

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 01-16

that issue.

- c. This guidance applies to U.S. flagged vessels subject to U.S. domestic chart (or map) and publication carriage requirements codified in Titles 33 and 46 of the C.F.R. and provides a voluntary equivalency to comply with those requirements.

2. ACTION.

- a. Sector Commanders and Officers in Charge, Marine Inspection (OCMI) are encouraged to apprise industry representatives of this Circular and apply its provisions appropriately. Vessel owners and operators, or their representatives, are encouraged to use the procedures and guidelines detailed herein.
- b. Enclosure (1) provides guidance to vessel owners/operators, Authorized Classification Societies and U.S. Coast Guard marine inspectors regarding equivalent measures to meet the chart and publication carriage requirements in 33 C.F.R. Part 164 and the several relevant subchapters of Title 46 C.F.R.¹

3. DIRECTIVES AFFECTED. CG-543 Policy Letter 10-05, *Electronic Navigation Publications Onboard U.S. Vessels*, is superseded by this Circular.

4. BACKGROUND.

Charts:

- a. U.S. regulations require “currently corrected marine charts” of a large enough scale and with enough detail to make safe navigation possible. This requirement first appeared in 33 C.F.R. Part 164 in the mid-1970s and in 33 C.F.R. § 164.72 in the mid-1990s. At the time these regulations were initially promulgated, paper charts were the only official marine charts available. Throughout the development of electronic charts and associated display equipment, the Coast Guard has always interpreted the marine chart carriage requirements in Titles 33 and 46 C.F.R. to mean paper charts published by an official hydrographic agency. Although the U.S. Coast Guard authorized U.S. flagged SOLAS-compliant vessels to use an Electronic Chart Display and Information System (ECDIS) in lieu of paper charts (reference e), that policy did not apply to the U.S. flagged vessels engaged solely on domestic voyages.
- b. The Maritime Transportation Security Act (MTSA) of 2004 directed the Coast Guard to prescribe regulations by 2007 requiring the use of electronic charts on certain U.S. flagged vessels engaged on domestic voyages. At that time, however, U.S. official electronic charts were not available for all U.S. waters. Furthermore, the Radio Technical Commission for Maritime Services (RTCM) advised the U.S. Coast Guard that

¹ The relevant subchapters are Subchapter C (46 C.F.R. §§ 24.15-1 and 26.03-4), Subchapter D (46 C.F.R. §§ 30.15-1 and 35.20-1), Subchapter H (46 C.F.R. §§ 70.15-1 and 78.05-5), Subchapter I (46 C.F.R. §§ 90.15-1 and 97.05-5), Subchapter I-A (46 C.F.R. §§ 108.105 and 109.565), Subchapter K (46 C.F.R. §§ 114.540 and 121.420), Subchapter L (46 C.F.R. §§ 125.170 and 130.330), Subchapter T (46 C.F.R. §§ 175.540 and 184.420), and Subchapter U (46 C.F.R. §§ 188.15-1 and 196.05-5).

its Electronic Chart System (ECS) technical standard, which guides manufacturers in producing these systems, was not sufficiently mature for inclusion by reference in Federal regulations. As such, the Coast Guard continued to allow U.S. flagged vessels engaged on international voyages to use ECDIS to meet the chart carriage requirements, but still required domestic vessels to carry official paper charts. Reference (e).

- c. Pursuant to references (c) and (d), NOAA has taken the position that their official electronic charts met the definition of nautical charts. Additionally, NOAA and the U.S. Army Corps of Engineers have produced official electronic nautical charts and maps for U.S. waters. In April of 2014, NOAA stopped printing lithographic nautical charts and moved to a commercially-available "print on-demand" service. Last, in July of 2015, the RTCM published its latest industry standard for ECS, which it now considers sufficiently mature for use as reference in Federal regulations. Pending promulgation of regulations, the U.S. Coast Guard now considers official electronic charts displayed on electronic charting systems (e.g., SOLAS-compliant or RTCM standard ECS) as equivalent to meeting the chart carriage requirements in Titles 33 and 46 C.F.R. if all conditions regarding electronic charts and displays of enclosure (1) are met.

