



COMDTPUB P P16700.4  
NVIC 8-01  
April 24, 2017

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 8-01, CHANGE 3

Subj: APPROVAL OF NAVIGATION EQUIPMENT FOR SHIPS

1. **PURPOSE.** This Circular provides voluntary guidance for approval of navigation equipment, as required under Regulation V/18, of the International Convention for the Safety of Life at Sea, 1974, as amended in 2000 (SOLAS). It revises Navigation and Vessel Inspection Circular (NVIC) No. 8-01, Change (CH) 2 by adding an approval process (series) for the Bridge Navigational Watch Alarm System (BNWAS) and updating various approval series to reflect the most applicable standards, resolutions, and processes.
2. **ACTION.** This Circular describes a voluntary process for equipment manufacturers who choose to have their products type-approved by the Coast Guard. Owners and operators of U.S. vessels and Coast Guard Officers in Charge, Marine Inspection should note, however, that SOLAS and various U.S. regulations require ships engaged on international voyages to be equipped with type approved navigation equipment and its compliance be verified by Coast Guard personnel and/or foreign port state control authorities of states party to SOLAS. Internet release is authorized.
3. **DIRECTIVES AFFECTED.** NVIC 8-01, CH 2 is superseded by this NVIC.
4. **BACKGROUND.** SOLAS Regulations V/18.1, 18.5 and 19.1 require navigation equipment installed on ships to be type approved by the Administration (in the United States that would be by the U.S. Coast Guard); and also require their manufacturers to be subject to an audited quality system (See Enclosure (3)). The Coast Guard has established an interim approval program using standards, regulations, and processes already in place, including regulations in 46 CFR subchapter Q, to meet the United States' obligations under SOLAS. Since publication of the previous change to this

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NVIC: (1) SOLAS Regulation V/19 was amended to add a requirement for BNWAS equipment; (2) new test standards were added for rudder angle indicator, propeller revolution indicator, and pitch indicator; and, (3) several existing test standards were amended. This NVIC addresses these changes. Note, Coast Guard type approval is also provided under mutual agreements detailed in NVIC 8-04, CH 1, Guide to Marine Equipment Approvals, covered by US-EC MRA & by US-EEA EFTA MRA (<http://www.uscg.mil/hq/cg5/nvic/pdf/2004/08-04change1.pdf>).

5. **DISCLAIMER**. This guidance is not a substitute for applicable legal requirements, nor is it itself a rule. It is not intended to impose legally binding requirements on anyone. It represents the Coast Guard's current thinking on this topic and may assist industry, mariners, the general public, and the Coast Guard, as well as other federal and state regulators, in applying international or domestic requirements. You can use an alternative approach for complying with these requirements if the approach satisfies applicable regulations. If you wish to discuss an alternative approach you may email [typeapproval@uscg.mil](mailto:typeapproval@uscg.mil).
6. **PAPERWORK REDUCTION ACT**. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a valid control number. The Office of Management and Budget (OMB) control number for the correspondence described in this Circular is 1625-0035.
7. **ENVIRONMENTAL ASPECT AND IMPACT CONSIDERATIONS**.
  - (a) The development of this NVIC and the general policies contained within it have been thoroughly reviewed by the originating office and are categorically excluded (CE) under current USCG CE # 33 from further environmental analysis, in accordance with Section 2.B.2. and Figure 2-1 of the National Environmental Policy Act Implementing Procedures and Policy for Considering Environmental Impacts, COMDTINST M16475.1 (series). Because this NVIC implements, without substantive change, the applicable Commandant Instruction or other federal agency regulations, procedures, manuals, and other guidance documents, Coast Guard CE #33 is appropriate.
  - (b) This NVIC will not have any of the following: significant cumulative impacts on the human environment; substantial controversy or substantial change to existing environmental conditions; or inconsistencies with any federal, state, or local laws or administrative determinations relating to the environment. All future specific actions resulting from the general policies in this NVIC must be individually evaluated for compliance with the National Environmental Policy Act (NEPA), DHS and Coast Guard NEPA policy, and compliance with all other environmental mandates.
8. **DISTRIBUTION**. This circular will be distributed by electronic means only and is available on the World Wide Web at <https://www.uscg.mil/hq/cg5/nvic/>.
9. **RECORDS MANAGEMENT CONSIDERATIONS**. This NVIC has been thoroughly reviewed during the directives clearance process, and it has been determined there are no further records scheduling requirements, in accordance with Federal Records Act, 44

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U.S.C. 3101 et seq., NARA requirements, and Information and Life Cycle Management Manual, COMDTINST M5212.12 (series). This policy does not create significant or substantial change to existing records management requirements.

10. FORMS/REPORTS. None.
11. QUESTIONS. All questions regarding implementation of this Circular should be directed to the Coast Guard Headquarters Systems Engineering Division (CG-ENG-3), at (202) 372-1375 or [typeapproval@uscg.mil](mailto:typeapproval@uscg.mil).

 Reason: I am approving  
this document  
Date: 2017.04.26  
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PAUL F. THOMAS  
Rear Admiral, U.S. Coast Guard  
Assistant Commandant for Prevention Policy

- Encl: (1) Coast Guard Approved Navigation Equipment and Applicable Standards  
(2) Coast Guard Approval Process for Navigation Equipment  
(3) Manufacturer's Quality System Requirements  
(4) Coast Guard Approval Process for Voyage Data Recorders and Simplified Voyage Data Recorders Service Providers  
(5) Coast Guard Approval Process for Equipment Wheelmarked by a European Notified Body and Tested by a Non U.S Coast Guard Accepted Laboratory  
(6) Coast Guard Approval Process for Long Range Identification and Tracking (LRIT) Equipment

## **Coast Guard Approved Navigation Equipment and Applicable Standards**

### **1. Application.**

There is no fee for a U.S. Coast Guard type approval application. Applications for U.S. Coast Guard type approval should be submitted by postal mail (paper or CD) or electronically to the addresses below; the latter must be less than 10 MB in size and provided in a secure compressed (i.e. zip) form. Due to USCG security restrictions our office cannot access any documents through file sharing websites.

