show seafloor hardness changes.
- **Sidescan View**. Where both the water column and seafloor are shown in a waterfall style of display.

See Figures 8 to 16 for sample screen shots.

Figure 8 – Contour Display: The vessel is shown in the middle of the display, the colour range is spread between RED at 11 m and BLUE at 25 m. Any depth outside this range is grey. Range scale = 1,800 m.



Note: The resolution in the screens of Figures 8, 9, and 10 was captured using an attitude sensor on a hydrographic surveying vessel.

Figure 9 – This is the same 2-D contour display as Figure 8, but with the Range Scale set at 900 m. Note the sand wave alignment ahead of the vessel.

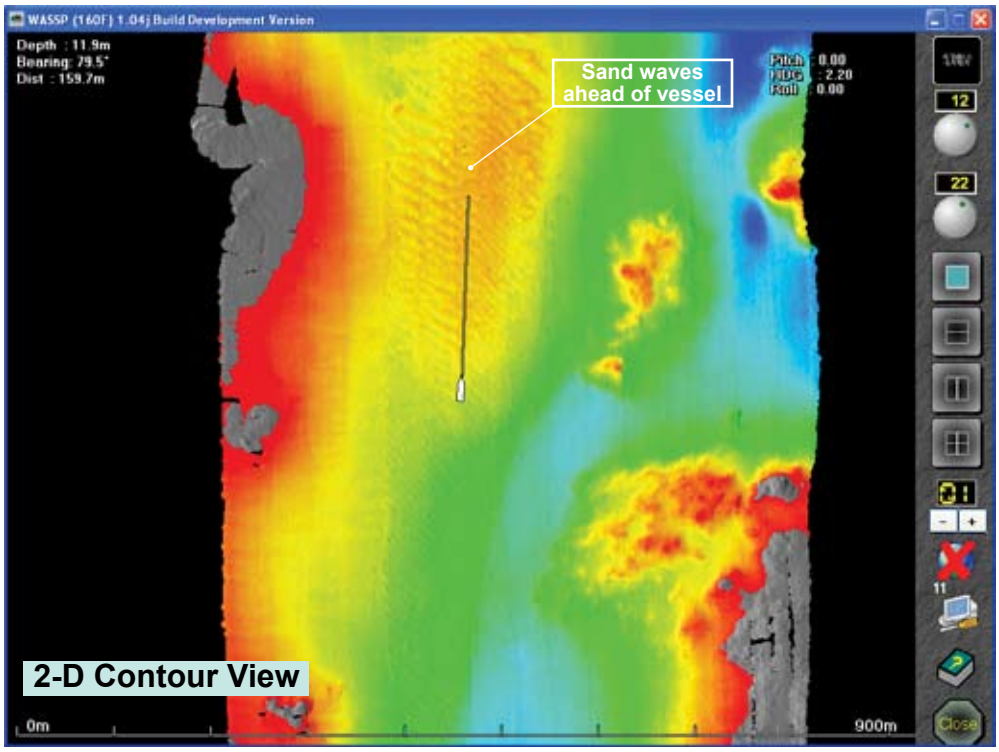


Figure 10 – 3-D view of terrain shown in Figures 8 & 9, showing port-starboard beam coverage.

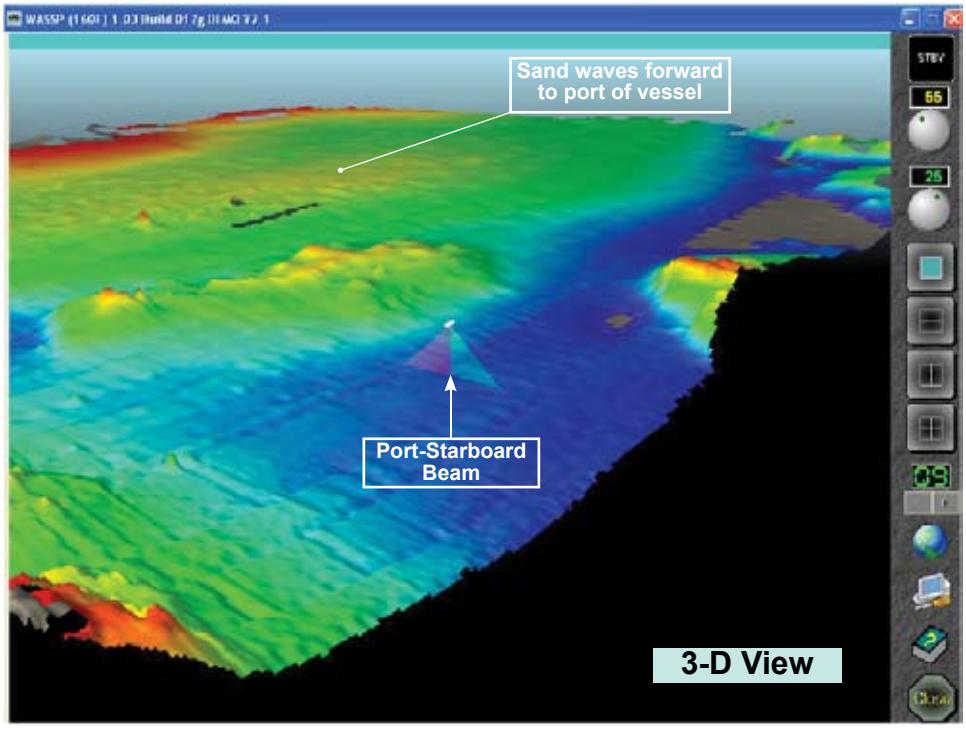


Figure 11 – Contour backscatter view showing changes in the seafloor hardness. Brighter = harder seafloor. Darker = softer seafloor.

