U.S. Department of Transportation
United States Coast Guard

Commandant,
United States Coast Guard

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COMDTPUB P16700.4
NVIC **8 01**
26 September 2001

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. **8 01**

Subj: APPROVAL OF NAVIGATION EQUIPMENT FOR SHIPS

1. PURPOSE. This Circular establishes a Coast Guard approval program for navigation equipment, as required under Chapter V, regulation 18, of the 2000 amendments to the 1974 International Convention for the Safety of Life at Sea (SOLAS).

2. ACTION: Operators of U.S. vessels and Coast Guard Officers in Charge, Marine Inspection should note that SOLAS Chapter V requires that SOLAS ships be equipped with type approved navigation equipment. This requirement should be considered effective with the coming into force of the 2000 SOLAS amendments on 1 July 2002, and it applies to all navigation equipment installed on board a ship subject to SOLAS on or after that date.

3. DIRECTIVES AFFECTED. None.

4. BACKGROUND. The 2000 SOLAS amendments come into force on 1 July 2002. Regulations V/18.1 and 18.5 of these amendments require navigation equipment installed on ships on or after this date, to be type approved by the Administration. They also call for Administrations to require manufacturers to produce approved navigation equipment under a quality system audited by a competent authority. By establishing an approval program now, the Coast Guard is providing sufficient time to ensure that approved equipment will be available on that date.

5. DISCUSSION. The Coast Guard, as the U.S. maritime safety Administration under SOLAS, is establishing this interim approval program using standards, regulations, and processes already in place, in order to meet the United States' obligations under SOLAS regulation V/18. The Coast Guard intends to propose Federal regulations to establish a permanent

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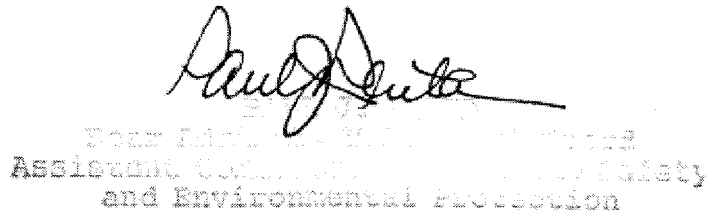
approval program, and to require carriage of approved navigation equipment on U.S. ships. Furthermore, most navigation equipment approved under this NVIC is expected to be covered by a Mutual Recognition Agreement (MRA) with the European Union, which means that manufacturers obtaining Coast Guard approval of equipment under this NVIC should also be able to obtain approval under the European Marine Equipment Directive (MarED) at the same time. Conversely, manufacturers obtaining approval of navigation equipment under the MarED could receive a Coast Guard approval as well. Details on the MRA may be obtained from:

Commandant (G-MSE-4)
U.S. Coast Guard
2100 Second St. S.W.
Washington, DC 20593
www.uscg.mil/hq/g-m/mse4/mse4home.htm

6. IMPLEMENTATION. Manufacturers may obtain approval of the equipment listed in enclosure (1). The approval process is described in enclosure (2). Enclosure (3) describes the quality system requirements. The standards applying to approved navigation equipment are listed in enclosure (4).



Encl: (1) Coast Guard Approved Navigation Equipment
(2) Coast Guard Approval Process for Navigation Equipment
(3) Quality System Requirements
(4) Standards for Approved Navigation Equipment

Non-Standard Distribution:

D:d Except Baltimore, Moriches, and Grand Haven.

