

Military Integrated Bridge System (IBS)



Sperry Marine

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IBS Capabilities

- Voyage Planning & Real-Time Navigation Tracking
- Track Steering Ship Control
- Radar Contact Track and Video overlay
- Interfaces to the Machinery Control Systems
- Moving Haven/ Water Space Management
- Position Uncertainty Fix Expansion
- Lines of Position Navigation Fix Capability
- CO Password Protect of approved voyage plans
- Electronic Bearing Lines & Variable Range
- Chart Markup
 - Operator Text Overlay
 - Operating Areas
 - Over-The-Horizon Areas of Uncertainty
 - Joint Tactical Action Areas
 - Submarine Generated Search Areas



Military Integrated Bridge System is a systems approach for the automated collection, processing, control, and display of the ship control and vital navigation sensor data in order to maximize bridge watch efficiency and Ship Control safety.

- **Voyage Management System (VMS)**

- A computer based navigation, planning and monitoring system. It meets U.S. Navy's Electronic Chart Display and Information System - Navy (ECDIS-N) requirements. VMS provides the tools necessary for the crew to navigate electronically.

- **Automated Radar Plotting Aid**

(ARPA) - System that automatically acquires and tracks contacts; providing accurate and timely contact information to the Watch Team.

- **Ship Control System (SCS)** - System which provides Command and Control Signals to the Ship Control and Propulsion Systems and monitors their performance.

Military Integrated Bridge Systems are already fielded and employed on US CV, CVN, CG, DDG, LHD, LPD, SSN, SSBN, LCAC and PC ship classes, plus MSC Ships, NOAA Ships, USCG Ice Breaker, and International Naval vessels.

Sperry Marine IBS Discriminators

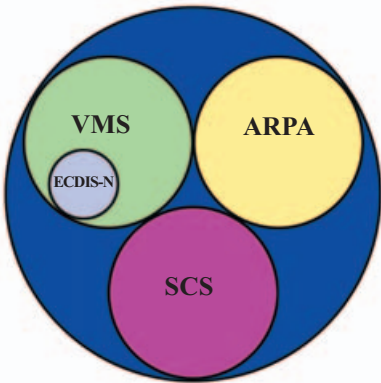
#1 USN Market Share

- Selected as the single standard for US Navy ECDIS-N
- NIMA DNC direct read validated
- Multiple military features incorporated
- MILSPEC environmental qualification
- Total integrated navigation system provider

#1 World Wide Commercial Share

- DNV W(1) and ECDIS certification
- Over 450 commercial systems at sea
- Certified track steering capability
- Sperry Marine developed software
- Manufacturers commercial sensors and systems





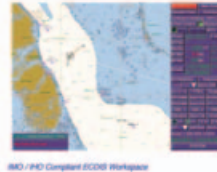
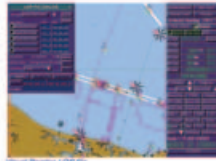
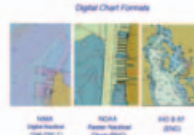
INTEGRATED BRIDGE SYSTEM

IBS Elements: VMS, SCS, ARPA are fully integrated to ensure maximum benefit in terms of Ship Safety, Reduced Workload and TOC

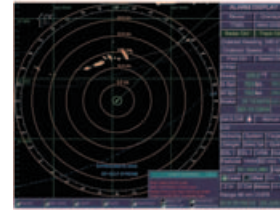
What is an IBS?

VMS Functionality

- Display Electronic Chart Products (NIMA DNC®, S-57, NOAA Raster, etc)
- Voyage Planning and Monitoring
- ECDIS-N Functionality
- Follows IMO A.817 Resolution
- Precision Anchoring
- Man Overboard
- Voyage Recording and Playback