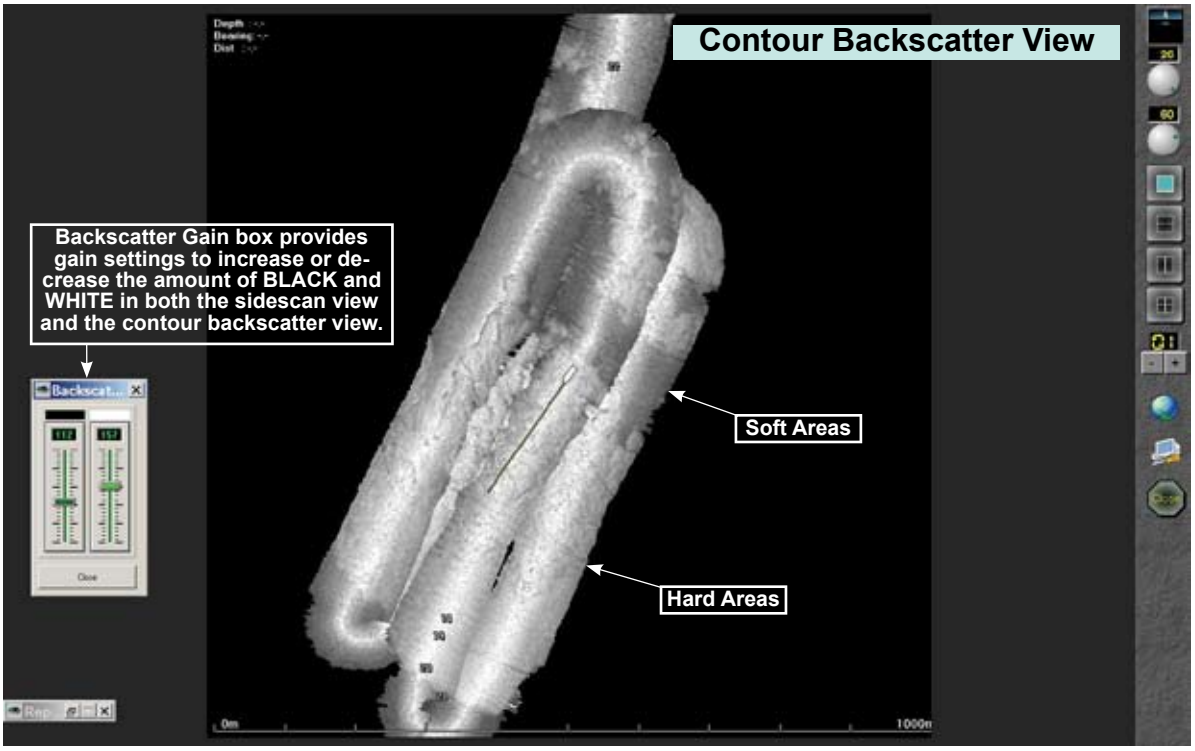


Figure 12 – Sidescan view presented in a waterfall display showing the rocky area to port and starboard of the vessel and in the water column, with a soft area falling off the screen as the vessel moves away from it.

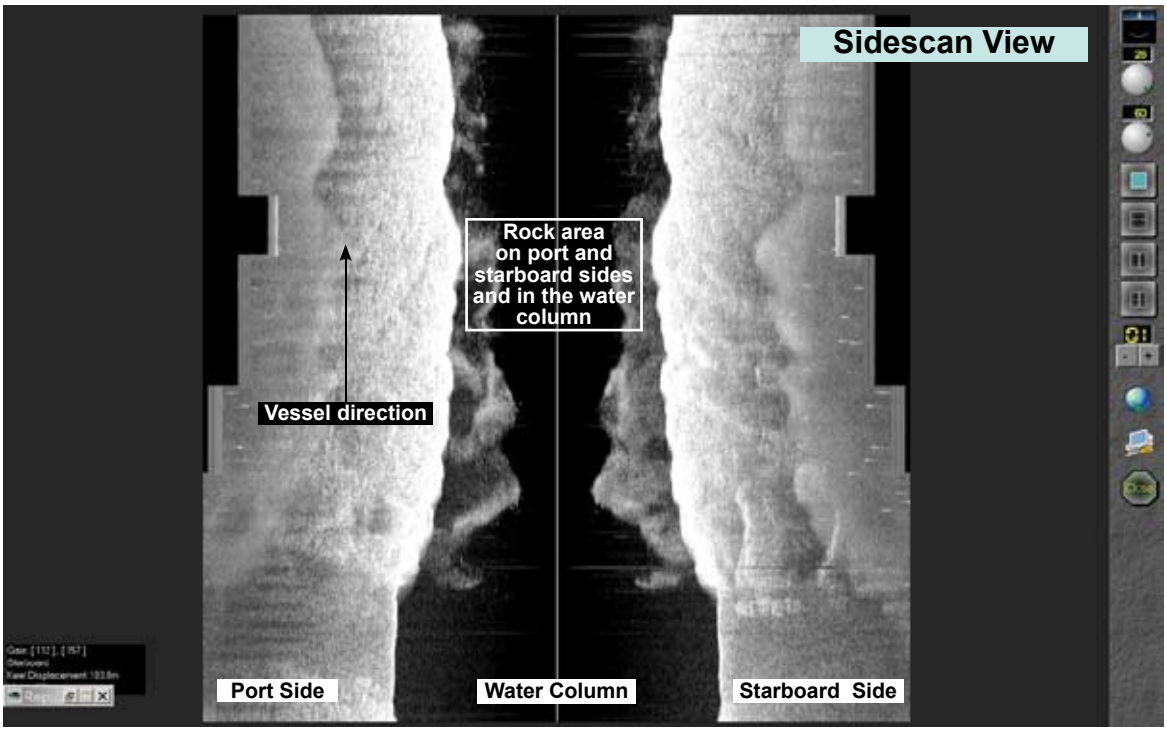


Figure 13 – Another contour backscatter view showing more changes in seafloor hardness.

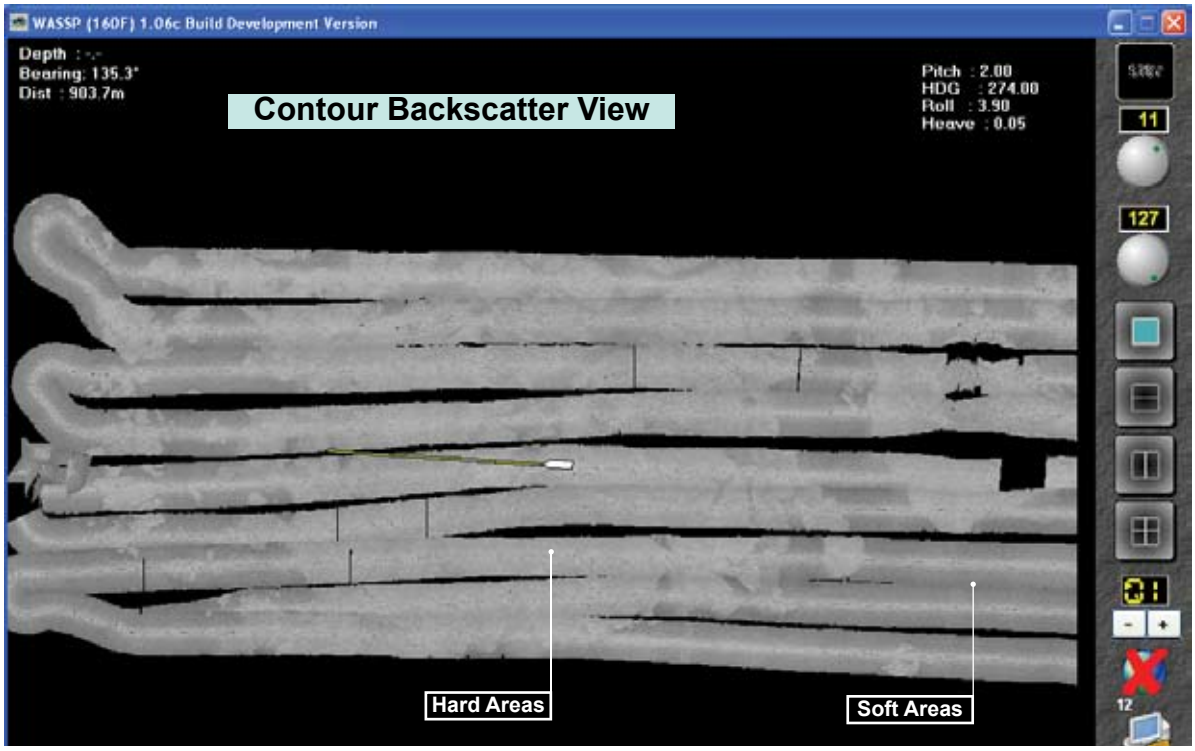


Figure 14 – 2-D contour view of the same area shown in Figure 13.

