



NVIC 01-16 CH-3  
18 AUG 2025

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 01-16 – CH- 3

Subj: EQUIVALENCY DETERMINATION FOR CHART AND PUBLICATION CARRIAGE REQUIREMENTS, NVIC 01-16 CH-3, COMDTPUB 16700.4

Ref: (a) Title 33, Code of Federal Regulations, part 164  
(b) Title 46, Code of Federal Regulations, various parts  
(c) NOAA Technical Memorandum NOS CS 60, Best Practices for Creation and Maintenance of ENC-Derived Paper Nautical Charts  
(d) Radio Technical Commission for Marine Services (RTCM) – Standard for Electronic Chart Systems (ECS) 10900 (series)

1. PURPOSE. This circular describes equivalencies for electronic charts, electronic publications, and ENC-derived paper charts in lieu of the carriage requirements found in references (a) and (b) and to provide procedures for conducting inspections for vessels electing to comply with one or more of the equivalencies described herein.

2. ACTION.

- a. Officers-in-Charge, Marine Inspection, and Authorized Classification Societies and Third-Party Organizations conducting inspections or surveys on behalf of the Coast Guard, must ensure the provisions of this circular are adhered to for those vessels electing to comply with one or more of the equivalences described herein.
- b. Vessel owners and operators subject to the chart and publication carriage requirements of 33 or 46 CFR may comply with the equivalencies described in Enclosure (1).

3. DIRECTIVES AFFECTED. NVIC 01-16 CH-2 is superseded.

4. BACKGROUND. In 2016, NVIC 01-16 was published to support the growing use of Electronic Chart Systems (ECS), Electronic Navigational Charts (ENC), and Inland Electronic Navigational Charts (IENC). Subsequently, two changes were issued to update the information and requirements necessary for electronic navigation.

In 2019, the National Oceanic and Atmospheric Administration (NOAA), Office of Coast Survey (OCS) announced its intention to discontinue paper chart production. In July 2024, NOAA released version 3.0 of their online custom chart tool. This tool allows mariners to select and download ENC-Derived customized paper charts, choosing the areas that are needed for

## NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 01-16 – CH-3

their voyage. In November 2024, NOAA published *Technical Memorandum NOS CS 60, Best Practices for Creation and Maintenance of ENC Derived Paper Nautical Charts*, reference (c).<sup>1</sup>

The Radio Technical Commission for Maritime Services (RTCM) develops the Standard for Electronic Chart Systems (ECS), reference (d).<sup>2</sup> This standard defines the classes of ECS which are incorporated into the equivalency in enclosure (1).

5. EQUIVALENCY DETERMINATION. Enclosure (1) describes three equivalencies—for electronic charts, electronic publications, and ENC-derived paper charts, respectively—as compliance options in lieu of the carriage requirements found in titles 33 and 46 of the Code of Federal Regulations (CFR). Vessels subject to the carriage requirements in 33 and 46 CFR may elect to comply with one or more of the equivalencies. Enclosure (2) describes inspection procedures applicable to vessels electing to comply with one or more of the equivalencies described in Enclosure (1).

6. DISCLAIMER. This guidance is not a substitute for applicable legal requirements, nor is it itself a rule. It is intended to provide administrative guidance for Coast Guard personnel and is not intended 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 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 References (a) and (b) until the relevant regulations therein are amended.

7. ENVIRONMENTAL ASPECT AND IMPACT CONSIDERATION. The Office of Environmental Management, Commandant (CG-47) reviewed this circular and the general policies contained within, and determined that this policy falls under the Department of Homeland Security (DHS) categorical exclusion A3. This circular will not result in any substantial change to existing environmental conditions or violation of any applicable federal, state, or local laws relating to the protection of the environment. It is the responsibility of the action proponent to evaluate all future specific actions resulting from this policy for compliance with the National Environmental Policy Act (NEPA), other applicable environmental requirements, and the U.S. Coast Guard Environmental Planning Policy, COMDTINST 5090.1 (series).