ARPA Functionality



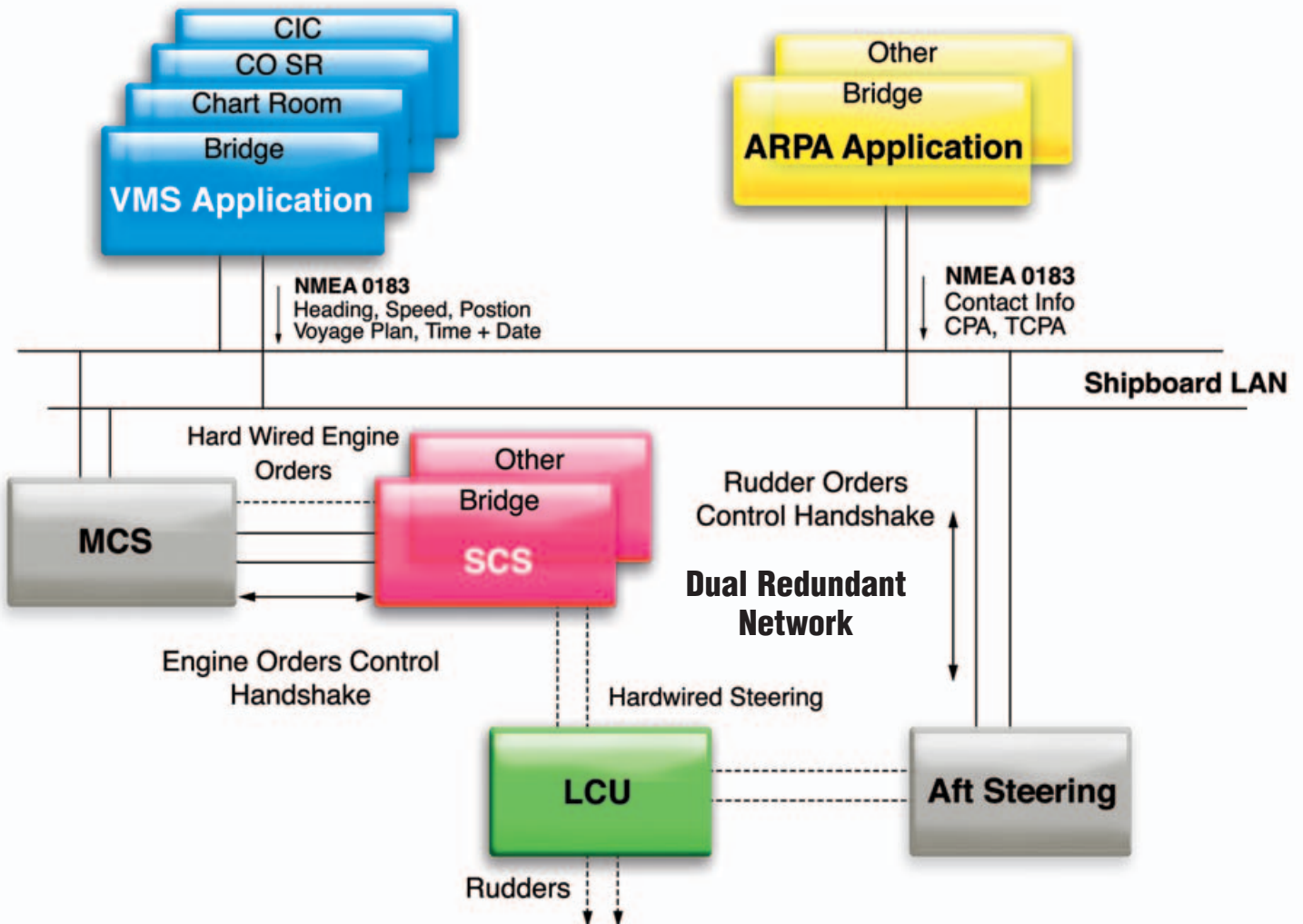
- Auto Detection of Contacts
- Auto calculation of contact course, speed & CPA
- Visual & Audible Warnings of Tracked Contacts
- Trial Maneuvers
- IMO A.823(19) Compliant
- VMS interface (radar overlay)

SCS Functionality



- Auto Pilot (Automatic Heading Control)
- Track Control of Steering
- Dynamically Adapts to Ship's Handling Characteristics
- Rudder Control / Steering Pump Control
- Main Propulsion Control
- Steering Control Common Alarm indication