Publications: Likewise, references (a) and (h) require vessels to carry currently corrected editions of, or applicable currently corrected extracts from, nautical publications necessary for the intended voyage. Paper copies were the only acceptable versions prior to 2010 when the Coast Guard published reference (g) allowing the use of electronic publications under the conditions of redundancy. As stated in Paragraph 3 above, CG-543 Policy Letter 10-05, *Electronic Navigation Publications Onboard U.S. Vessels*², is superseded by this Circular for ease and consistency of reference.

5. DISCUSSION.

Charts:

- a. Through this Circular, the Coast Guard will accept SOLAS-compliant equipment, three specific RTCM classes of ECS; A, B and C and certain electronic publications as equivalent to the carriage requirements of Titles 33 and 46 of the C.F.R.³ This should benefit vessel owners and operators by allowing them to voluntarily use official electronic charts and publications in lieu of paper charts, maps, and publications. Vessel owners should note that this provides an equivalency to certain domestic requirements and does not provide that ECS will be accepted in lieu of SOLAS-required equipment for the purpose of SOLAS certificates.
- b. The Coast Guard recognizes that it has become standard practice for the U.S. domestic fleet to carry and use some form of electronic charts in addition to the paper charts

² Referencing 33 C.F.R. §§ 164.33, 164.72 and 161.4, Policy Letter 10-05 authorized the following navigation publications to be carried in electronic format: U.S. Coast Guard Light List, Local Notice to Mariners, tide-current or river-current tables, U.S. Coast Pilot, and VTS Rules.

³ This guidance provides an equivalency under 46 C.F.R. §§ 24.15-1, 30.15-1, 70.15-1, 90.15-1, 108.105, 114.540, 125.170, 175.540, and 188.15-1. Vessels not regulated under these subchapters of Title 46 of the C.F.R. are not eligible for the equivalency.

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required by Federal regulations. Furthermore, industry has for a number of years, requested authorization from the Coast Guard to substitute electronic charts for official paper charts, which are costly to maintain. By recognizing the use of official electronic charts with the particular system specified in enclosure (1) as equivalent to current regulatory requirements, this Circular may relieve vessel owners and operators of the cost and time spent maintaining a “currently corrected” full portfolio of official paper charts.

- c. Due to the current state of technology, the Coast Guard believes that official electronic charts provide substantially more information to the mariner, and therefore may enhance navigational safety beyond that of official paper charts. Official electronic charts, when displayed on electronic charting systems (with integrated systems such as Electronic Positioning-Fixing Devices, Automatic Identification System, gyro, radar), can provide the mariner with substantially more navigational information than a paper chart. These enhancements better facilitate voyage planning and monitoring and thus may reduce the potential for marine accidents.


Publications: The requirement to carry paper publications means that a large number of printed documents must be accessible to the mariner. Per current industry practice, these publications are stored and displayed by onboard computers readily accessible to the navigation watch. This widespread practice is effective for providing information to mariners and efficient for maintaining updated publications. Since most required publications are only available in electronic format, the Coast Guard considers the electronic publications listed in enclosure (1) to be an acceptable equivalent means of meeting the publication carriage requirements set forth in Titles 33 and 46 C.F.R. and SOLAS Chapter V Regulation 27.