Commandant (CG-ENG-3)  
US Coast Guard Stop 7509  
2703 Martin Luther King Jr Ave SE  
Washington DC 20593-7509  
Email: [typeapproval@uscg.mil](mailto:typeapproval@uscg.mil)

### **2. Referenced standards for approved navigation equipment.**

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 60945 – Maritime navigation and radiocommunication equipment and systems –  
General requirements – Methods of testing and required test results, Edition 4.0 with  
Corrigendum 1 (2002-08)

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, Edition 3.0 (2007-06)

IEC 61108-1 – Maritime navigation and radiocommunication equipment and systems –  
Global navigation satellite systems (GNSS) – Part 1: global positioning system (GPS) –  
Receiver equipment – Performance standards, methods of testing and required test  
results, Edition 2.0 (2003-07)

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, Edition 1.0 (1998-06)

IEC 61108-3 – Maritime navigation and radiocommunication equipment and systems –  
Global navigation satellite systems (GNSS) – Part 3: Galileo receiver equipment –  
Performance standards, methods of testing and required test result, Edition 1.0 (2010-05)

- IEC 61108-4 – Maritime navigation and radiocommunication equipment and systems – Global navigation satellite systems (GNSS) – Part 4: Shipborne DGPS and DGLONASS maritime radio beacon receiver equipment – Performance standards, methods of testing and required test results, Edition 1.0 (2004-07))
- IEC 61162-1 – Maritime navigation and radiocommunication equipment and systems – Digital interfaces – Part 1: Single talker and multiple listeners, Edition 4.0 (2010-11)
- IEC 61162-2 – Maritime navigation and radiocommunication equipment and systems – Digital interfaces – Part 2: Single talker and multiple listeners, high speed transmission, Edition 1.0 (1998-09)
- IEC 61162-3 – Maritime navigation and radiocommunication equipment and systems – Digital interfaces – Part 3: Serial data instrument network, Edition 1.2 (2014-07)
- IEC 61162-450 – Maritime navigation and radiocommunication equipment and systems – Digital interfaces – Part 450: Multiple talkers and multiple listeners – Ethernet interconnection, Edition 1.1 (2016-03)
- 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, Edition 4.0 (2015-08)
- IEC 61924-2 – Maritime navigation and radiocommunication equipment and systems – Integrated navigation systems (INS) – Part 2: Modular structure for INS – Operational and performance requirements, methods of test and required test results, Edition 1.0 (2012-10)
- IEC 61993-2 – Maritime navigation and radiocommunication equipment and systems – Automatic identification systems (AIS) – Part 2: Class A shipborne equipment of the automatic identification system (AIS) – Operational and performance requirements, methods of test and required test results, Edition 2.0 (2012-10)
- IEC 61996-1 – Maritime navigation and radiocommunication equipment and systems – Shipborne voyage data recorder (VDR) – Part 1: Performance requirements, methods of testing and required test results, Edition 2.0 (2013-05)
- IEC 61996-2 – Maritime navigation and radiocommunication equipment and systems – Shipborne voyage data recorder (VDR) – Part 2: Simplified voyage data recorder (S- VDR) – Performance requirements, methods of testing and required test results, Edition 2.0 (2007-11)
- IEC 62065 – Maritime navigation and radiocommunication equipment and systems – Track control systems – Operational and performance requirements, methods of testing and required test results, Edition 2.0 (2014-02)

IEC 62287-1 – Maritime navigation and radiocommunication equipment and systems – Class B shipborne equipment of the automatic identification system (AIS) – Part 1: Carrier-sense time division multiple access (CSTDMA) techniques, Edition 2.1 (2013-04)<sup>1</sup>

IEC 62287-2 – Maritime navigation and radiocommunication equipment and systems – Class B shipborne equipment of the automatic identification system (AIS) – Part 2: Self-organising time division multiple access (SOTDMA) techniques, Edition 2.0 (2017-02)<sup>1</sup>

IEC 62288 – Maritime navigation and radiocommunication equipment and systems – Presentation of navigation-related information on shipborne navigational displays – General requirements, methods of testing and required test results, Edition 2.0 (2014-07)

IEC 62388 – Maritime navigation and radiocommunication equipment and systems – Shipborne Radar – Performance requirements, methods of testing and required test results, Edition 2.0 (2013-06)

IEC 62616 – Maritime navigation and radiocommunication equipment and systems – Bridge navigational watch alarm system (BNWAS), Edition 1.0 (2010-02)

### **International Maritime Organization (IMO)**

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

MSC.1/Circ.1222 – Guidelines on Annual Testing of Voyage Data Recorders (VDR) and Simplified Voyage Data Recorders (S-VDR), 11 December 2006

MSC.1/Circ.1307 – Guidance on the Survey and Certification of Compliance of Ships with the Requirements to Transmit LRIT Information, 9 June 2009

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.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

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<sup>1</sup> Edition 3.0 of IEC 62287-1 is scheduled to be published in 2017. AIS equipment submitted for approval after its publication should comply with Edition 3.0.



