



Warship Electronic Chart Display and Information System (WECDIS)

*Unprecedented
Situational Awareness*

THE VALUE OF PERFORMANCE.

NORTHROP GRUMMAN

Experience Counts

Northrop Grumman Sperry Marine (NGSM) has been at the forefront of Electronic Chart Display Integrated System (ECDIS) development for over 20 years. More than 2,500 merchant and naval ships rely on our Integrated Bridge Systems (IBS) with advanced Electronic Chart Display and Information System technology. Our software is certified as the standard electronic navigation solution for more than 50 navies worldwide.

Technology Matters

NGSM's Warship Electronic Chart Display and Information System (WECDIS) is designed to support the operational requirements of the modern navy. Based on our successful commercial ECDIS, the WECDIS greatly reduces navigator workload and increases tactical and situational awareness for the ship's crew on ships engaged in blue water and littoral theatres of operation. The multi-node network architecture provides seamless integration of all watch modes with common

Human Machine Interfaces. The system supports all phases of maritime navigation, including route planning and monitoring, piloting, collision avoidance, conning information and other modes.

Compliance with International Standards

- NATO STANAG 4564 (WECDIS)*
- NATO STANAG 7170 (Additional Military Layers)
- Support BR45 Admiralty Manual of Navigation
- Type approved to IEC62388, IEC 61174 (ECDIS) and IEC62288 performance standards

Optimised Situational Awareness

- Polar Stereo Graphic - In addition to the traditional chart view the operator can also display a top down view of the globe.

- Moving Havens - Enables the display and management of moving havens for waterspace management and deconfliction
- 4W Grid - Allows the operator to display standard 4W grid in a user defined position, size and orientation
- Contact Tracking- Displays user defined contacts and allocates ID, course speed and warning ranges thus creating a compilation of surface picture/general ops plot on the navigation system. Contacts rendered per MIL-STD-2525B. Can also provide inner and outer proximity alarms for use in helicopter operations
- Linked Object Editor & Saved Templates - Allows the user to create personal chart corrections or hydrographic notes from a template and to link to own platform and other targets

Increased Navigation Safety

- Search & Rescue Patterns - Allows the operator to display standard search and rescue patterns on a nominated position to be used for SAR ops
- Other Ship Routes - Allows other ships routes to be displayed as well as own or allows other plans to be imported for ownship use
- Comprehensive User Defined Grids- The operator can define and display a tactical grid for specific mission requirements
- Weapon Arcs - Operator-defined safety arcs for



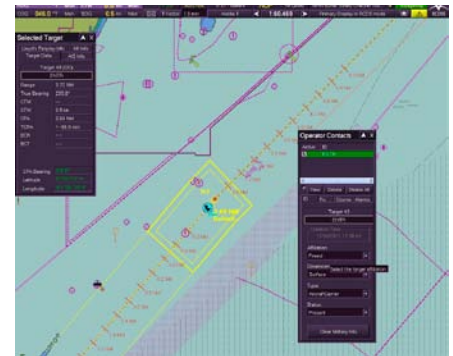
Queen Elizabeth Class (QEC) Aircraft Carrier. Photo courtesy of Aircraft Carrier Alliance.

weaponry. Allows display of splash points and ricochet dangers for medium and large caliber weapons

- Additional Military Layers (AMLs) - Enables the presentation of military information such as tactical and exercise operating areas



4W Grids



Operator Contact Moving Havens

- Countdown Marks - Distances to course alterations can be marked on each leg up to 1 nm before the alteration point in variable intervals



Tide Data-Countdown Marks



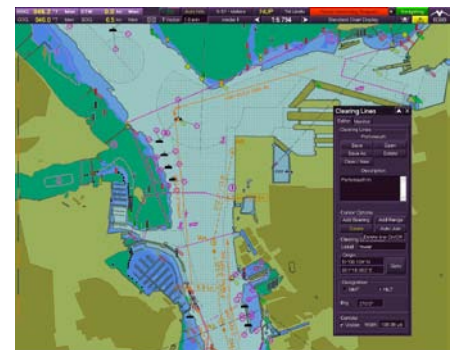
Expanding box SAR

- Advance & Transfer - Enables the operator to apply ship specific turning data to determine the wheel over position for course alterations

- Clearing Bearing - Allows the construction of visual bearings around dangers at an appropriate distance so that they can be monitored visually, alarming if the safety limits are exceeded



Moving Havens



Clearing Bearings

Enhanced Features

- Enhanced Lines of Position - Allow for confirmation of the ship's position using operator defined position lines/fixes, including visual bearings, transits, horizontal and vertical sextant angles, depth contours, soundings and ranges
- Additional Coordinate Systems - Can use a number of different geodetic datums for referencing including WGS 84 or WGS 72 and Military Grid or GeoRef

Easy, Intuitive Operation

- The NGSM WECDIS user

interface is designed to seamlessly facilitate the switchover from paper charts to electronic navigation

- Common user interface among all watch modes - radar, chart radar, ECDIS, conning information and machinery automation
- Highly integrated solution with multi-function workstation combining all operating modes

- Works with a wide range of raster and vector electronic chart formats, with fast chart loading
- Chart portfolio management and voyage planning capabilities
- Direct target tracking with radar overlay option
- Advanced target correlation with AIS and radar target inputs



A Northrop Grumman Sperry Marine Technician works on the VisionMaster FT.

- Split-screen with variable chart scales and window-inset display nodes
- Central alarm management
- Built-in multi-level help and documentation

24/7 Global Support

All Northrop Grumman Sperry Marine products and systems are supported by the industry's most extensive worldwide service network, with technical support and service available in every major seaport in the world, 24 hours a day, 365 days a year.

Training and Service Support

Northrop Grumman Sperry Marine offers extensive, proven training for WECDIS operation and maintenance, including classroom and simulator instruction at training centers in Germany.

Mobile classrooms and interactive courseware are among the many industry leading aids to training that ensure user and maintainer customers are fully proficient and confident in all operational and maintenance tasks. All courses are taught by fully experienced professional navigators and certified instructors, and the curriculum is accredited to IMO STCW-95 ECDIS requirements.

*Substantially compliant with the exception of certain sub surface navigation features: details available on request.

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