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ABS (1).
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Coast Guard Approved Navigation Equipment

Approval series [1]	Equipment [2]
165.101	Magnetic compass
165.102	Transmitting Magnetic Heading Device, TMHD (formerly Electromagnetic compass)
165.103	Gyrocompass
165.105	Speed and distance indicating device
165.106	Rate of turn indicator
165.107	Echosounding equipment
165.110	Heading control system
165.111	Auto-Tracking Aid
165.112	Track Control
165.120	Automatic radar plotting aid (ARPA)
165.121	Electronic Plotting Aid
165.122	Chart facilities for shipborne radar
165.123	Electronic chart display and information system (ECDIS)
165.124	ECDIS Back-up Equipment
165.125	Raster Chart Display Systems (RCDS)
165.130	Global positioning system (GPS) equipment
165.131	Global navigation satellite system (GLONASS) equipment
165.132	Differential global position system (DGPS) equipment
165.133	Differential global navigation satellite system (DGLONASS) equipment
165.134	Combined global position system and global navigation satellite system (GPS/GLONASS) receiver equipment
165.135	Loran-C equipment
165.136	Chayka equipment
165.140	Integrated bridge system
165.141	Integrated navigational system

[1] "Approval series" means the first six digits of a number assigned by the Coast Guard to approved equipment.
[2] SOLAS Chapter V navigation equipment which includes a radio transmitter is authorized by the Federal Communications Commission, including Radar Equipment and Automatic Identification Systems (AIS).

Approval series [1]	**Equipment** [2]
165.150	Voyage data recorder (VDR)
165.155	Shipborne automatic identification system (AIS)
165.160	Radar reflector
165.165	Sound reception system
165.166	Daylight signaling lamp
165.203	Gyrocompass for High Speed Craft
165.210	Automatic steering aid (automatic pilot) for High Speed Craft
165.251	Night Vision Equipment for High Speed Craft

Coast Guard Approval Process for Navigation Equipment

1 Purpose.

This document describes the procedure for Coast Guard approval of navigation equipment for ships.

2 Independent laboratory.

Examinations, tests and inspections described in section 4, are to be conducted by an independent laboratory accepted by the Coast Guard under Title 46 of the Code of Federal Regulations (46 CFR), subpart 159.010. A list of accepted laboratories is available from the Commandant at the address in the letterhead of this NVIC, or on the World Wide Web at http://www.uscg.mil/hq/g-m/mse/lablist.html.

3 Quality system.

The manufacturer must produce approved navigation equipment under an approved quality system as described in enclosure (3) of this NVIC.

4 Approval procedure.

(a) The Coast Guard approves navigation equipment under the procedures in 46 CFR subpart 159.005. Preapproval review by the Coast Guard is not required.

(b) The independent laboratory must evaluate and test a sample of the navigation equipment presented for approval to determine whether the equipment meets each performance standard and testing standard listed for the equipment in enclosure (4). The independent laboratory's test report must include a statement as to whether the navigation equipment meets each performance and testing standard listed.

(c) In addition to the inspection and test report, and the plans required under 46 CFR §§ 159.005-11 and 159.005-12, the manufacturer must ensure that Commandant (G-MSE) receives the results of the quality system assessment described in enclosure (3).

(d) The manufacturer may request Commandant (G-MSE) to renew a certificate of approval which is about to expire. The request for renewal must include --

(1) a statement that the navigation equipment continues to meet the description on the certificate of approval; and

(2) evidence that the manufacturer's quality system has been audited and continues to meet the requirements in enclosure (3).

5 Marking and labeling.

(a) Whatever other languages they may be in, the markings required for an item of navigation equipment must be in English.

(b) The navigation equipment must be marked with the –

(1) Name and address of the manufacturer;

(2) Description of the equipment, using the title of the section in part 2 of enclosure (4) of this NVIC;

(3) Manufacturer's model identification;

(4) Serial number or an indication of the manufacturing date, such as month and year, or lot number; and

(5) U.S. Coast Guard approval number.

(c) The manufacturer must identify the performance and testing standards which the equipment meets, either on the item of navigation equipment or in an operations manual intended to be kept on the ship.

(d) All required markings must be in a place where they are visible without removal or disassembly of the equipment.

Manufacturer's Quality System Requirements

1 Purpose.

This enclosure contains the procedures under which production control of approved equipment is maintained through the manufacturer's quality system, audited by a quality system registration organization. The manufacturer must arrange for continuing quality system assessment and audit as described in this enclosure, as a condition for continued Coast Guard approval.