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.789(19) – Specification on the Survey and Certification Functions of Recognized Organizations on Behalf of the Administration, 8 December 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.824(19), as amended – Recommendations on Performance Standards for Devices to Indicate Speed and Distance, 23 November 1995

Resolution MSC.64(67), Annex 3 – Recommendation on Performance Standards for Heading Control Systems, 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.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

Resolution MSC.96(72) – Adoption of Amendments to Performance Standards for Devices to Measure and Indicate Speed and Distance, 22 May 2000

Resolution MSC.97(73) – Adoption of the International Code of Safety for High-Speed Craft, 2000 (2000 HSC Code), 5 December 2000

Resolution MSC.112(73) – Adoption of Revised Performance Standards for Shipborne Global Positioning (GPS) Receiver Equipment, 1 December 2000

Resolution MSC.113(73) – Adoption of Revised Performance Standards for Shipborne GLONASS Receiver Equipment, 1 December 2000

Resolution MSC.114(73) – Adoption of Revised Performance Standards for Shipborne DGPS and DGLONASS Maritime Radio Beacon Receiver Equipment, 1 December 2000

Resolution MSC.115(73) – Adoption of Revised Performance Standards for Shipborne Combined GPS/GLONASS Receiver Equipment, 1 December 2000

Resolution MSC.116(73) – Performance Standards for Marine Transmitting Heading Devices (THDs), 1 December 2000

Resolution MSC.128(75) – Performance Standards for a Bridge Navigational Watch Alarm System (BNWAS), 20 May 2002

Resolution MSC.163(78) – Performance Standards for Shipborne Simplified Voyage Data Recorders (S-VDRs), 17 May 2004 as amended by Resolution MSC.214(81)

Resolution MSC.164(78) – Adoption of Revised Performance Standards for Radar Reflectors, 17 May 2004

Resolution MSC.191(79) – Performance Standards for the Presentation of Navigation-related Information on Shipborne Navigational Displays, 06 December 2004

Resolution MSC.192(79) – Adoption of the Revised Performance Standards for Radar Equipment, 06 December 2004

Resolution MSC.214(81) – Adoption of Amendments to Performance Standards for Shipborne Voyage Data Recorders (VDRs) (Resolution A.861(20)) and Performance Standards for Simplified Voyage Date Recorders (S-VDRs) (Resolution MSC.163(78)), 12 May 2006

Resolution MSC.232(82) – Adoption of the Revised Performance Standards for Electronic Chart Display and Information System (ECDIS), 5 December 2006

Resolution MSC.252(83) – Adoption of the Revised Performance Standards for Integrated Navigation Systems (INS), 8 October 2007

Resolution MSC.263(84) – Revised Performance Standards and Functional Requirements for the Long-Range Identification and Tracking of Ships, 16 May 2008

Resolution MSC.302(87) – Adoption of Performance Standards for Bridge Alert Management, 17 May 2010

Resolution MSC.330(90) – Adoption of Amendments to the Revised Performance Standards and Functional Requirements for the Long-Range Identification and Tracking of Ships (Resolution MSC.263(84)), 25 May 2012

Resolution MSC.333(90) – Adoption of Revised Performance Standards for Shipborne Voyage Data Recorders (VDRs), 22 May 2012



Resolution MSC.334(90) – Adoption of Amendments to the Performance Standards for Devices to Measure and Indicate Speed and Distance, 22 May 2012

**International Organization for Standardization (ISO)**

*1, ch. Del la Voie-Creuse CP 56, CH-1211 Geneva 20, Switzerlan, <https://www.iso.org/>*

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

ISO 8728: 2014 – Ships and marine technology – Marine gyro-compasses

ISO 8729-1: 2010 – Ships and marine technology – Marine radar reflectors – Part 1 Passive type

ISO 8729-2: 2009 – Ships and marine technology – Marine radar reflectors – Part 2: Active type

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

ISO 11674: 2006 – Ships and marine technology – Heading control systems

ISO 14859: 2012 – Ships and marine technology – Sound reception systems

ISO 16273: 2003 – Ships and marine technology – Night vision equipment for high-speed craft – Operational and performance requirements, methods of testing and required test results

ISO 16328: 2014 – Ships and marine technology – Gyro-compasses for high-speed craft

ISO 16329: 2003 – Ships and marine technology – Heading control systems for high speed craft

ISO 17884: 2004 – Ships and marine technology – Searchlights for high-speed craft

ISO 20672: 2007 with Corrigenda 1:2008 – Ships and marine technology – Rate of turn indicators

ISO 20673: 2007 – Ships and marine technology – Electric rudder angle indicators

ISO 22090-1: 2014 – Ships and marine technology – Transmitting heading devices (THDs) – Part 1: Gyro-compasses

ISO 22090-2: 2014 – Ships and marine technology – Transmitting heading devices (THDs) – Part 2: Geomagnetic principles

ISO 22090-3: 2014 – Ships and marine technology – Transmitting heading devices (THDs) – Part 3: GNSS principles

Enclosure (1) to NVIC 8-01

ISO 22554: 2015 – Ships and marine technology – Propeller shaft revolution indicators – Electric type and electronic type

ISO 22555: 2007 – Ships and marine technology – Propeller pitch indicators

ISO 25861: 2007 – Ships and marine technology – Navigation – Daylight signalling lamps

ISO 25862: 2009 – Ships and marine technology – Marine magnetic compasses, binnacles and azimuth reading devices

**International Telecommunication Union (ITU)**

*Place des Nations, CH-1211 Geneva 20, Switzerland, <http://www.itu.int/>*

ITU-R M.1177-4 – Techniques for measurement of unwanted emissions of radar systems, (04/2011)

ITU-R M.1371-5 – Technical characteristics for a universal shipborne automatic identification system using time division multiple access in the VHF maritime mobile band, (02/2014)

### 3. Approved navigation equipment and applicable standards.

Unless stated otherwise, all navigation equipment should also meet the requirements of IEC 60945 and IMO Resolution MSC.302(87).

