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AN/SPS-73(V)12 Radar Set

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The AN/SPS-73(V) Surface Search Radar is a navigation and surveillance system which can be configured for ship or land-based applications. Integrated data from own ship sensors provides the AN/SPS-73(V) operators with a comprehensive view of the maritime environment.

Description

The Radar Set AN/SPS-73(V)12 is a short-range, two-dimensional, surface search/navigation radar system that provides contact range and bearing information. The AN/SPS-73(V)12 provides for signal processing and automatic target detection capability. The AN/SPS-73(V)12 surface search function provides short-range detection and surveillance of surface units and low-flying air units, while the AN/SPS-73(V)12 navigation function enables quick and accurate determination of own ship position relative to nearby vessels and navigational hazards. The system's radar processors and displays combine Commercial-Off-The-Shelf (COTS) products and specialized technologies to create navigational awareness. The AN/SPS-73(V)12 is replacing the AN/SPS-64(V) and AN/SPS-55(V) systems in their capacity as navigational radars on the US Navy Ships.

The AN/SPS-73(V) Surface Search Radar is a navigation and surveillance system which can be configured for ship or land-based applications. Integrated data from own ship sensors provides the AN/SPS-73(V) operators with a comprehensive view of the maritime environment. The AN/SPS-73(V) system meets or exceeds International Maritime Organization requirements and the Radar Technical Commission for Maritime Services requirements for an Automatic Radar Plotting Aid (ARPA). With implementation of the Technology Refreshment (Tech Refresh) upgrades, the system's configuration can comply with International Electrotechnical Commission 62388 performance requirements.

Identified shipboard configurations comprise Navigation Radar and Shipborne Dual Radar Systems (NRS and SDRS). A typical NRS architecture is understood to comprise a Furuno 2120 antenna, a safety switch unit, and a Stand-Alone Operator's Position (SAOP). A typical SDRS configuration comprises two Furuno 2120 antennas, two SAOPs, two safety switch units, an Ethernet switch and a junction box, which provide a single feed for raw radar video from both antenna sets.

The AN/SPS-73(V)12 includes its own display indicator which is capable of displaying AN/SPS-73(V)12 radar or other shipboard radars. Radar video is displayed on consoles to provide a means for the operators to perform manual radar search, and detection and tracking functions. AN/SPS-73(V)12 with Tech Refresh receives National Marine Electronics Association (NMEA) track messages from AN/URN-31 to display Automatic Identification System (AIS) tracks. Radar video from the AN/SPS-67(V) or AN/SPQ-9B radars are provided to the AN/SPS-73(V)12 SAOP console processor in the Pilot House to provide the Officer of the Deck (OOD) an alternate source of navigation data for processing and display. In addition, the AN/SPS-73(V)12 interfaces with the Integrated Bridge System (IBS) to provide navigation interfaces for track incoming threats.

Legacy AN/SPS-73(V)12 systems utilize Versa Module Europa (VME) architecture and host a VxWorks Operating System (OS), which runs software version 11.7 on a Synergy Microsystem PowerPC single board computer. The Field Change 13 upgrade was designed to mitigate obsolescence by replacing the legacy VME card cage with a Compact Peripheral Component Interconnect architecture, which runs Linux Centos release 5.3 OS on a GE

Fanuc Single Board Computer. Ethernet interfaces utilize proprietary Radar Data Service Communication middleware protocols developed by Raytheon. External Ethernet interconnections are routed through an Ethernet switch.

The AN/SPS-73(V)12 has been tested and qualified to Shock MIL-STD-901D, Vibration MIL-STD-167 and Electromagnetic Interference certification MIL-STD-461D and E.

The AN/SPS-73(V)12 Radar Set requires no addition to ship's manning, and maintenance is supported by existing billets. Formal Maintenance Training for the Electronics Technician (ET) rating is conducted at Center for Surface Combat Systems (CSCS) Norfolk and CSCS San Diego under Navy Enlisted Classification 1520, which was authorized in a Navy Manpower Analysis Center letter (serial number, 10/0222) dated Aug. 3, 2006. AN/SPS-73(V)12 Radar Operator's Computer-Based Training (CBT) is provided for the Bridge Watch Team (i.e., the OOD, Junior OOD, Quarter Masters, Operations Specialists and ETs at the ship's discretion). The CBT is self-paced which provides Surface Search Radar introduction and five (5) radar operator familiarization modules, including Controls and Indicators, System Start Up/Shut Down, Graphics Functions, Tracking Functions and Navigation Functions.

Operation and maintenance training is also provided by the Alteration Installation Teams during initial system installations using Technical Training Equipment. Subsequent operator training is provided via CBT.

The AN/SPS-73(V)12 Radar Set is currently installed onboard approximately 100 ships across CVN, CG, DDG, LHA, LHD, LPD, LSD, LCC, PC and MCM ship classes.

The AN/SPS-73(V)12 program was placed into Caretaker Status in FY17. The Next Generation Surface Search Radar (NGSSR) is currently in development to replace the AN/SPS-73(V)12 radar.

Features

The AN/SPS-73(V) radar has Built-In-Test functionality for improved reliability, capability and maintainability. The AN/SPS-73(V) can track up to 200 targets on a single system or 300 targets on a dual system with speeds up to 210 knots. The AN/SPS-73(V) Radar tracks surface crafts, obstructions, shorelines, buoys and navigational markers in order to assist in navigation, collision avoidance, surface surveillance and limited detection of low flying aircraft. The AN/SPS-73(V) is designed to commercial standards for navigation radars and is in compliance with various electronics interfacing standards (e.g., NMEA 0183). This radar system is a digital system, which outperforms the previous analog AN/SPS-64(V) Radar. The system can be easily integrated with other navigation and information processing systems, such as AIS, Electronic Chart Display Information System-Navy (via IBS) and Navigation Sensor System Interface. The AN/SPS-73(V) system can also be modified to accommodate future interfaces and requirements; the systems' Interface Design Document describes the data, status, and control inputs and outputs of the radar and facilitates integration into other systems.

The AN/SPS-73(V) is a program of record per Chief of Naval Operations letter (serial number, N865D/7U654045) dated May 2, 1997.

General Characteristics

Primary Function: Short-range, two-dimensional, surface-search/navigation radar system that provides contact range and bearing information.
Contractor: Raytheon Portsmouth, Rhode Island (Original Equipment Manufacturer).
Unit Cost: $421,000.
Weight: Above Deck: AS-4472/SPS-73(V) - 18.5 lbs., AS-4473/SPS-73(V) - 21.8 lbs., AB-1399/SPS-73(V) - 63.9 lbs., AB-1399(A)/SPS-73(V) - 68.9 lbs., 7614132. Antenna Safety Switch - 2.0 lbs.

Point of Contact

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