2 Definition.

Quality system registration organization (QSRO) means an organization -

(a) eligible for listing in the National Institute of Standards and Technology's (NIST) list of North American Quality System Registration Organizations (NAQSRO), and

(b) accredited by a signatory to the International Accreditation Forum (IAF) Multilateral Recognition Agreement (MLA). The U.S. accreditation body is:

American National Standards Institute - Registrar Accreditation Board
National Accreditation Program - ANSI-RAB NAP
P.O. Box 3005
Milwaukee, Wisconsin WI 53201-3005
414 272 3937
http://www.rabnet.com

The organizations in the NAQSRO list have informed NIST about their quality system registration according to ISO 9001, or other quality system registration standard. The manufacturer is not required to be registered to ISO 9001 for the purposes of this quality system assessment. The listing may be obtained from the National Institute of Standards and Technology, Technical Standards Activities Program, Office of Standards Services, Technology Services, Gaithersburg, MD 20899-2150, http://ts.nist.gov/ts/htdocs/210/216/iso9000.htm.

3 Application for assessment.

(a). The manufacturer must apply to a QSRO for assessment of the quality system covering the equipment concerned. The equipment must be of a type which is within the QSRO's scope of accreditation. The application must include to the extent required by the QSRO –

(1) All relevant information for the equipment category;

(2) Documentation concerning the quality system; and

(3) The technical documentation of the equipment covered.

4 Quality system requirements.

(a) The quality system must ensure that the equipment conforms to the documentation submitted for the equipment's approval, and is subjected to all inspections and tests required by the standards under which the equipment is approved. All the elements, requirements and provisions adopted by the manufacturer must be documented in a systematic and orderly manner in the form of written policies, procedures and instructions.

(b) The quality-system documentation must permit a consistent interpretation of the quality programs, plan, manuals and records. It must, in particular, include an adequate description of:

(1) The quality objectives and the organizational structure, responsibilities and powers of the management with regard to equipment quality;

(2) The manufacturing, quality-control and quality-assurance techniques, processes and systematic actions that will be used;

(3) The examinations and tests that will be carried out before, during and after manufacture, and the frequency with which they will be carried out;

(4) The quality records, such as inspection reports and test data, calibration data, qualification reports of the personnel concerned, etc.; and

(5) The means of monitoring the achievement of the required equipment quality and the effective operation of the quality system.

5 QSRO assessment.

(a) The QSRO will assess the quality system to determine whether it satisfies the requirements in section 4. It will determine compliance with those requirements in respect of quality systems that implement the approval standard.

(b) The auditing team must have at least one member from the independent laboratory responsible for the inspections and tests conducted for approval of the equipment. The assessment procedure must include a visit to the manufacturer's premises. In the event that an independent laboratory representative is not available, the QSRO will propose an alternate member who has knowledge and experience in the relevant technology. The alternate member is subject to the acceptance of Commandant (G-MSE).

(c) The manufacturer and Commandant (G-MSE) must be notified of the results of the assessment. The notification must include the conclusions of the examination and the reasoned assessment decision.

6 Obligations under the quality system.

(a) The manufacturer must fulfill the obligations arising out of the quality system as approved and to maintain it so that it remains adequate and efficient.

(b) The manufacturer must keep the QSRO that has approved the quality system informed of any intended revision of that quality system.

(c) The QSRO will assess the revisions proposed and decide whether the revised quality system will still satisfy the requirements in section 4 or whether a reassessment is required.

(d) The manufacturer will be notified of the QSRO's decision. The notification will include the conclusions of the examination and the reasoned assessment decision.

7 Quality system surveillance.

(a). The manufacturer must arrange for continuing quality system surveillance by the QSRO. The purpose of surveillance is to make sure that the manufacturer meets the obligations of the approved quality system.

(b) The manufacturer must allow the QSRO access for inspection purposes to the locations of manufacture, inspection, testing and storage, and must provide it with all necessary information, in particular:

(1) the quality-system documentation; and

(2) the quality records, such as inspection reports and test data, calibration data, qualification reports of the personnel concerned, and other relevant data.