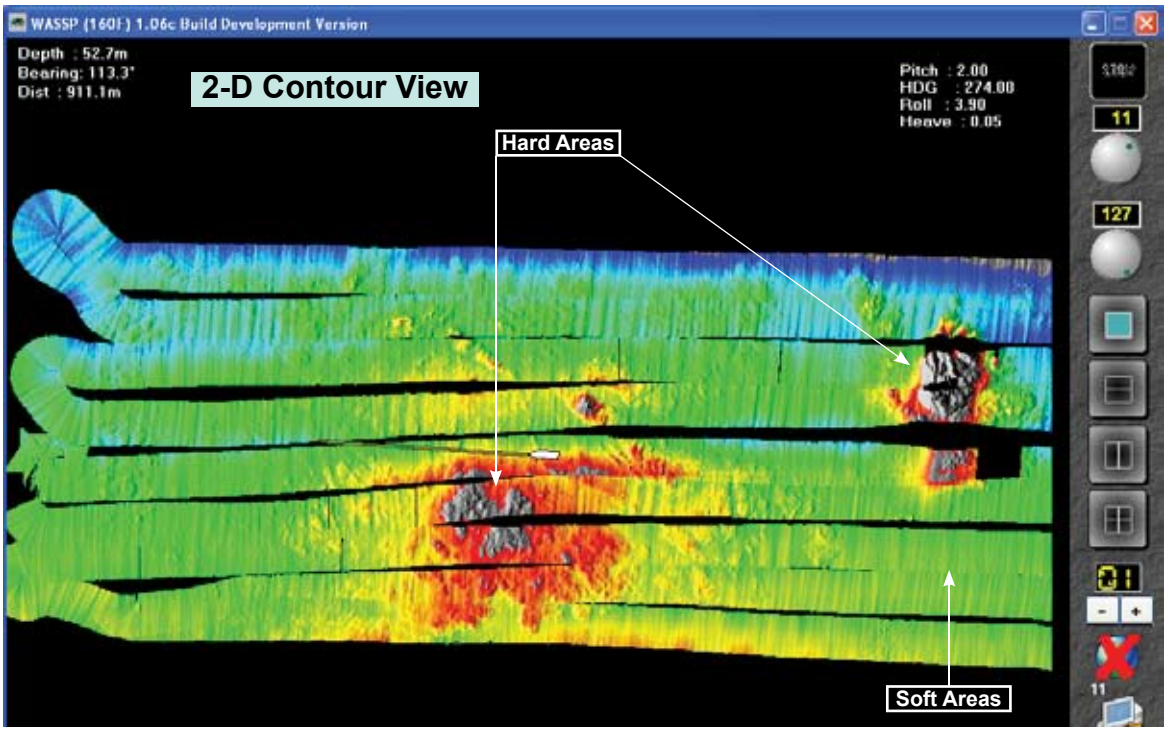


Figure 15 – Sidescan view as waterfall display. A shipwreck is entering the display at the top of the port side of the screen. Note the rocky area to port side at the bottom of the screen.

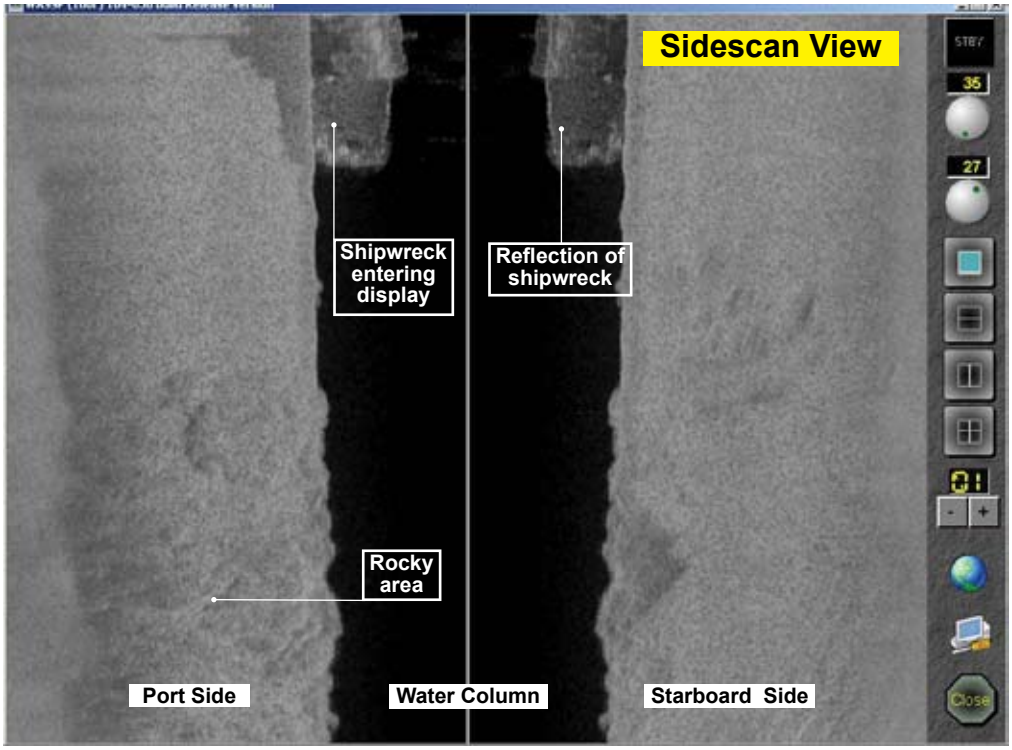
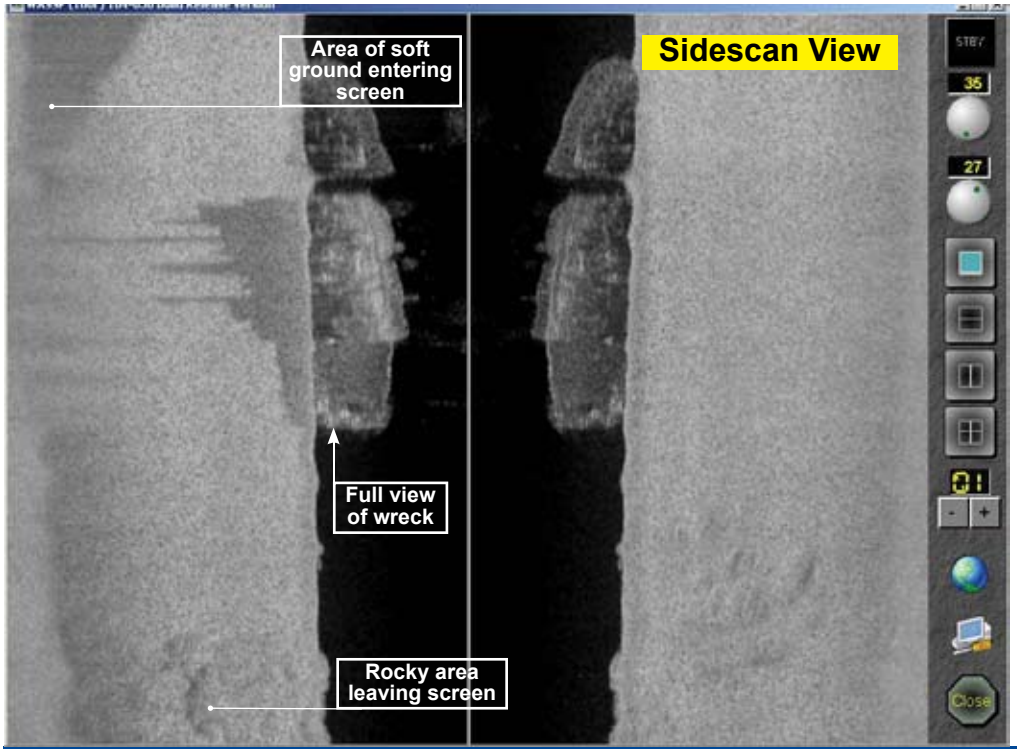