Notes in the table are located at the end of the table.

Approval series <sup>1</sup>	Equipment	Applicable Recommendations, Resolutions, and Standards
165.101	Magnetic Compass	IMO Resolutions A.382(X), A.694(17), and MSC.302(87) ISO 1069 ISO 25862
165.102	Transmitting Heading Device (THD) (formerly Electromagnetic Compass) <sup>2</sup>	IMO Resolutions A.694(17), MSC.116(73), MSC.191(79), and MSC.302(87) ISO 22090-1 or 22090-2 or 22090-3 IEC 61162 (applicable part) IEC 62288
165.103	Gyrocompass	IMO Resolutions A.424(XI), A.694(17), MSC.191(79) and MSC.302(87) IEC 61162 (applicable part) IEC 62288 ISO 8728
165.105	Speed and Distance Measuring Equipment (SDME)	IMO Resolutions A.694(17), A.824(19), MSC.96(72) as amended by MSC.334(90), MSC.191(79) and MSC.302(87) IEC 61023 IEC 61162 (applicable part) IEC 62288
165.106	Rate of Turn Indicator	IMO Resolutions A.526(13), A.694(17), MSC.191(79) and MSC.302(87) IEC 61162 (applicable part) ISO 20672

Approval series <sup>1</sup>	Equipment	Applicable Recommendations, Resolutions, and Standards
165.107	Echosounding Equipment	IMO Resolutions A.224(VII), A.694(17), MSC.74(69) and MSC.302(87) Annex 4, and MSC.191(79) IEC 61162 (applicable part) IEC 62288 ISO 9875
165.110	Heading Control System	IMO Resolutions A.342(IX), A.694(17), MSC.64(67) Annex 3, MSC.191(79) and MSC.302(87) IEC 61162 (applicable part) IEC 62288 ISO 11674
165.112	Track Control System	IMO Resolutions A.694(17), MSC74(69) Annex 2, MSC.191(79) and MSC.302(87) IEC 61162 (applicable part) IEC 62065 IEC 62288
165.115	Shipborne Radar – Category 1 (Category 1C with Chart Option) <sup>3, 4</sup>	IMO Resolutions A.694(17), MSC.191(79), MSC.192(79) and MSC.302(87) IEC 61162 (applicable part) IEC 62288 IEC 62388 ITU-R M.1177-4
165.116	Shipborne Radar – Category 2 (Category 2C with Chart Option) <sup>3, 4</sup>	IMO Resolutions A.694(17), MSC.191(79), MSC.192(79) and MSC.302(87) IEC 61162 (applicable part) IEC 62288 IEC 62388 ITU-R M.1177-4

Approval series <sup>1</sup>	Equipment	Applicable Recommendations, Resolutions, and Standards
165.117	Shipborne Radar – Category 3 (Category 3C with Chart Option) <sup>3, 4</sup>	IMO Resolutions A.694(17), MSC.191(79), MSC.192(79) and MSC.302(87) IEC 61162 (applicable part) IEC 62288 IEC 62388 ITU-R M.1177-4
165.123	Electronic Chart Display and Information System (ECDIS)	IMO Resolutions A.694(17), MSC.191(79), MSC.232(82) and MSC.302(87) IMO SN.1/Circ.266 IEC 61162 (applicable part) IEC 61174 IEC 62288 IEC 62388 Annex A
165.124	ECDIS Back-up Equipment	IMO Resolutions A.694(17), MSC.191(79), MSC.232(82) and MSC.302(87) IMO SN.1/Circ.266 IEC 61162 (applicable part) IEC 61174, Annex F IEC 62288 IEC 62388 Annex A
165.130	Global Positioning System (GPS) Equipment	IMO Resolutions A.694(17), MSC.112(73), MSC.191(79) and MSC.302(87) IEC 61108-1 IEC 61162 (applicable part) IEC 62288
165.131	Global Navigation Satellite System (GLONASS) Equipment	IMO Resolutions A.694(17), MSC.113(73), MSC.191(79) and MSC.302(87) IEC 61108-2 IEC 61162 (applicable part) IEC 62288

Approval series <sup>1</sup>	Equipment	Applicable Recommendations, Resolutions, and Standards
165.132	Maritime Radio Beacon Receiver Equipment for Differential Global Position System (DGPS) Equipment	IMO Resolutions A.694(17), MSC.114(73) and MSC.302(87) IEC 61162 (applicable part) IEC 61108-4 IEC 62288
165.133	Maritime Radio Beacon Receiver Equipment for Differential Global Navigation Satellite System (DGLONASS) Equipment	IMO Resolutions A.694(17), MSC.114(73) and MSC.302(87) IEC 61108-4 IEC 61162 (applicable part) IEC 62288
165.134	Combined Global Position System and Global Navigation Satellite System (GPS/GLONASS) Receiver Equipment	IMO Resolutions A.694(17), MSC.115(73) and MSC.302(87) IEC 61108-1 IEC 61108-2 IEC 61162 (applicable part) IEC 62288
165.137	Galileo Receiver Equipment	IMO Resolution A.694(17), MSC.191(79), MSC.233(82) and MSC.302(87) IEC 61162 (applicable part) IEC 61108-3 IEC 62288
165.141	Integrated Navigational System	IMO Resolutions A.694(17), MSC.191(79), MSC.252(83) and MSC.302(87) IEC 60945 IEC 61162 (applicable part) IEC 61924-2 IEC 62288
165.142	Bridge Navigational Watch Alarm System	IMO Resolutions A.694(17), MSC.128(75), MSC.191(79) and MSC.302(87) IEC 61162 (applicable part) IEC 62288 IEC 62616