(c) The QSRO will periodically carry out audits to make sure that the manufacturer maintains and applies the quality system and will provide the manufacturer with audit reports. In addition, the QSRO may pay unannounced visits to the manufacturer. During such visits the QSRO may carry out tests or cause tests to be carried out to check that the quality system is functioning correctly, if necessary. The QSRO will provide the manufacturer with a visit report and, if a test has taken place, with a test report.

Standards for Approved Navigation Equipment

1 Referenced standards.

The following standards are referenced in this enclosure:

International Electrotechnical Commission (IEC)

Bureau Central de la Commission Electrotechnique Internationale, 3 rue de Varembé, P.O. Box 131, 1211 Geneva 20, Switzerland

IEC 60447 - "Man-Machine Interface (MMI) - Actuating Principles", April 1993

IEC 60872-1 - Maritime navigation and radiocommunication equipment and systems - Radar plotting aids - Part 1: Automatic radar plotting aids (ARPA) - Methods of testing and required test results, September 1998

IEC 60872-2 - Maritime navigation and radiocommunication equipment and systems - Radar plotting aids - Part 2: Automatic tracking aids (ATA) - Methods of testing and required test results, January 1999

IEC 60872-3 - Maritime navigation and radiocommunication equipment and systems - Radar plotting aids - Part 3: Electronic plotting aid (EPA) - Performance requirements - Methods of testing and required test results, August 2000

IEC 60936-3 - Maritime navigation and radiocommunication equipment and systems - Radar - Part 3: Radar with chart facilities - Performance requirements, methods of test and required test results

IEC 60945 - Maritime navigation and radiocommunication equipment and systems general requirements - methods of testing and required test results, November 1996

IEC 61023 - Maritime navigation and radiocommunication equipment and systems marine speed and distance measuring equipment (SDME) – performance requirements - methods of testing and required test results, July 1999

IEC 61075 – LORAN-C receivers for ships. Minimum performance standards - methods of testing and required test results, July 1991

IEC 61108-1 - Global navigation satellite systems (GNSS) - part 1: global positioning system (GPS) - receiver equipment - performance standards, methods of testing and required test results, June 1996

IEC 61108-2 - Maritime navigation and radiocommunication equipment and systems global navigation satellite systems (GNSS) - Part 2: Global navigation satellite system (GLONASS) - receiver equipment - performance standards, methods of testing and required test result, June 1998.

IEC 61108-4 – Maritime navigation and radiocommunication equipment and systems - Global navigation satellite systems (GNSS) - Part 4:Differential global positioning system (GPS)/Differential global navigation satellite system (GLONASS) - Receiver equipment - Performance standards, methods of testing and required test results

IEC 61162 series - - Maritime navigation and radiocommunication equipment and systems digital interfaces, July 2000

IEC 61174 – Maritime navigation and radiocommunication equipment systems - Electronic chart display and information system (ECDIS) - Operational and performance requirements, methods of testing and required test results, August 1998

IEC 61209 – Maritime navigation and radiocommunication equipment and systems - Integrated bridge systems (IBS) - Operational and performance requirements, methods of testing and required test results, April 1999

IEC 61924 – Maritime navigation and communication equipment and systems - Integrated navigation systems (INS) operational and performance requirements - Methods of testing and required test results

IEC 61993-2 – Maritime navigation and radiocommunication equipment and systems - Part 2: Universal shipborne automatic identification system - Performance requirements, methods of testing and required test results

IEC 61996 – Maritime navigation and radiocommunication equipment and systems shipborne voyage data recorder (VDR) - Performance requirements methods of testing and required test results, July 2000.