Figure 16 – Sidescan view showing the same area as Figure 15, but with the shipwreck fully displayed on the screen, and also showing an area of soft ground entering the port side of the screen. Note the broken bow section and the masts showing clearly as shadow on the port side.



Shipwrecks and foreign objects

Shipwrecks and foreign objects can be shown in both the water column type (sonar, single / triple beam views) and seafloor profiling displays (contour, 3-D, sidescan views).

Figure 17 – Triple beam view of a shipwreck. Note, the wreck is further to port as the echo is brighter, meaning it is stronger.

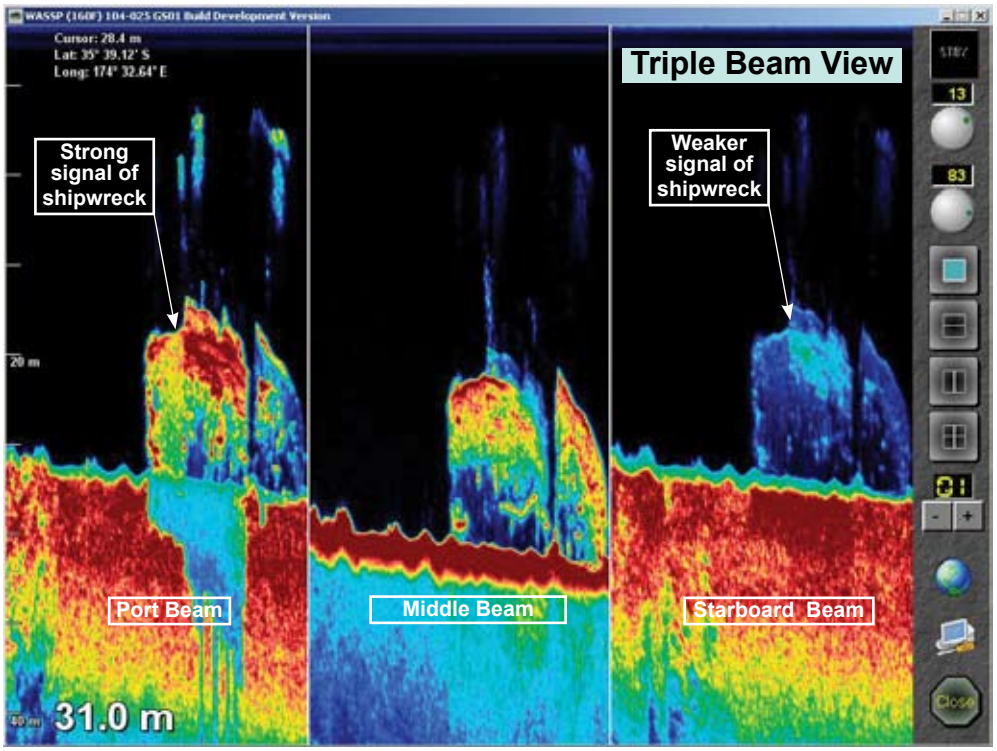


Figure 18 – Sonar view of a shipwreck.

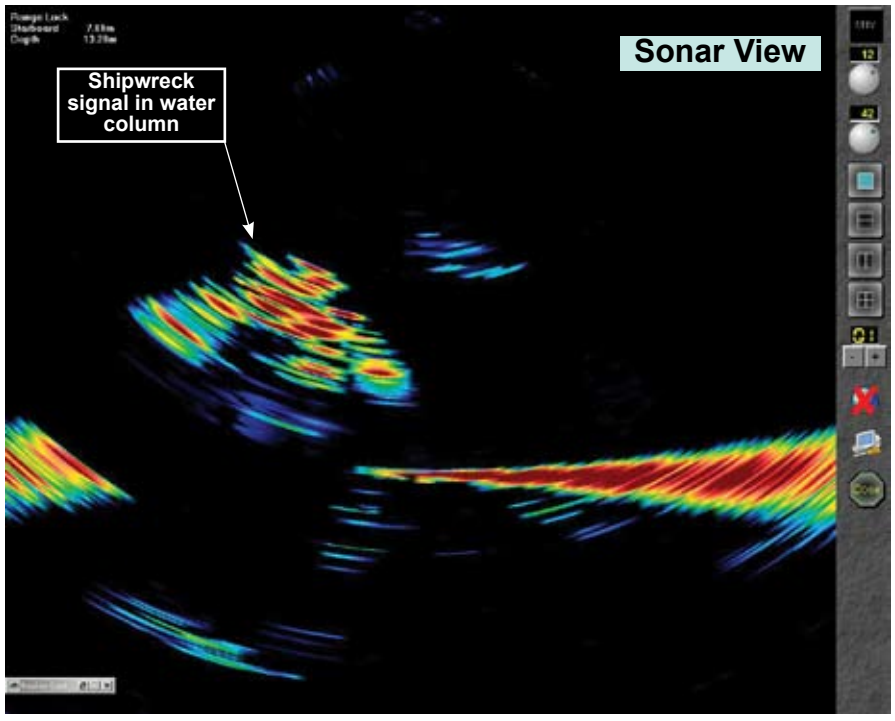


Figure 19 – 3-D view of a shipwreck created after a single pass.

