WHAT'S BENEATH THE WAVES?

Making the underwater world visible; **Andy Millar** talks about the technology delivered by Wavefront Systems

Poorly charted, or rapidly changing underwater landscapes pose a risk to all shipping and the reliance on outdated or less than perfect charts often creates more risk than no charts at all. A captain navigating by chart can enjoy a level of confidence that is, perhaps, not deserved. However, using a combination of charts and Forward Looking Sonar (FLS) provides a level of underwater situational awareness that delivers confidence.

Wavefront's Vigilant FLS can not only provide 2D/3D profiling out to 600m and down to 100m depth, it can also detect obstacles including ice, shipping containers or marine mammals in the water column out to 1500m. Its automated warnings and exceptional, high-resolution, real-time, 3D mapping, allows your crew to navigate safely. It gives them the time needed to react to underwater hazards, minimising the risk of collisions and groundings.

Vigilant FLS is a long range sonar solution for all types of maritime vessels. It offers high resolution 3D mapping of the water column up to 600m ahead and crystal clear bathymetric imaging of the entire seabed around your vessel. With automated alarms, capable of being configured to meet Under Keel Clearance requirements and delivered in real-time, Vigilant can be used in poorly or unchartered waters and in busy coastal waters, harbours and ports.

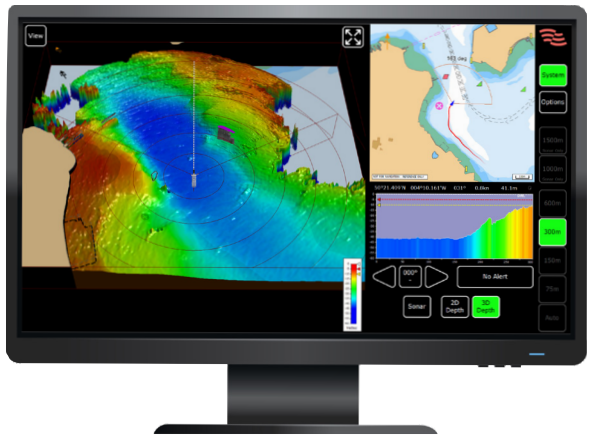
Looking after you and looking after the planet

Not only does Vigilant FLS protect the vessel when exploring, it also helps to protect environmentally sensitive areas from physical damage caused by anchoring or grounding, while helping you protect the marine mammals that make our oceans the spectacular resource they are.

As designers of our third generation of FLS, we posed the question; can we design an FLS which is both capable of ensuring the safety of the vessel, whilst simultaneously doing the same for the creatures which inhabit the world our vessel is exploring or transiting through?

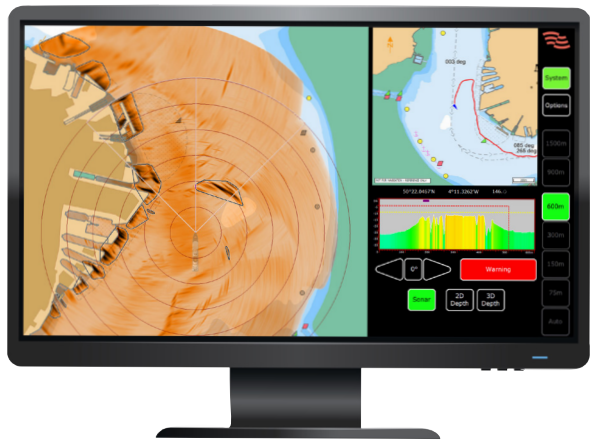
Our system has been developed with new advanced 'water-column' object detection to augment the existing and well established digital terrain mapping of the seafloor ahead of the vessel (up to 600m over a class leading 120 degrees of azimuth).

But what about the environmental impact of the sound transmissions we make on those fauna? In recent years, through the efforts of organisations such as NOAA, our scientific understanding of both the physics and the physiology of underwater hearing by mammals, such as whales, has advanced considerably. It is now possible to assess, quantitatively, the levels of sound at which temporary and permanent auditory damage may occur for these species, these levels then act as a natural threshold below which the FLS must operate. A recent paper undertaking research into this shows that we have successfully developed an FLS which not only avoids the prospect of mega-fauna collisions, but does so whilst respecting their acoustic world.



In 3D Mode Vigilant shows the water depth in a fully rotatable, interactive 3D display. Good for a complete perspective on situational awareness.

In 2D Mode Vigilant shows water depth colour coded on a bow up display. Good for confined waters where you want a detailed image around you.



In Sonar mode Vigilant shows long range sonar echo intensities. Good for open water navigation to detect objects in the water.

The detection of these mammals underwater allows the monitoring and aids the identification of species by indicating where to look for the next surfacing event. Reporting based upon surface sightings are critical for the mapping and preservation of these species. Vigilant can allow you to participate in these programs.

For more details email: enquiries@wavefront.systems
or visit www.wavefront.systems