IEC 62065 – Maritime navigation and radiocommunication equipment and systems – Track control systems – Operational and performance requirements, methods of testing and required test results

International Maritime Organization (IMO)

Publications Section, 4 Albert Embankment, London SE1 7SR, England

Resolution A.224(VII) – Performance standards for echo-sounding equipment, 12 October 1971

Resolution A.342(IX) – Recommendation on performance standards for automatic pilots, 12 November 1975

Resolution A.382(X)-- Recommendation on Performance standards for magnetic compasses, 14 November 1977

Resolution A.384(X)-- Performance standards for radar reflectors, 14 November 1977

Resolution A.424(XI) – Performance standards for gyro-compasses, 15 November 1979

Resolution A.526(13) – Performance standards for rate of turn indicators (ROTI), 17 November 1983

Resolution A.694(17) -- General requirements for shipborne radio equipment forming part of the global maritime distress and safety system (GMDSS) and for electronic navigational aids, 6 November 1991

Resolution A.817(19) -- Recommendation on performance standards for Electronic Chart Display and Information Systems (ECDIS), 23 November 1995; as amended by resolution MSC.64(67), Annex 5, 4 December 1996

Resolution A.818(19) – Performance standards for shipborne Loran-C and Chayka receivers, 23 November 1995

Resolution A.819(19) – Performance standards for shipborne global position system(GPS) receiver equipment, 23 November 1995

Resolution A.821(19) – Performance standards for gyro-compasses for High Speed Craft, 23 November 1995

Resolution A.822(19) – Performance standards for automatic steering aids (automatic pilots) for High Speed Craft, 23 November 1995

Resolution A.823(19) – Performance standards for automatic radar plotting aids, 23 November 1995

Resolution A.824(19), as amended – Recommendations on performance standards for devices to indicate speed and distance, 23 November 1995

Rresolution A.861(20) – Recommendation on Performance Standards for Voyage Data Recorders (VDRs), November 1997.

Resolution MSC.53(66) – Performance standards for shipborne GLONASS receiver equipment, 30 May 1996

Resolution MSC.64(67), Annex 1 – Performance standards integrated bridge system, 4 December 1996

Resolution MSC.64(67), Annex 2 – Recommendation on performance standards for shipborne DGPS and DGLONASS maritime radio beacon receiver equipment, 4 December 1996

Resolution MSC.64(67), Annex 3 – Recommendation on performance standards for heading control systems, 4 December 1996

Resolution MSC.64(67), Annex 4 – Recommendation on performance standards for radar equipment, 4 December 1996

Resolution MSC.74(69), Annex 2 – Recommendations on performance standards for track control systems, 12 May 1998

Resolution MSC.74(69), Annex 3 – Recommendations on performance standards for an universal shipborne automatic identification system (AIS), 12 May 1998

Resolution MSC.74(69), Annex 4 – Recommendations on performance standards for echo-sounding equipment, 12 May 1998

Resolution MSC.86(70), Annex 1 – Performance standard for sound reception systems, 8 December 1998

Resolution MSC.86(70), Annex 2 – Performance standard for marine transmitting magnetic heading devices (TMHDs), 8 December 1998

Resolution MSC.86(70), Annex 3 – Performance standard for integrated navigational systems, 8 December 1998

Resolution MSC.86(70), Annex 4 – Amendments to the Recommendation on Performance Standards for Electronic Chart Display and Information Systems (ECDISs), 8 December 1998

Resolution MSC.94(72) – Recommendation on performance standards for night vision equipment for High-Speed Craft (HSC), 31 May 2000

Resolution MSC.95(72) – Performance Standards For Daylight Signalling Lamps, 22 May 2000

International Organization for Standardization (ISO)

1, rue de Varembé, Case postale 56, CH-1211 Geneva 20, Switzerland

ISO 449: 1997 - Ships and marine technology - Magnetic compasses, binnacles and azimuth reading devices - Class A, June 19, 1997

ISO 694: 2000 - Positioning of magnetic compasses in ships

ISO 1069: 1973 - Magnetic compasses and binnacles for sea navigation - Vocabulary

ISO 2269: 1992 - Shipbuilding - Class A magnetic compasses, azimuth reading devices and binnacles - Tests and certification