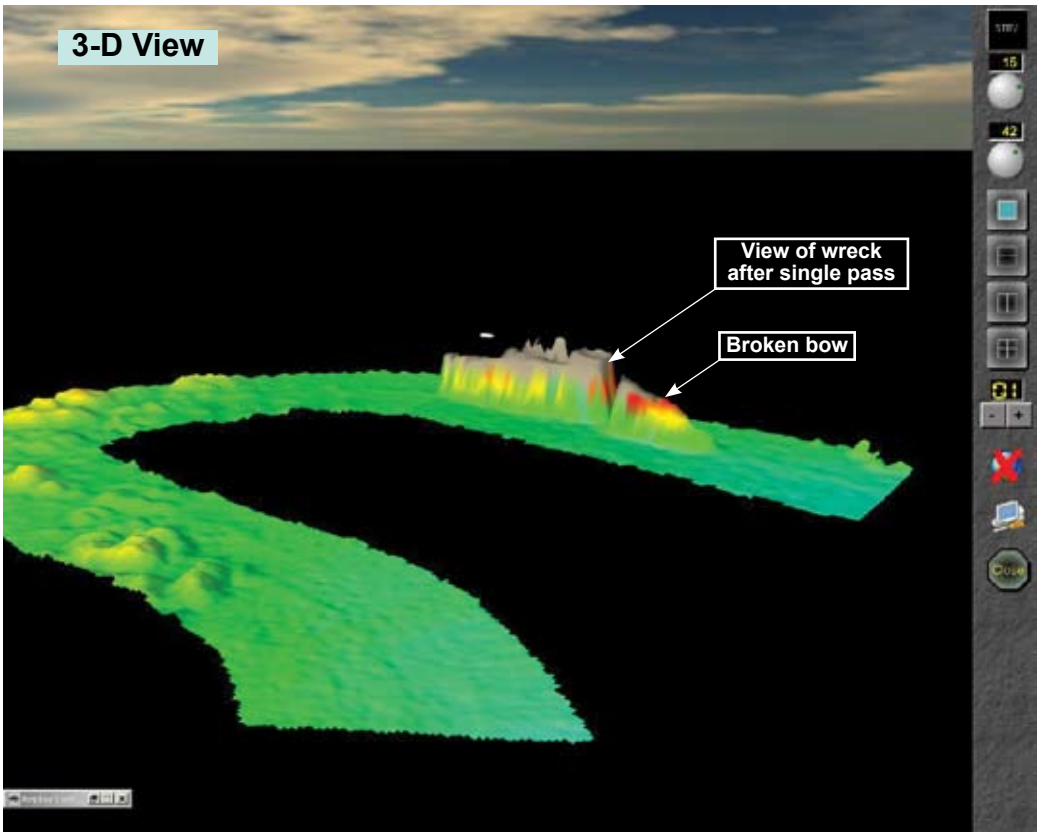


Figure 20 – Another 3-D view of the same shipwreck after a number of passes.

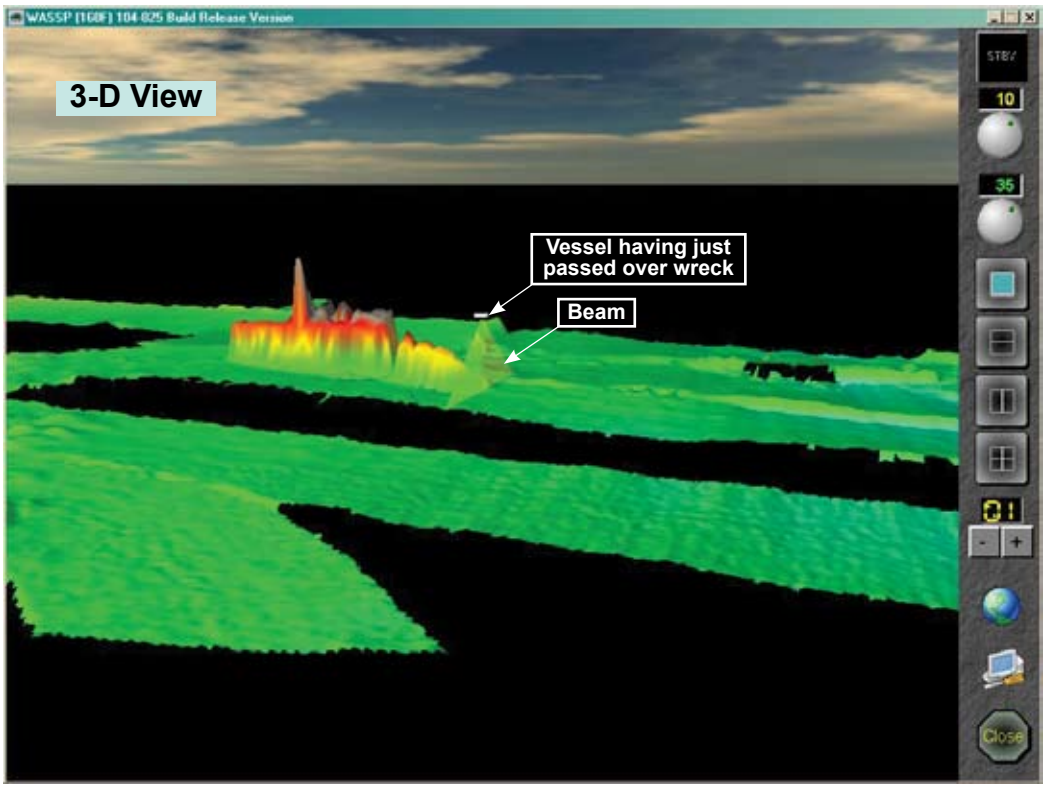


Figure 21 – 4-screen display of the same shipwreck shown in Figures 19 and 20, displaying 3-D, contour, sonar, and backscatter views.

