

HMS Scott; World's most advanced Survey Ship

By John Hutchinson

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HMS Scott, the world's most advanced ocean survey ship, recently launched by the Royal Navy

The hidden, secretive world of the oceans' vast seabed is set to be mapped and recorded with unprecedented detail, speed and accuracy following the entry into Royal Navy service of the world's most advanced naval survey ship.

Her Majesty's Ship (HMS) Scott - named in honour of Captain Robert Falcon Scott, the Antarctic explorer who established the true position of the South Magnetic Pole - brings greatly improved mapping capability to the Royal Navy's Hydrographic Surveying Squadron,

which provides the data needed to produce the renowned Admiralty charts that ensure safe passages for mariners the world over.

This powerful capability is provided by an innovative deep water multibeam sonar system, for which HMS Scott's hull design is optimised. High-technology visualisation techniques allow operators to 'see' the ocean floor at high resolution as the ship surveys a swathe some 5.6 kilometres (three miles) wide at typical ocean depths of 4,000 metres sur-

veying continuously while travelling at speeds up to 17 knots.

Such coverage means as much as 150 square kilometres (58 square miles) of ocean floor can be charted accurately every hour of the day and night.

HMS Scott's 'eyes' are in fact sound beams, transmitted from a powerful low-frequency sonar array ten metres long on the ship's lower hull. This transmission is divided into 90 adjoining beams each just one degree in width, which penetrate through the water to the greatest ocean depths.

Their returning echoes are received by another large array containing 144 hydrophone elements to gather a line of depth soundings across the ship's track. These signals are then processed electronically to establish an ongoing profile of the seabed, enabling a high quality three-dimensional record of the seabed to be studied in real time by the surveyor on watch.

Among the most advanced features of the new ship is its unique range of specialist on-board technology. This includes equipment for conducting geophysical surveys using gravimeters with a newly-developed data recording system.

Another important innovation is the Aquashuttle, a new device developed in Britain that is towed behind the ship and undulates between different depths, gathering oceanographic data that can be used to help maintain the accuracy of surveying equipment by keeping a real-time check on sea water quality and density, factors that can affect survey data by causing complications such as localised variations in the speed of sound at different depths.

These and other on-board innovations enable HMS Scott not only to provide Britain's Royal Navy and allied nations with a much-enhanced ability to pinpoint the locations of rocks, wrecks and other hazards to shipping but also to help the scientific community at large to examine all aspects of oceanography, studying the contents and movements of large bodies

of salt water and their influence on factors such as climatic changes around the world.

Besides its high-technology equipment HMS Scott reflects a new approach in virtually every aspect. For example, the ship is the first Royal Navy vessel to be supplied not by a specialist naval shipbuilder but by a prime industrial contractor - the British Aerospace company, BAeSEMA. In a further break with tradition, BAeSEMA sub-contracted its construction to a British commercial shipyard, Appledore Shipbuilders of Devon, southern England, where the ship was the largest to be built.

Unusually for a naval vessel, the new survey ship is built to Lloyds and United Kingdom Department of Transport standards, enhanced where necessary to meet naval requirements.

Other major changes to previous Royal Navy practice are denoted by the ship's accommodation and its crew's duty regime. HMS Scott is a spacious ship with a high standard of accommodation

and all crew members with the rank of leading seaman and above have their own single cabin, as do many able seamen.

Comfort and good recreation facilities are important aspects of the crew's demanding work schedule, in which the planned complement of 42 officers and ratings will spend some 70 days on board followed by 30 days on shore three times each year.

This crew rotation concept, linked with low-maintenance ship systems designed to function with minimum attention during HMS Scott's three-year docking cycle, will allow uniquely high levels of operational availability for a naval surface vessel, with a maximum of 307 days each year being spent at sea.

One of the first important duties of the new 13,500 tonne ocean survey ship is to delineate precisely the extent of the UK's claims to a continental shelf stretching more than 300 kilometres (186 miles) under the Atlantic Ocean. Under the terms of the third United Nations con-

vention for the law of the sea, this claim must be submitted soon, so HMS Scott's early work will involve providing supporting evidence.

Later this year the new ship is expected to begin operating far from her home UK base of Devonport near Plymouth, where a monument to the pioneering Captain Scott overlooks the harbour entrance.

HMS Scott's survey work in support of UK and allied defence interests will take her to all the world's oceans, constantly providing data that the Royal Navy's Hydrographic Surveying Squadron and the UK Admiralty will use to make the seas safer and that the global scientific community can exploit to help improve both the maritime environment and man's understanding of the fundamental importance of the world's oceans.

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