ISO 8728: 1997 - Ships and marine technology - Marine gyro-compasses

ISO 8729: 1997 - Ships and marine technology - Marine radar reflectors

ISO/IEC 9126: 1991 - Information Technology, Software Product Evaluation, Quality Characteristics and Guidelines for their Use

ISO 9875: 2000 - Ships and marine technology - Marine echo-sounding equipment

ISO 11606: 2000 - Ships and marine technology - Marine electromagnetic compasses

ISO 11674: 2000 - Ships and marine technology - Heading control systems

ISO 16328: 1999 - Ships and marine technology -- Gyro-compasses for high-speed craft

ISO 16329: 2001 - Ships and marine technology -- Heading control systems for high speed craft

International Telecommunication Union (ITU)

Place des Nations, CH-1211 Geneva 20, Switzerland

ITU-R M.1371-1 - Technical characteristics for a universal shipborne automatic identification system using time division multiple access in the VHF maritime mobile band

2 Standards applying to approved navigation equipment.

165.101 Magnetic compass.

Approved magnetic compasses must meet the requirements in –

(a) IMO Resolutions A.382(X) and A.694(17);

(b) ISO standards ISO 449, ISO 694, ISO 1069, and ISO 2269; and

(c) IEC standard IEC 60945.

165.102 Transmitting Magnetic Heading Device, TMHD (formerly Electromagnetic compass).

Approved TMHDs must meet the requirements in –

(a) IMO Resolutions A.694(17) and MSC.86(70) Annex 2;

(b) ISO standard ISO 11606; and

(c) IEC standards IEC 61162 (applicable part), and IEC 60945.

165.103 – Gyrocompass.

Approved gyrocompasses must meet the requirements in –

(a) IMO Resolutions A.424(XI), and A.694(17);

(b) ISO standard ISO 8728; and

(c) IEC standards IEC 61162 (applicable part), and IEC 60945.

165.105 – Speed and distance indicating device.

Approved speed and distance indicating devices must meet the requirements in –

(a) IMO Resolutions A.694(17), and A.824(19); and

(b) IEC standards IEC 61023, IEC 61162 (applicable part), and IEC 60945.

165.106 – Rate of turn indicator.

Approved rate of turn indicators must meet the requirements in –

(a) IMO Resolutions A.526(13), and A.694(17); and

(b) IEC standard IEC 61162 (applicable part).

165.107 – Echosounding equipment.

Approved echosounding equipment must meet the requirements in –

(a) IMO Resolutions A.224(VII) as amended by IMO Resolution MSC74(69) Annex 4, and A.694(17);

(b) ISO standard ISO 9875; and

(c) IEC standards IEC 61162 (applicable part), and IEC 60945.

165.110 – Heading control system.

Approved heading control systems must meet the requirements in –

(a) IMO Resolutions A.342(IX) as amended by IMO Resolution MSC 64(67) Annex 3, and A.694(17);

(b) ISO standard ISO 11674; and

(c) IEC standards IEC 61162 (applicable part), and IEC 60945.

165.111 – Auto-Tracking Aid.

Approved auto-tracking aids must meet the requirements in –

(a) IMO Resolutions A.694(17), and MSC 64(67), Annex 4, Appendix 1; and

(b) IEC standards IEC 60872-2, IEC 60945, and IEC 61162 (applicable part).

165.112 – Track Control.

Approved track control equipment must meet the requirements in –

(a) IMO Resolutions A.694(17), and MSC 74(69), Annex 2, and

(b) IEC standards IEC 60945, IEC 61162 (applicable part), and IEC 62065.

165.120 – Automatic radar plotting aid (ARPA).

Approved ARPAs must meet the requirements in –

(a) IMO Resolutions A.694(17), and A.823(19): and

(b) IEC standards IEC 60872-1, and IEC 61162 (applicable part).

165.121 – Electronic Plotting Aid.

Approved electronic plotting aids must meet the requirements in –

(a) IMO Resolutions A.694(17), and MSC 64(67), Annex 4, Appendix 2; and

(b) IEC standards IEC 60872-3, IEC 60945, and IEC 61162 (applicable part).