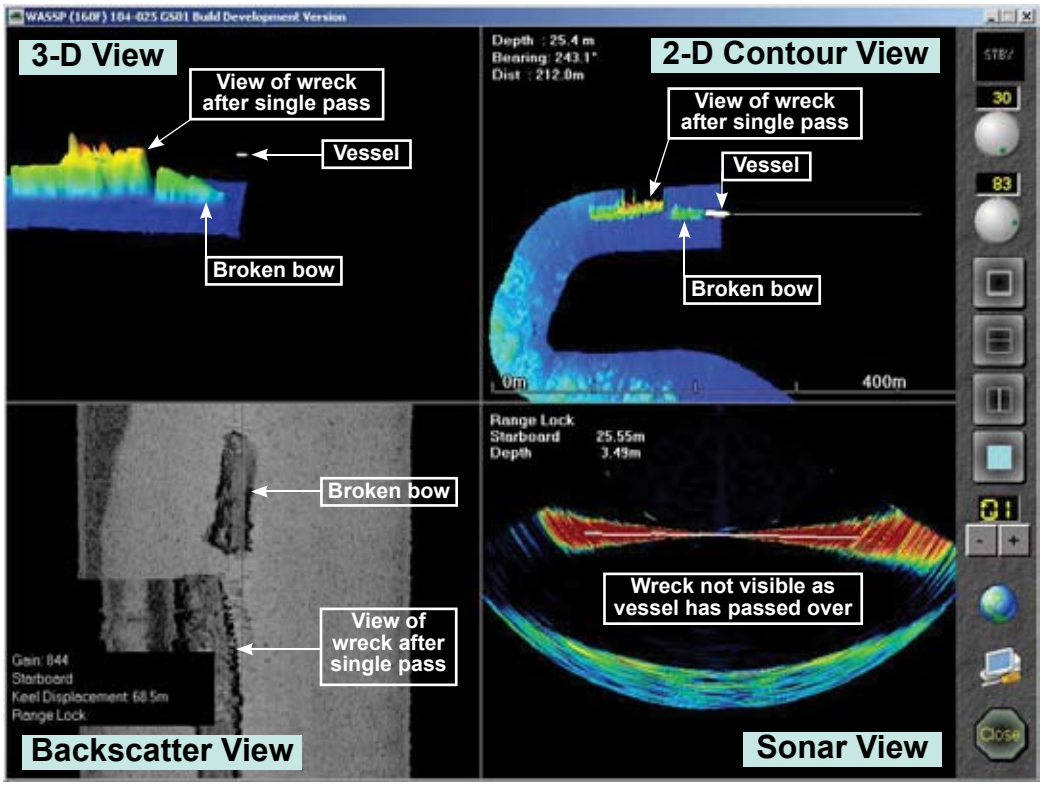


Figure 22 – 4-screen display of a different shipwreck – Sonar, 3-D, single beam, contour.

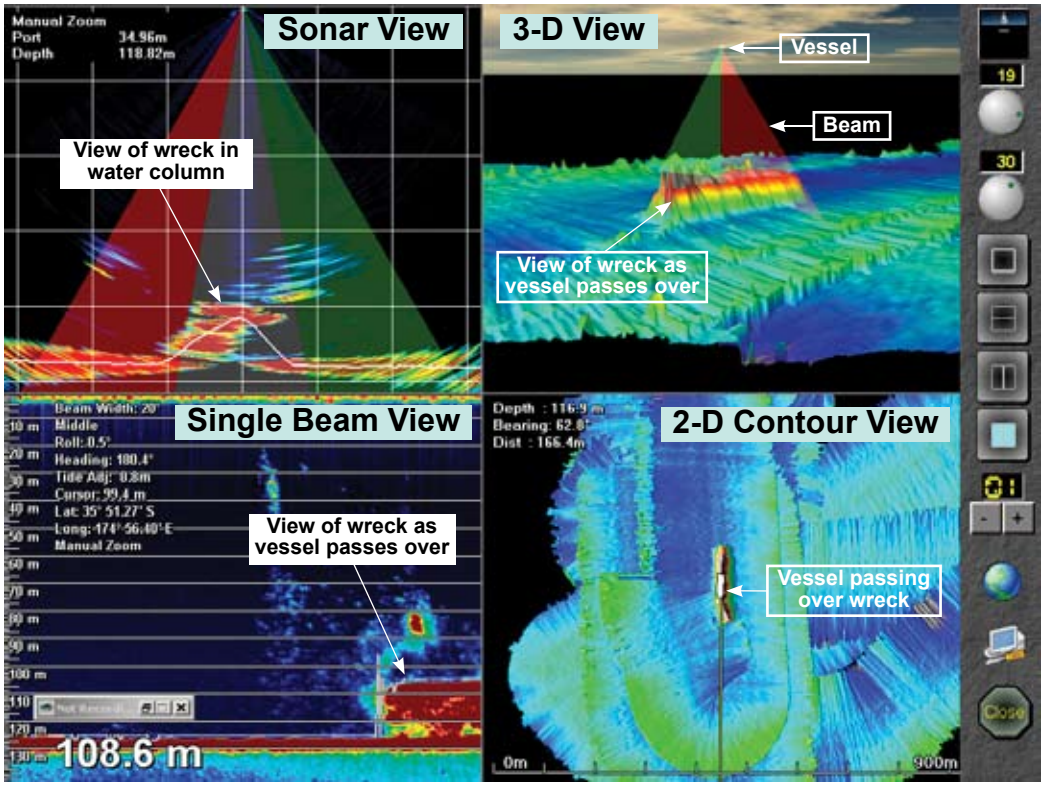


Figure 23 – 2-D Contour view of the shipwreck. Note the rocks along the track shown in GREEN.

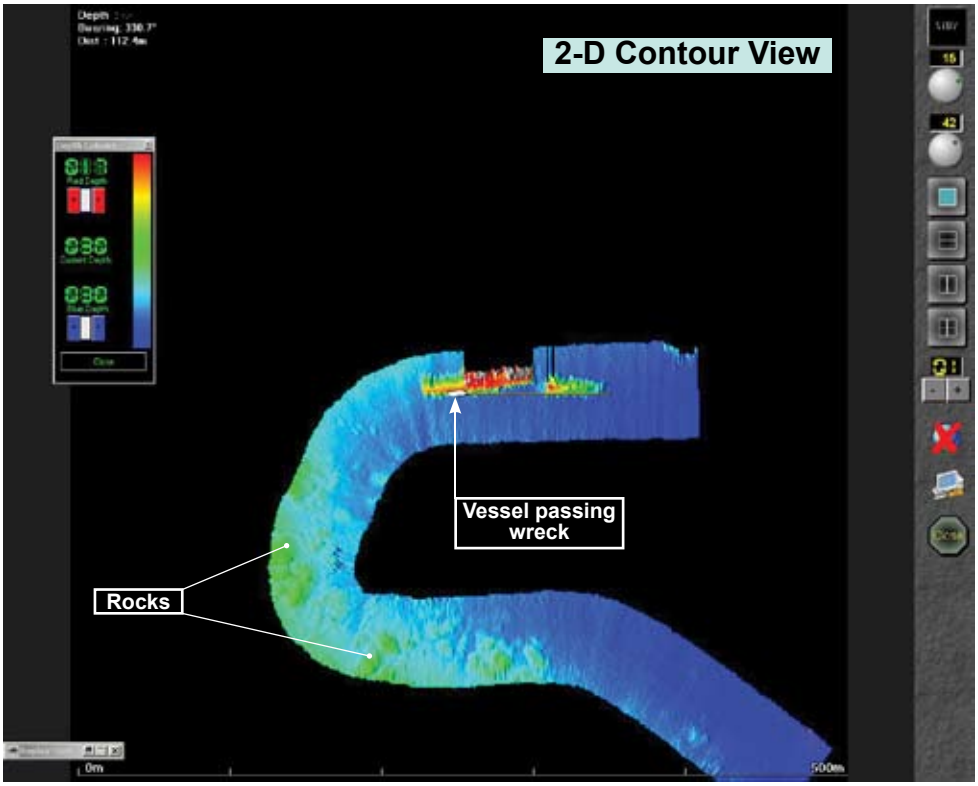
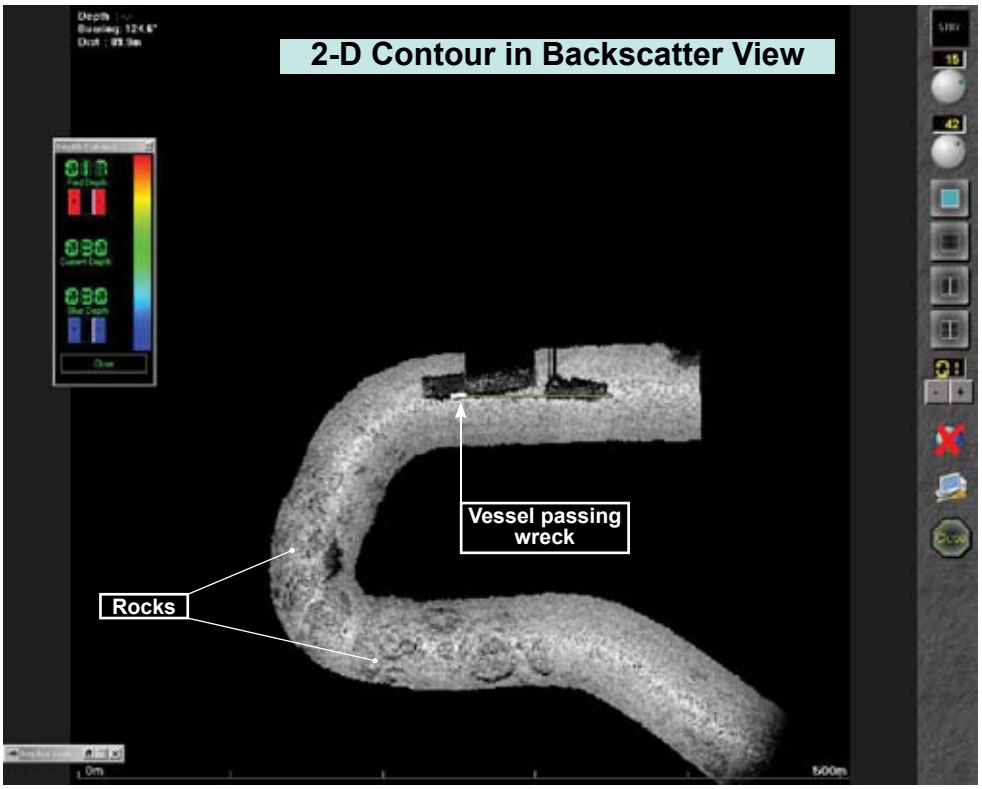