6. **DISCLAIMER.** This guidance is not a substitute for applicable legal requirements, nor is it itself a rule. It is intended to provide operational guidance for Coast Guard personnel and is not intended to nor does it impose legally binding requirements on any party outside the Coast Guard. 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 statutory and regulatory requirements. This Circular is voluntary in that it prescribes no new requirements for the maritime industry. As such, vessel owners and operators may continue using official paper charts and publications in accordance with Titles 33 and 46 C.F.R. until the relevant regulations therein are amended.
7. **DISTRIBUTION.** No paper distribution will be made of the Circular. An electronic version will be located on the following Commandant web sites; Internet: <http://www.uscg.mil/hq/cg5/nvic/default.asp>, and CGPortal: <https://cgportal2.uscg.mil/library/directives/SitePages/Home.aspx>.
8. **ENVIRONMENTAL ASPECT AND IMPACT CONSIDERATIONS.**
 - a. The development of this NVIC and the general policies contained within it have been thoroughly review by the originating office in conjunction with the Office of Environmental Management, and are categorically excluded (CE) under current USCG CE # 33 from further environmental analysis, in accordance with Section 2.B.2 and

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Figure 2-1 of the National Environmental Policy Act Implementing Procedures and Policy for Considering Environmental Impacts, COMDTINST M16475.1 (series).

- b. This directive 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 directive 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.
9. RECORDS MANAGEMENT CONSIDERATIONS. This Circular 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 U.S.C. Chapter 31, NARA requirements, and Information and Life Cycle Management Manual, COMDTINST M5212.12 (series). This policy does not have any significant or substantial change to existing records management requirements.
 10. FORMS/REPORTS. None.
 11. REQUEST FOR CHANGES. Questions regarding this policy should be directed to Coast Guard Headquarters, Office of Navigation Systems (CG-NAV-2), using the contact information provided in the above letterhead.


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Encl: (1) Use of official electronic charts, electronic charting systems and electronic publications

Use of official electronic charts, electronic charting systems and electronic publications

This guidance applies to vessels subject to U.S. chart (or map) and publication carriage requirements codified in Titles 33 or 46 of the Code of Federal Regulations (C.F.R.) and provides an equivalent voluntary means to comply with those requirements. If vessels choose to voluntarily comply with this guidance, then they are subject to the requirements herein. Vessels may continue to comply with carriage requirements using official paper charts, maps, and publications as required by Titles 33 and 46 of the C.F.R. This guidance provides an equivalency only for domestic paper chart requirements and does not provide an equivalency for chart requirements contained in the International Convention for the Safety of Life at Sea, 1974 (SOLAS).

- A. Electronic Chart Carriage. Vessels may use electronic charts provided they are official charts issued by or on the authority of a Government, authorized hydrographic office, or other relevant government institution (“official electronic charts”). Additional information regarding electronic charts may be found in International Hydrographic Organization (IHO) publication, S-66 – Facts About Electronic Charts and Carriage Requirements, Edition 1.0.0 — January 2010. Under the conditions set forth herein, the Coast Guard considers official electronic charts to be equivalent to the charts prescribed in Titles 33 and 46 of the C.F.R.
- B. Electronic Charting System (ECS) Carriage. When displaying official electronic charts, the Coast Guard considers:
1. SOLAS compliant vessels to meet the chart carriage requirements on all waters.
 2. A Radio Technical Commission for Maritime Services (RTCM)¹ class ‘A’ ECS to meet the chart carriage requirements for vessels not on international voyages.
 3. An RTCM class ‘B’ or ‘C’ ECS to meet the chart carriage requirements for vessels operating not more than 12 nautical miles from the territorial sea baseline².
 4. An RTCM class ‘D’ is not equivalent to paper marine charts under this Circular, and therefore does not meet the chart carriage requirements prescribed in Titles 33 and 46 of the C.F.R.
- C. Redundant Arrangement. For vessels using official electronic charts as the primary means of navigation, an independent redundant arrangement is required in order to meet the equivalency, and must be:
1. An equivalent system to the requirement in paragraph B, connected to a back-up power supply separate and independent from the primary system, or
 2. A full folio of official paper charts in accordance with 33 C.F.R. part 164 for the intended voyage.³

¹ ECS classes shall meet the most current RTCM 10900 series ECS standard.