165.122 – Chart facilities for shipborne radar.

All approved chart facilities for shipborne radar must meet the requirements in –

(a) IMO Resolutions A.694(17), and A.817(19) as amended by IMO Resolution MSC64(67) Annex 5; and

(b) IEC standards IEC 60936-3, IEC 60945, and IEC 61162 (applicable part).

165.123 – Electronic chart display and information system (ECDIS).

Approved ECDIS must meet the requirements in –

(a) IMO Resolutions A.694(17), and A.817(19) as amended by MSC.86(70) Annex 4; and

(b) IEC standards IEC 60945, IEC 61162 (applicable part), and IEC 61174.

165.124 – ECDIS Back-up Equipment.

All approved back-up equipment for Electronic Chart and Display Systems (ECDIS) must meet the requirements in –

(a) IMO Resolutions A.694(17), and A.817(19) as amended by IMO Resolution MSC64(67) Annex 5; and

(b) IEC standards IEC 60945, IEC 61162 (applicable part), and IEC 61174, annex G

165.125 – Raster Chart Display Systems (RCDS).

All approved Raster Chart Display Systems (RCDS) must meet the requirements in –

(a) IMO Resolutions A.694(17), and A.817(19) as amended by IMO Resolution MSC64(67) Annex 5; and

(b) IEC standards IEC 60945, IEC 61162 (applicable part), and IEC 61174, annex H

165.130 – Global positioning system (GPS) equipment.

Approved GPS equipment must meet the requirements in –

(a) IMO Resolutions A.694(17), and A.819(19); and

(b) IEC standards IEC 61108-1, IEC 61162 (applicable part), and IEC 60945.

165.131 – Global navigation satellite system (GLONASS) equipment.

Approved global navigation satellite system GLONASS equipment must meet the requirements in –

(a) IMO Resolutions A.694(17), and MSC.53(66) ; and

(b) IEC standards IEC 60945, IEC 61108-2, and IEC 61162 (applicable part).

165.132 – Differential global position system (DGPS) equipment.

Approved differential global position system (DGPS) equipment must meet the requirements in –

(a) IMO Resolutions A.694(17), and MSC.64(67) Annex 2; and

(b) IEC standards IEC 60945, IEC 61162 (applicable part), and IEC 61108-4.

165.133 – Differential global navigation satellite system (DGLONASS) equipment.

Approved differential global navigation satellite system (DGLONASS) equipment must meet the requirements in –

(a) IMO Resolutions A.694(17), and MSC.64(67) Annex 2; and

(b) IEC standards IEC 60945, IEC 61108-4, and IEC 61162 (applicable part).

165.134 – Combined global position system and global navigation satellite system (GPS/GLONASS) receiver equipment.

Approved combined global position system and global navigation satellite system (GPS/GLONASS) receiver equipment must meet the requirements in –

(a) IMO Resolutions A.694(17), and MSC.74(69) Annex 1; and

(b) IEC standards IEC 60945, and IEC 61162 (applicable part).

165.135 – Loran-C equipment.

Approved Loran-C equipment must meet the requirements in –

(a) IMO Resolutions A.694(17), and A.818(19) ; and

(b) IEC standards IEC IEC 60945, 61075, and IEC 61162 (applicable part).

165.136 – Chayka equipment.

Approved Chayka equipment must meet the requirements in –

(a) IMO Resolutions A.694(17), and A.818(19) ; and

(b) IEC standards IEC 60945, IEC 61075, and IEC 61162 (applicable part).

165.140 – Integrated bridge system.

Approved integrated bridge systems must meet the requirements in –

(a) IMO Resolutions A.694(17), and MSC.64(67), Annex 1; and

(b) IEC standards IEC 60945 (applicable part), IEC 61209, and IEC 61162.

165.141 – Integrated navigational system.

Approved integrated navigational systems must meet the requirements in –

(a) IMO Resolutions A.694(17), and MSC.86(70) Annex 3; and

(b) IEC standards IEC 60945 (applicable part), IEC 61924, and IEC61162.