Figure 24 – Backscatter view of the same wreck (Fig. 23). Note the rocks along the track.



Combination viewing modes

Following are two samples of viewing mode combinations.

Figure 25 – 2-screen Display: Triple beam and 2-D contour views.

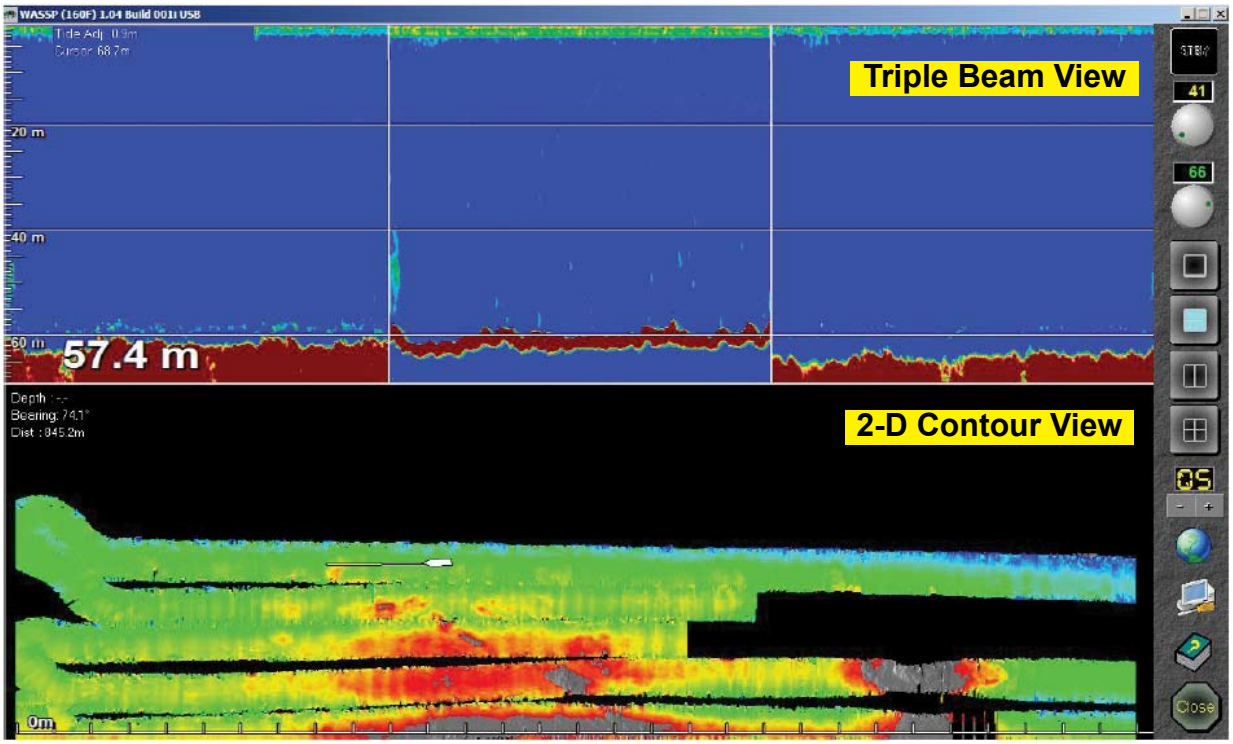
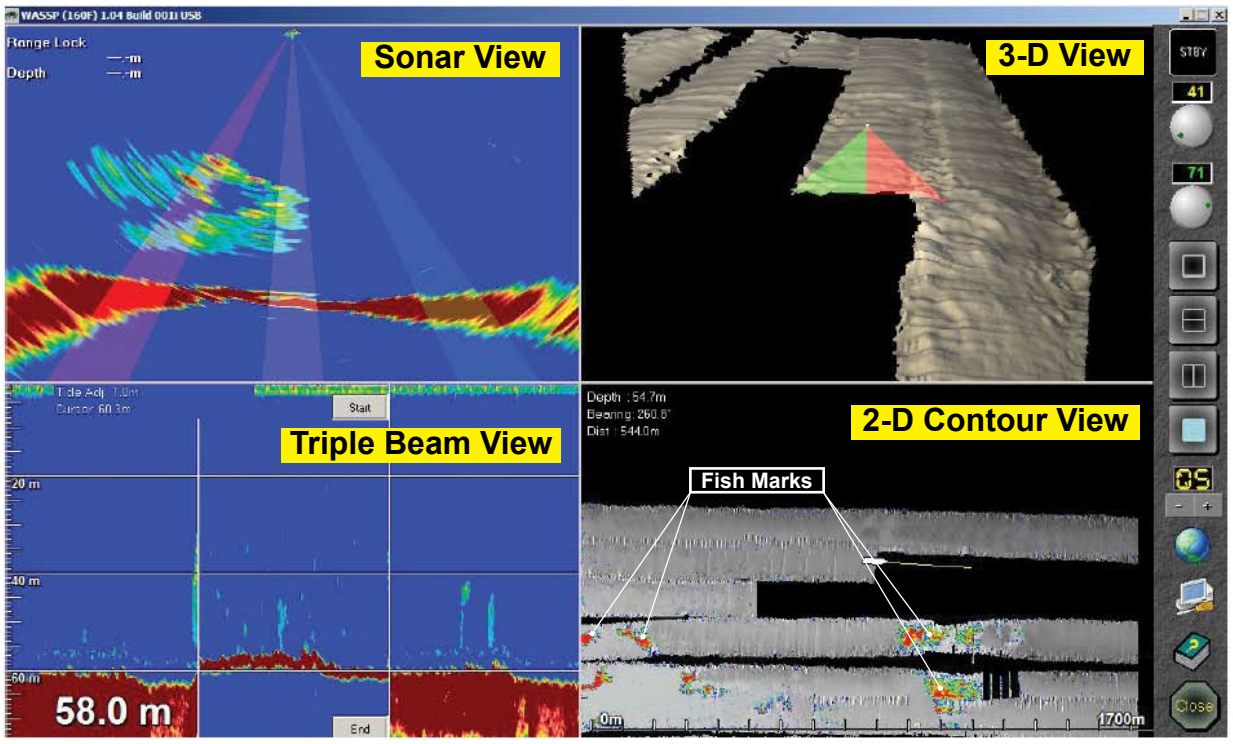