Military IBS Configuration



Sperry Marine

www.sperrymarine.northropgrumman.com

For more information, please contact:

AMERICAS

Charlottesville, VA USA

Tel: +1 434-974-2000

Fax: +1 434-974-2259

Melville, NY USA

Tel: +1 631-719-4736

Fax: +1 631-719-4630

ASIA

China, Shanghai

Tel: +86-21-5836-9978

Fax: +86-21-5836-9979

Hong Kong, Sheung Wan

Tel: +852-2581-9122

Fax: +852-2581-9967

Japan, Tokyo

Ph: +81 (0)-3-3863-7401

Fax: +81 (0)-3-3863-7455

Singapore

Tel: +65-6274-3332

Fax: +65-6271-3339

South Korea, Busan

Tel: +82-51-247-7455

Fax: +82-51-247-7454

Taiwan, Kaohsiung

Tel: +886-7-331-7786

Fax: +886-7-331-7924

CANADA

Nova Scotia, Halifax

Tel: +1 902-468-9479

Fax: +1 902-468-9480

EUROPE

Belgium, Antwerp

Tel: +32-3-233-14-33

Fax: +32-3-225-05-53

Denmark, Copenhagen

Tel: +45-77-33-66-33

Fax: +45-77-33-66-11

Germany, Hamburg

Tel: +49 (0)40 299 00-0

Fax: +49 (0)40 299 00-146

Holland, Vlaardingen

Tel: +31(0)-10-4451600

Fax: +31(0)-10-4345015

Norway, Bergen

Tel: +47-55-94-94-94

Fax: +47-55-34-52-27

United Kingdom, New Malden

Tel: +44(0)20 8329 2000

Fax: +44(0)20 8329 2415



Sperry Marine stands behind its products by providing system integration engineering, integrated logistics support, and operator and maintenance training.

System Integration Engineering

Sperry Marine has provided the system integration engineering and test and evaluation support to integrate the IBS to Ship's Command and Control systems on board all types of military vessels including CG, DDG, SSN, SSBN and Advanced Seal Delivery Systems.

Integrated Logistics Support

Sperry Marine is one of the first contractors to successfully execute a Performance Based Logistics (PBL) Program with the U.S. Navy. Sperry Marine provides full spectrum of logistics support from traditional spares and repair support to managed inventory and maintenance program such as PBL.

Operator and Maintenance Training

Sperry Marine provides operator and maintenance training at our facilities or we can send our trainer to your facility. Sperry Marine has a U.S. Coast Guard certified ECDIS training facility in our Charlottesville, VA location and a similar facility in New Malden, UK.

Sperry Marine also develops and produces training products including Computer Based Training (CBT) and embedded training such as IBS-T.

U.S. NAVY SmartShip Program

SmartShip is the U.S. Navy's premier program for adapting commercial technology solutions for reduced ship manning in the Fleet. The program was initiated by the CNO based on a Naval Research Advisory Committee finding that ship manning must be optimized to reduce Navy operating costs.

Sperry Marine's IBS, along with Sperry Marine developed Machinery Control System (MCS) and Damage Control System (DCS) form a core component of the SmartShip's Integrated Ship Control System. SmartShip is a key component of Cruiser Conversion and select technologies are being installed in Aegis Destroyers.



Worldwide Service Support

As a direct result of the importance we place on fast, efficient aftersales support, the company has built up a truly worldwide network of service centers in over 400 locations. In addition, there is a team of staff field engineers ready at a moment's notice to travel anywhere in the world to provide vital support. Spares for all Sperry Marine's products and systems are held at strategic locations around the world ready for immediate dispatch to where they are needed.

Customers, whether they are commercial, military, or paramilitary are becoming increasingly concerned about service. They know that the presence of a qualified technician and the appropriate spares at the right time and in the right place can save them considerable time and money. Sperry Marine recognizes these requirements and is well placed to provide the after sales service required.



Sperry Marine, with worldwide headquarters in Charlottesville, VA, and major engineering and support offices in Melville, NY, New Malden, England, and Hamburg, Germany, is part of the Northrop Grumman **Electronic Systems** sector.

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