165.150 – Voyage data recorder (VDR).

(a) Approval standards. Approved VDR must meet the requirements in –

(1) IMO Resolutions A.694(17), and A.861(20); and

(2) IEC standards IEC 60945, IEC 61162 (applicable part) , and IEC 61996.

(b) Annual performance test. After 1 July 2002, each VDR installed on a vessel is required to undergo an annual performance test under the requirements of regulation V/20.4 of the International Convention for the Safety of Life at Sea (SOLAS). An independent laboratory accepted by the Coast Guard for testing VDR must conduct the performance test.

(1) The VDR system, including all sensors, shall be tested to verify the accuracy, duration and recoverability of the recorded data. In addition, tests and inspections shall be conducted to determine the serviceability of all protective enclosures and devices fitted to aid location.

(2) The independent laboratory will issue a certificate of compliance if the VDR successfully passes the test. The certificate is intended to be retained on board the ship. The certificate includes:

(i) The words "Certificate of Compliance for Voyage Data Recorder".

(ii) The name of the ship and its official number.

(iii) The make, model, approval number, and serial number of the VDR.

(iv) The date of the testing.

(v) The applicable performance standards applied.

(vi) The name and address of the independent laboratory.

(vii) The name and signature of the independent laboratory representative responsible for the testing.

(viii) Date and file identification of the Coast Guard letter accepting the independent laboratory for testing of VDR.

165.155 – Shipborne automatic identification system (AIS).

(a) Approval. Shipborne automatic identification systems (AIS) contain radio transmitters and are therefore authorized by the Federal Communications Commission under Subpart J of 47 CFR 2. Prior to FCC authorization, the shipborne AIS design, test reports, and quality system audit should be reviewed by the Coast Guard, in accordance with the procedures in this directive. The Coast Guard will provide a letter to the manufacturer containing the results of the assessment. The Coast Guard will transmit a copy of this letter to the FCC for its use in authorizing the equipment.

(b) Standards. Shipborne AIS must meet the requirements in –

(1) IMO Resolutions A.694(17), and MSC.74(69), Annex 3;

(2) IEC standards IEC 60945, IEC 61162 (applicable part), and 61993-2; and

(3) ITU Recommendation ITU-R M.1371-1.

165.160 – Radar reflector.

Approved radar reflectors must meet the requirements in –

(a) IMO Resolution A.384(X);

(b) IEC standard IEC 60945; and

(c) ISO standard ISO 8729.

165.165 – Sound reception system.

Approved sound reception systems must meet the requirements in –

(a) IMO Resolution A.694(17), and MSC.86(70) Annex 1; and

(b) IEC standards IEC 61162 (applicable part), and IEC 60945.

165.166 – Daylight signaling lamp.

Approved daylight signaling lamps must meet the requirements in –

(a) IMO Resolutions A.694(17) and MSC.95(72); and

(b) IEC standard IEC 60945.

165.203 – Gyrocompass for High Speed Craft.

Approved gyrocompasses for High Speed Craft must meet the requirements in –

(a) IMO Resolutions A.694(17), and A.821(19);

(b) ISO standard ISO 16328; and

(c) IEC standards IEC 61162 (applicable part), and IEC 60945.

165.210 – Automatic steering aid (automatic pilot) for High Speed Craft.

Approved automatic steering aids (automatic pilots) for High Speed Craft must meet the requirements in –

(a) IMO Resolutions A.342(IX) as amended by IMO Resolution MSC 64(67) Annex 3, A.694(17), and A.822(19);

(b) ISO standard ISO 16329; and

(c) IEC standards IEC 61162 (applicable part), and IEC 60945.

165.251 – Night Vision Equipment for High Speed Craft.

Approved night vision equipment for High Speed Craft must meet the requirements in –

(a) IMO Resolutions A.694(17) and MSC.94(72); and

(b) IEC standards IEC 60447, IEC 60945, IEC 61162 (applicable part), and ISO/IEC 9126.