Figure 26 – 4-screen Display: Sonar, 3-D grey scale, triple beam, and contour with fish overlay. Note, with Fish Marks selected in the 2-D contour view, the 3-D view also displays in greyscale.



Technical Specifications

Equipment List

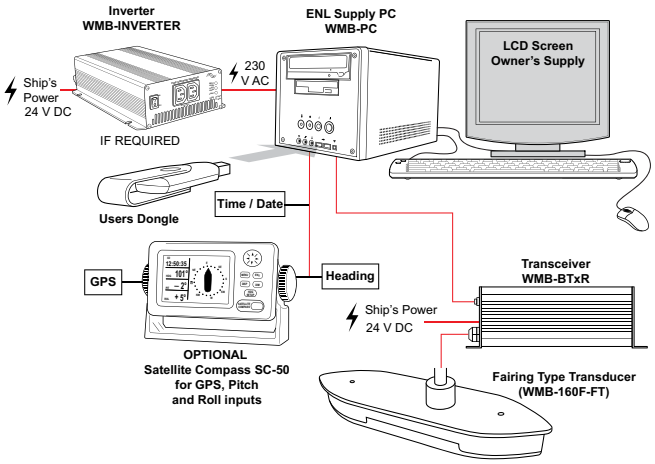
Standard:

Transducer:	WMB-160F-FT (fairing type for wood and FRP hulls) or WMB-160-SCT (sea chest type for steel and alloy hulls).
Transceiver:	WMB-BTxR.
Computer:	WMB-SHUTTLE PC.
Gland:	WMB-AG (alloy), WMB-SG (steel), WMB-PL (plastic).
Inverter:	WMB-INVERTER.

Options:

Satellite compass:	For beam roll stabilisation.

Interconnection Diagram



Computer Requirements

CPU:	Minimum 2.5 GHz 32-bit processor.
Memory:	1 GB RAM.
HDD:	40 GB (recommended 160 GB).
Graphics:	NVIDIA GeForce 4 Graphics 64 MB (or faster DirectX8 and OpenGL compatible graphics card).
CD-ROM Drive:	Required for software installation.
Serial Ports:	At least 2.
USB Ports:	At least 2.
Power:	230 V AC (ENL supplied Shuttle PC).

Display

Display unit:	Owner supplied.
Resolution:	1024x768 or better.
Display range:	
Range	5 to 300 m.
Shift	5 to 200 m.
Zoom range	2-D zooming from 250 m to 3 km, 3-D zooming from 10 m to 1 km.
Display modes:	Sonar view. Single / Triple beam view. 3-D sonar view. Contour view. Backscatter view.
Display windows:	Single screen. Vertical split screen. Horizontal split screen. 4-screen.
Advance speed:	Slow – fast (5 speeds).
Record:	Raw data, capture maps.

Transceiver

Output power:	14 power settings from 40 W to 1.5 kW.
TX rate:	Automatic ping rate, determined by depth.
Frequency:	160 kHz.
Beam width:	112 beams at 1.07° over 120° port/starboard swath, Transmit 4° fore/aft, Receive 10° fore/aft.
Maximum depth:	

Stabilisation

Roll:	±45° depending on sensor.

Interface

Inputs:	NMEA sentences: HDT, HDG, VTG, RMC, GGA, GGL, ZDA, PFEC-Gpatt, PFEC-Gphve.

Power Supply

Transceiver:	24 V DC, 70 W.
Computer:	230 V AC, 50 to 60 Hz (inverted from 24 V DC ships supply).

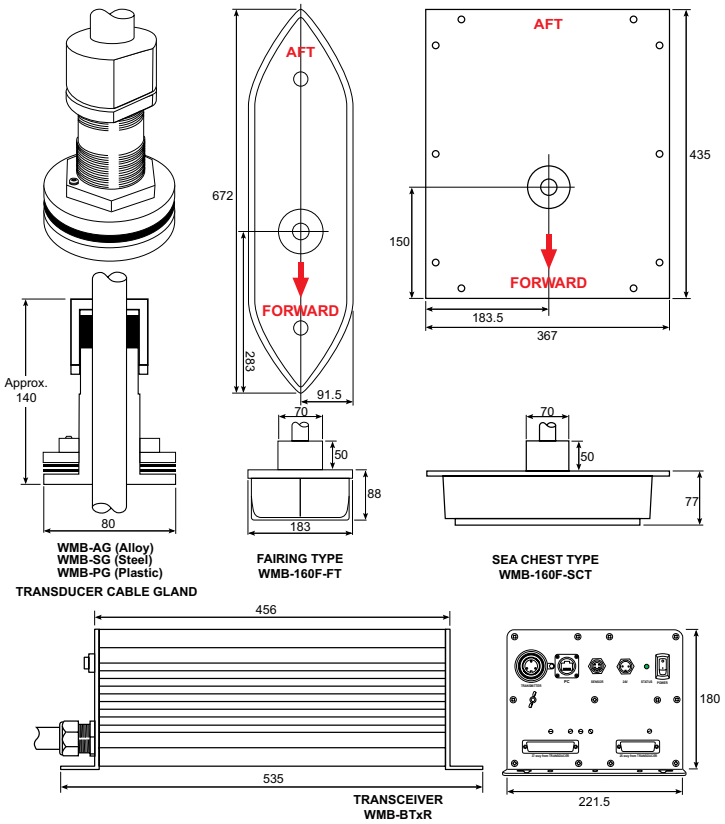
Environmental

Temperature:	0 to 40 °C.
Relative humidity:	5 to 95% non condensing.
Vibration:	IEC 60945, protected equipment.

Weight

Transceiver:	5 kg.
Transducer:	
Sea Chest type:	18 kg.
Fairing type:	14 kg.

Interconnection Diagram



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