Approval series <sup>1</sup>	Equipment	Applicable Recommendations, Resolutions, and Standards
165.150	Voyage Data Recorder (VDR) <sup>5</sup>	IMO Resolutions A.694(17), MSC.191(79), MSC.330(90) and MSC.302(87) IEC 61162 (applicable part) IEC 61996-1 IEC 62288
165.151	Simplified Voyage Data Recorder (S-VDR) <sup>5</sup>	IMO Resolutions A.694(17), MSC.163(78) as amended by MSC.214(81), MSC.191(79) and MSC.302(87) IEC 61162 (applicable part) IEC 61996-2 IEC 62288
165.155	Shipborne Automatic Identification System (AIS) <sup>3</sup>	IMO Resolutions A.694(17), MSC.74(69) Annex 3, and MSC.191(79) IEC 61162 (applicable part) IEC 61993-2 IEC 62288 ITU-R M.1371-4
165.156	Shipborne Automatic Identification System (AIS) <sup>3</sup> Class B	IMO Resolutions A.694(17) and MSC.74(69) Annex 3 IEC 61162 (applicable part) IEC 62287-1 (for CSTDMA) IEC 62287-2 (for SOTDMA) IEC 62288 ITU-R M.1371-4 or ITU- R M.1371-5
165.160	Radar Reflector	IMO Resolutions MSC.164(78) ISO 8729-1 ISO 8729-2 (for active)
165.165	Sound Reception System	IMO Resolutions A.694(17), MSC.86(70) Annex 1, MSC.191(79) and MSC.302(87) IEC 61162 (applicable part) IEC 62288 ISO 14859

Approval series <sup>1</sup>	Equipment	Applicable Recommendations, Resolutions, and Standards
165.166	Daylight Signaling Lamp	IMO Resolutions A.694(17) and MSC.95(72) ISO 25861
165.167	Rudder Angle Indicator	IMO Resolutions A.694(17), MSC.191(79) and MSC.302(87) IEC 61162 (applicable part) IEC 62288 ISO 20673
165.168	Propeller Revolution Indicator	IMO Resolutions A.694(17), MSC.191(79) and MSC.302(87) IEC 61162 (applicable part) IEC 62288 ISO 22554
165.169	Pitch Indicator	IMO Resolutions A.694(17), MSC.191(79) and MSC.302(87) IEC 61162 (applicable part) IEC 62288 ISO 22555
165.203	Gyrocompass for High Speed Craft	IMO Resolutions A.694(17), A.821(19), MSC.191(79) and MSC.302(87) IEC 61162 (applicable part) IEC 62288 ISO 16328
165.207	Long Range Information Tracking (LRIT) <sup>6</sup>	IMO Resolutions A.694(17) and MSC.263(84) as amended by MSC.330(90) MSC.1/Circ.1307
165.210	Heading Control System for High Seed Craft (formerly Automatic Pilot)	IMO Resolutions A.694(17), A.822(19), MSC.64(67) Annex 3, MSC.191(79) and MSC.302(87) IEC 61162 (applicable part) IEC 62288 ISO 16329

Approval series <sup>1</sup>	Equipment	Applicable Recommendations, Resolutions, and Standards
165.216	Shipborne Radar – Category 1H for High Speed Craft (Category 1HC with Chart Option) <sup>3, 4</sup>	IMO Resolutions A.694(17), MSC.191(79), MSC.192(79) and MSC.302(87) IEC 61162 (applicable part) IEC 62288 IEC 62388 ITU-R 1177-4
165.217	Shipborne Radar – Category 2H for High Speed Craft (Category 2HC with Chart Option) <sup>3, 4</sup>	IMO Resolutions A.694(17), MSC.191(79), MSC.192(79) and MSC.302(87) IEC 61162 (applicable part) IEC 62288 IEC 62388 ITU-R 1177-4
165.251	Night Vision Equipment for High Speed Craft	IMO Resolutions A.694(17) and MSC.94(72) ISO 16273 IEC 62288
165.252	Searchlight for High Speed Craft	IMO Resolution A.694(17) ISO 17884

<sup>1</sup> Approval series means the first six digits of a number assigned by the Coast Guard to approved equipment.

<sup>2</sup> A THD can be constructed and tested to gyroscopic principles (ISO 22090-1), geomagnetic principles (ISO 22090-2) or GNSS principles (ISO 22090-3).

<sup>3</sup> This equipment includes a radio transmitter which is regulated by the Federal Communications Commission, and requires FCC type-certification before such equipment may be marketed, sold or used in the United States.

<sup>4</sup> Resolution MSC.192(79) recommends that Governments ensure radar equipment installed on or after 01 July 2008 conform to the performance standards set out in the Annex of the resolution. When existing radar equipment becomes unserviceable, it should be replaced with radar equipment approved to series 165.115, 165.116 or 165.117, as appropriate. Collision avoidance equipment will no longer be approved to this series.

<sup>5</sup> For additional information see section 4 of this enclosure.

<sup>6</sup> See Enclosure (6).

#### **4. Voyage Data Recorders (VDR) and Simplified Voyage Data Recorders (S-VDR).**

Annual performance test. SOLAS Regulation V/18.8 of the International Convention for the Safety of Life at Sea (SOLAS) requires each VDR/S-VDR installed on a vessel to undergo an annual performance test. A service provider meeting the requirements of Enclosure (4) of this NVIC and accepted by the Coast Guard for testing VDRs/ S-VDRs should conduct the performance test. A list of current Coast Guard accepted VDR/S-VDR service providers can be

found on CGMIX

(<https://cgmix.uscg.mil/EQLabs/EQLabsSearch.aspx?SortOrder=ByNumber>) under approval series 165.152.