² As defined by 33 C.F.R. § 2.20 and, for the purpose of this policy, including the shoreline of the Great Lakes.

If official electronic charts are being used as the primary and back-up means of navigation, the equipment identified in Section E (Integration) of this enclosure must be integrated with the redundant arrangement as outlined.

D. Training. The following training is considered to meet the equivalency for U.S. flagged vessels electing to use official electronic charts in accordance with this Circular.

1. RTCM ECS class 'A': The Coast Guard considers an RTCM class 'A' to function closely to an Electronic Chart Display and Information System (ECDIS). Therefore, for the purposes of this policy, all mariners in charge of a navigational watch and using a class 'A' ECS must possess a successful completion certificate from a Coast Guard approved ECDIS course and have the appropriate endorsement on their Merchant Mariner Credential (MMC). The Coast Guard considers this training to meet the requirement of 46 C.F.R. § 15.405.
2. RTCM ECS class 'B' and 'C': Title 46 C.F.R. § 15.405 requires that each credentialed crewmember must be familiar with installed navigation equipment prior to assuming their duties. This requirement applies to RTCM class 'B' or 'C' ECS equipment used pursuant to this Circular. To achieve the required familiarity, companies must follow manufacturer's standards, user's manuals, and company policies to document watch stander competency.

Mariners serving on U.S. flagged vessels, currently holding the ECDIS endorsement on their MMC, are compliant with this Circular and do not require additional training in order to navigate using official electronic charts displayed on an RTCM standard ECS authorized by this Circular. Mariners will not meet the equivalency requirement using official electronic charts as the primary means of navigation without meeting the above training requirements.

E. Integration. ECSs are most functional for navigational safety when fully interfaced with installed navigation equipment.

1. The following equipment, if installed, must be integrated with the ECS in order to meet the equivalency:
 - a. External electronic position-fixing device providing position information,
 - b. Automatic Identification System (AIS),

³ If paper charts are being used as the back-up, they must be readily available and the voyage plan should be indicated on them. Section 164.33(c) of Title 33 of the C.F.R. defines "currently corrected" as it applies to charts, U.S. Coast Pilot, and Coast Guard Light List. The IHO defines "official charts" as those "charts issued by or on the authority of a Government, authorized hydrographic office or other relevant government institution." IHO publication, S-66 – Facts About Electronic Charts and Carriage Requirements, Edition 1.0.0—January 2010, p. 10. Section 164.33 of Title 33 of the C.F.R. includes the National Ocean Service of National Oceanic and Atmospheric Administration (NOAA) and U.S. Army Corps of Engineers as United States sources for charts.

- c. Gyro-compass or other means to determine and display the vessel's heading by vessel borne non-magnetic means and transmit heading information⁴, and
 - d. Marine radar.
2. The Coast Guard further recommends the following equipment, if installed, also be integrated with the ECS:
- a. Magnetic compass; and
 - b. Voyage data recorder or simplified voyage data recorder.
- F. Electronic Publications Carriage. Vessels may maintain the navigation publications required by 33 C.F.R. §§ 161.4, 164.33, and 164.72 and SOLAS Chapter V Regulation 27 in electronic format provided that they are derived from the original source, currently corrected/up-to-date and readily accessible on the vessel's bridge by the crew. Those publications are: U.S. Coast Pilot, Sailing Directions, Coast Guard Light List, List of Lights, tide-current and river-current tables, Notice to Mariners, Local Notice to Mariners, Notices to Navigation, and Vessel Traffic Rules. If electronic publications are used, vessels must retain a redundant copy in the event the primary electronic format becomes inaccessible. The redundant copy may be a second computer, CD, or portable mass storage device readily displayable to the navigation watch, or a paper copy.

⁴ Recommendations on Performance Standards for Marine Transmitting Heading Devices (THD) (resolution MSC.116(73)).