- (a) The VDR/S-VDR system should be tested to verify the accuracy, duration, and recoverability of the recorded data. In addition, tests and inspections should be conducted to determine the serviceability of all protective enclosures and devices fitted to aid location. IMO has published IMO MSC.1/Circ.1222 “Guidelines on Annual Testing of Voyage Data Recorders (VDR) and Simplified Voyage Data Recorders (S-VDR)” which all approved VDR/S-VDR service providers should follow.
- (b) The service provider should issue a certificate of compliance if the VDR/S-VDR successfully passed the test. The certificate should be retained onboard the ship.

## **Coast Guard Type Approval Process for Navigation Equipment**

### **1. Purpose.**

This enclosure contains guidance on processes and procedures for Coast Guard type approval of navigation equipment for ships.

### **2. Independent laboratory.**

Examinations, tests, and inspections described in section 4 of this enclosure should 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 online at <https://cgmix.uscg.mil/>.

### **3. Quality system.**

Manufacturers should produce approved navigation equipment under an audited quality system as described in Enclosure (3).

### **4. Approval procedure.**

- (a) The Coast Guard will follow the procedures in 46 CFR Subpart 159.005. Pre-approval review by the Coast Guard is not recommended.
- (b) The independent laboratory should 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 (1). The independent laboratory's test report should show the test results as well as 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 identified in 46 CFR 159.005-11 and 46 CFR 159.005-12, the manufacturer should ensure that Commandant (CG-ENG-3) receives the results of the quality system assessment described in Enclosure (3).
- (d) The manufacturer may request Commandant (CG-ENG-3) to renew a certificate of approval that is about to expire. The request for renewal should include the following:
  - (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) The markings required for an item of navigation equipment should, at a minimum, be in English.
- (b) The navigation equipment should be marked with the following information:
  - (1) Name and address of the manufacturer,
  - (2) Description of the equipment using the title of the section 3 of Enclosure (1) 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 should 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 should be in a place where they are visible without removal or disassembly of the equipment.

**6. Checklist for application submittal.**

New application for Coast Guard approval certificate should include the following information:

- (a) Copy of evaluation and complete test report performed by an independent laboratory,
- (b) Copy of all certifications received as a result of the test report in (a),
- (c) Example of the marking and labeling of the equipment,
- (d) Copy of the manufacturer's quality system manual and guidelines, and
- (e) Name and address of the manufacturer as they wish for it to appear on the certificate.

**7. Alternative process for navigation equipment onboard US Naval Auxiliaries**

Many US deep draft vessels on international voyage and certificated by the Coast Guard are Naval Auxiliaries operated by the Military Sealift Command (MSC) or the Maritime Administration (MARAD). Compliance with SOLAS and other international conventions is voluntary for these vessels and they are not subject to Port State Control.



The navigation equipment and systems on these vessels often meet MILSPEC standards, rather than applicable international standards, and align with equipment used on U.S. Naval vessels. The manufacturers that produce MILSPEC equipment are generally the same manufacturers that produce Coast Guard approved equipment. Additionally, this equipment is usually very robust and suitable for its intended use. In the past MSC has asked the Coast Guard to evaluate this equipment as equivalent to the requirements of SOLAS Regulation V/18.

A navigation equipment manufacturer may request a Coast Guard letter of equivalency for equipment intended for vessels operated by MSC or MARAD. The request should include the following information:

- (a) A comparison of MILSPEC standards that the equipment complies with to the applicable international standards listed in Enclosure (1), and
- (b) A statement indicating the equipment has a satisfactory operating history on naval vessels.

Testing by a Coast Guard accepted independent laboratory is not required.

Manufacturers desiring Coast Guard approval of their navigation equipment so that it may be used on all vessels must provide the information listed in section 6 of this enclosure.

## **Manufacturer's Quality System Requirements**

### **1. Purpose.**

This enclosure contains guidance on meeting the quality system requirements of SOLAS Chapter V, Regulation 18.5. This includes the procedures under which production control of approved equipment is maintained through the manufacturer's audited quality system. Manufacturers may arrange for continuing quality system assessment and audit as described in this enclosure.

### **2. Application for assessment.**

The International Accreditation Forum (<http://www.iaf.nu/>) has membership bodies in countries all over the world. These IAF members conduct and administer programs by which they accredit bodies for certification/registration of quality systems, products, services, personnel, environmental management systems as well as other programs of conformity assessment. It is these third-party Certification Bodies (CBs), which have been accredited by the IAF membership bodies that can certify a manufacturer's quality system registration according to ISO 9001, or other quality system registration standards.

The manufacturer should apply to a third-party CB, which has been accredited by an IAF membership body, to assess the quality system covering the equipment concerned. The Coast Guard will accept an ISO 9001, or other quality system registration standards certification from any CB that has been accredited by any IAF membership body world-wide.

For reference, the IAF U.S. accreditation body for ISO 9001 is the ANSI-ASQ National Accreditation Board (ANAB) (<http://anab.org/>). On ANAB's website, manufacturers can find a list of CBs to become certified to ISO 9001, or other quality system registration standards.

### **3. Quality system requirements.**

- (a) The quality system should 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 should be documented in a systematic and orderly manner in the form of written policies, procedures and instructions.
- (b) The quality-system documentation should permit a consistent interpretation of the quality programs, plan, manuals and records. It should, in particular, include an adequate description of the following items:
  - (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.

**4. Assessment of quality system by a Certification Body (CB).**

- (a) A third-party CB should assess the quality system to determine whether it satisfies the requirements in section 3.
- (b) The auditing team should have at least one member from the independent laboratory responsible for the inspections and tests conducted for approval of the equipment. The assessment procedure should include a visit to the manufacturer's premises. In the event that an independent laboratory representative is not available, the CB will propose an alternate member who has knowledge and experience in the relevant technology. The alternate member is subject to the acceptance of Commandant (CG-ENG).
- (c) The manufacturer and Commandant (CG-ENG) should be notified of the results of the assessment. The notification should include the conclusions of the examination and the reasoned assessment decision.

**5. Obligations under the quality system.**

- (a) The manufacturer should 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 should keep the CB that has approved the quality system informed of any intended revision of that quality system.
- (c) The CB should assess the revisions proposed and decide whether the revised quality system will still satisfy the requirements in section 3 or whether a reassessment is required.
- (d) The manufacturer should be notified of the CB's decision. The notification will include the conclusions of the examination and the reasoned assessment decision.

**6. Quality system surveillance.**

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

- (b) The manufacturer should allow the CB access for inspection purposes to the locations of manufacture, inspection, testing and storage, and should provide it with the following:
  - (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 CB should periodically carry out audits to make sure that the manufacturer maintains and applies the quality system and should provide the manufacturer with audit reports. In addition, the CB may pay unannounced visits to the manufacturer. During such visits the CB may carry out tests or cause tests to be carried out to check that the quality system is functioning correctly, if necessary. The CB should provide the manufacturer with a visit report and, if a test has taken place, with a test report.

## **Coast Guard Approval Process for Voyage Data Recorder and Simplified Voyage Data Recorders Service Providers**

### **1. Purpose.**

This enclosure provides guidance on the procedure by which service providers can receive Coast Guard approval to perform the annual performance testing for Voyage Data Recorders (VDRs) or Simplified Voyage Data Recorders (S-VDRs).

### **2. Service provider.**

A service provider can be, but is not limited to, an independent laboratory, manufacturer, or sales representative. After meeting the criteria in this enclosure and receiving Coast Guard approval, service providers will be certified to perform the annual inspection of VDRs/S-VDRs.

### **3. Quality system.**

The service provider should have in place an audited quality system as described in the following:

- (a) The quality system should 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.
- (b) The quality system documentation should permit a consistent interpretation of the quality programs, plan, manuals and records. It should, in particular, include an adequate description of the following:
  - (1) Quality records, such as inspection reports, test data, and calibration data,
  - (2) Training plan and qualification reports of the personnel performing the annual certification,
  - (3) Maintenance and documentation of training received by each approved inspector,
  - (4) Documented procedures and instructions for how to carry out testing and examination of radio equipment,
  - (5) Documented procedures and instructions for operation of each item of the testing equipment should be available at all times,
  - (6) Means of monitoring the testing procedures of the required equipment and the effective operation of the quality system, and
  - (7) Periodic review of the testing process, complaints, corrective action, maintenance and control of documents.

#### **4. Coast Guard assessment.**

The Coast Guard will assess the quality system to determine whether it satisfies the criteria in section (3).

The following documents should be submitted as part of the Coast Guard assessment:

- (a) Description of the service provider's organizational structure, management hierarchy and a list of any subsidiaries that should be part of the final approval,
- (b) Documented procedures covering the requirements of section (3),
- (c) Documented training and experience of the service provider with servicing of the VDR/S-VDR equipment,
- (d) Type and model of equipment that will be used in the annual testing procedure,
- (e) List of service personnel and their training,
- (f) List of activities that may present a conflict of interest for the service provider, and
- (g) Authorization by the equipment's manufacturer.

#### **5. Obligations under the quality system.**

- (a) The service provider should fulfill the obligations arising out of the quality system as approved and maintain it so that it remains adequate and efficient.
- (b) The service provider should keep the Coast Guard informed of any intended revision of the quality system.
- (c) The Coast Guard will assess the revisions proposed and decide whether the revised quality system will still satisfy the criteria in section 3 or whether a reassessment is required.
- (d) The service provider will be notified of the Coast Guard's decision. The notification will include the conclusions of the examination and the reasoned assessment decision.

#### **6. Quality system surveillance.**

The service provider should arrange for continuing quality system surveillance by a Certified Body as defined in section (2) of Enclosure (3) to this NVIC. The purpose of surveillance is to make sure that the service provider meets the obligations of the approved quality system.



The service provider should be able to provide to the Coast Guard, upon request and for inspection purposes, all the necessary information pertaining to the quality system documentation and the quality records, such as inspection reports, test data, calibration data, qualification reports of the personnel concerned and other relevant data.

## **7. Termination of approval.**

The approval for the service provider to perform the annual testing of VDR/S-VDR equipment terminates if the service provider -

- (a) Requests termination,
- (b) Is no longer in business,
- (c) Knowingly fails to perform or supervise the annual inspection, or
- (d) Contracts or transfers the performance or supervision of required inspections or tests to another service provider without the approval of the Commandant as set forth in section 5 of this enclosure.

## **8 Reference documents.**

### (a) For Voyage Data Recorders

- (1) SOLAS 1974, as amended
- (2) IMO Circular MSC.1/Circ. 1222: Guidelines on Annual Testing of Voyage Data Recorders (VDR) and Simplified Voyage Data Recorders (S-VDR)
- (3) IMO Resolution MSC.330(90)
- (4) IEC standards IEC 60945, IEC 61162, IEC 61996-1, and IEC 62288

### (b) For Simplified Voyage Data Recorders

- (1) SOLAS 1974, as amended
- (2) IMO Circular MSC.1/Circ. 1222: Guidelines on Annual Testing of Voyage Data Recorders (VDR) and Simplified Voyage Data Recorders (S-VDR)
- (3) IMO Resolution MSC.163(78) as amended by MSC.214(81)
- (4) IEC standards IEC 60945, IEC 61162, IEC 61996-2 and IEC 62288

**Coast Guard Approval Process for Equipment Wheelmarked by a European Notified Body and Tested by a Non U.S. Coast Guard Accepted Laboratory**

**1. Purpose.**

The intent of this enclosure is to provide guidance on the approval process for navigation equipment as required by SOLAS Regulation V/18 for equipment that has already received a wheelmark by an EU Notified Body and has been tested by an independent laboratory not accepted by the U.S. Coast Guard.

**2. Alternate approval.**

The Commandant (CG-ENG-3) may issue a Coast Guard approval certificate for navigation equipment where testing has determined that the navigation equipment has received full approval from an EU Notified Body and meets the criteria identified by Enclosures (2) and (3) of this NVIC.

**3. Coast Guard assessment.**

- (a) The Coast Guard will assess the test report from the independent laboratory, the certification by the EU Notified Body, and the manufacturers' quality system manual and guidelines as described in Enclosures (2) and (3) of this NVIC.
- (b) The following documents should be submitted as part of the Coast Guard assessment:
  - (1) Copy of the evaluation and complete test report performed by an independent laboratory,
  - (2) Copy of all certifications received as a result of the test report in (1),
  - (3) Example of the marking and labeling of the equipment, and
  - (4) Copy of the manufacturers' quality system manual and guidelines.

## **Coast Guard Approval Process for Long Range Identification and Tracking (LRIT) Equipment.**

### **1. Purpose.**

This enclosure provides guidance on equipment used to transmit LRIT information, including type approval of LRIT equipment. SOLAS Regulation V/19-1.6 specifies that the equipment to be used to transmit LRIT information shall be of a type approved by the Administration. Transmission of LRIT information can be accomplished with new equipment designed to transmit LRIT information or previously type approved existing equipment adapted to transmit LRIT information, such as global maritime distress and safety system (GMDSS). A separate LRIT type approval for previously type approved equipment adapted to transmit LRIT information is not recommended. Therefore, demonstration of compliance with Regulation V/19-1.6 will be different for new and existing equipment; see paragraphs 3 and 4 below for more details.

### **2. Reference documents.**

- (a) International Convention for the Safety of Life at Sea, 1974, as amended (SOLAS)
- (b) Resolution A.789(19) – Specification on the Survey and Certification Functions of Recognized Organizations on Behalf of the Administration
- (c) 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
- (d) IEC 60945 – Maritime navigation and radiocommunication equipment and systems – General requirements – Methods of testing and required test results
- (e) Resolution MSC.263(84) as amended by MSC.330(90) – Revised Performance Standards and Functional Requirements for the Long-Range Identification and Tracking of Ships
- (f) MSC.1/Circ.1307 – Guidance on the Survey and Certification of Compliance of ships with the Requirement to Transmit LRIT Information

### **3. Type approval for new equipment manufactured to comply with SOLAS V/19-1.6.**

In order for a manufacturer to obtain Coast Guard type approval for equipment designed to comply with SOLAS Regulation V/19-1.6 (as amended):

- (a) It should have a USCG Independent Lab or EU Notified Body certify that the LRIT equipment complies with IEC 60945 (2002-08) and IEC 60945 Corr.1 (2008-04). Manufacturers should follow the established type approval procedures in Enclosure (2) or (5) of this NVIC, as applicable.

- (b) It should have a United States authorized application service provider (ASP) conduct the conformance test of Annex 1 of MSC.1/Circ.1307 and issue a conformance test report per Appendix 2 of the circular. A list of ASPs authorized by the United States may be obtained from USCG Headquarters (CG-7611). More information on LRIT can be found online (<https://www.navcen.uscg.gov/>) or contact the LRIT Business Help Desk at 1-866-944-LRIT (5748).
- (c) Once (a) and (b) have been completed, the conformance test report results and USCG Independent Lab or EU Notified Body certification should be sent to:

Commandant (CG-ENG-3)  
US Coast Guard Stop 7509  
2703 Martin Luther King Jr Ave SE  
Washington DC 20593-7509  
Email: [typeapproval@uscg.mil](mailto:typeapproval@uscg.mil)

The Coast Guard will then issue a type approval certificate to the manufacturer and list the equipment in the CGMIX and MISLE databases. Compliance with SOLAS Regulation V/19-1.6 onboard the vessel using this equipment may be determined by checking to ensure this equipment is listed in these databases under approval series 165.207.

- (d) Outside of USCG Type approval, radio transmission equipment used for LRIT will need to meet the requirements of the Federal Communications Commission's (FCC) regulations for equipment authorization, 47 C.F.R. parts 2 and 80. This is done by the FCC independently of the Coast Guard. In most cases, existing transmission equipment modified for use as LRIT will already have met the FCC's requirement. If there is any question whether modification to transmission equipment will affect FCC approval, the manufacturer should contact the FCC.

#### **4. LRIT installations using existing equipment (e.g. GMDSS).**

If existing equipment is used to transmit LRIT information, the manufacturer should complete only the conformance test as described in 3(b) above. In these cases, the ship using the existing equipment should demonstrate compliance with SOLAS Regulation V/19-1.6(as amended) via the conformance test report issued by the ASP.

As noted above, these installations will not be type approved for LRIT by the Coast Guard. Compliance with SOLAS Regulation V/19-1.6 onboard the vessel may be determined by checking for an LRIT endorsement on the applicable certificate, radio related certificate and/or record of equipment as defined in paragraph 3.1.2, 3.1.6 and 3.1.7 of MSC.1/Circ.1307 and a completed Conformance Test Report; it is not necessary to check for a separate LRIT type approval number.