8. MAJOR CHANGES. This change to NVIC 01-16 revises the following:

- a. Enclosures (1) and (2) updates provide ENC-Derived Printed Paper Charts and Electronic Chart Carriage equipment equivalency and guidance, which align with NOAA’s Technical Memorandum NOS CS60 and the Radio Technical Commission for Maritime Services (RTCM), Standard for Electronic Chart Systems
- b. Enclosure (1) updates contain guidance for mariners seeking an equivalency for chart and publication carriage requirement, as listed in titles 33 and 46 of the CFR.

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<sup>1</sup> NOAA Technical Memorandum NOS CS 60 can be found at <https://repository.library.noaa.gov/view/noaa/66438>

<sup>2</sup> Radio Technical Commission for Maritime Services’ Publications can be found at <https://www.rtcn.org/publications>

## NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 01-16 – CH-3

- c. Table 1 was added to enclosure (1), illustrating minimum electronic chart hardware carriage requirements based on vessel type and location.
- d. Enclosure (2) updates provide marine inspectors guidance to make chart and publication carriage requirement equivalency determinations.

9. DISTRIBUTION. No paper distribution will be made of this NVIC. An electronic version will be located at <https://www.dco.uscg.mil/Our-Organization/NVIC/>

10. RECORDS MANAGEMENT CONSIDERATIONS. This circular has been thoroughly reviewed during the directive's clearance process, and it has been determined there are no further records scheduling requirements, in accordance with Federal Records Act, 44 U.S. Code 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.

11. FORMS/REPORTS. None.

12. REQUEST FOR CHANGES. Submit recommended changes or questions regarding this circular to Coast Guard Headquarters, Office of Navigation Systems (CG-NAV-2), using the contact information provided in the above letterhead.



W. R. Arguin,  
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Assistant Commandant for Prevention Policy.

Encl: (1) Equivalency Determinations for "Marine Charts" or "Maps," Publications, and Navigation Functions  
(2) Procedures for Inspecting Electronic Charts, Publications, and Rules

## **EQUIVALENCY DETERMINATIONS FOR “MARINE CHARTS” OR “MAPS,” PUBLICATIONS, AND NAVIGATION FUNCTIONS**

This enclosure describes three equivalencies for the chart and publication carriage requirements in 33 and 46 CFR. Vessels may continue to comply with carriage requirements using printed paper charts, maps, publications, as long as they are produced by a government hydrographic authority such as the National Oceanic and Atmospheric Administration (NOAA), United States Army Corps of Engineers (USACE), a river authority, or a foreign government. The equivalency described in this enclosure is only for domestic carriage requirements; it does not relieve any requirements contained in the International Convention for the Safety of Life at Sea, 1974 (SOLAS).

For the purposes of this NVIC, “marine charts,” “charts,” or “maps” as required by titles 33 and 46 of the CFR, can be data that conforms to the International Hydrographic Organization’s definition of an Electronic Navigational Chart (ENC), data issued by or on the authority of a government, authorized hydrographic office or other relevant government institution. Furthermore, “marine charts,” “charts,” or “maps” can be data that conforms to the Inland ENC Harmonization Group (IEHG) standard (e.g. Inland Electronic Navigational Chart (IENC)). ENC and IENC are henceforward referred to, generically, as ENC for the ease of reading.

This guidance is not a substitute for applicable legal requirements, nor is it itself a rule. Mariners are responsible to safely navigate and follow applicable regulatory requirements. To be eligible for the electronic charts and publications equivalency available under this NVIC, mariners must meet the following requirements.

1. **Electronic Navigational Charts and Electronic Chart Systems.** The following criteria applies to vessels electing to carry electronic charts in lieu of paper charts:
  - a. ENCs must be of the area to be transited, displayed in a large enough scale, and portray enough detail to make safe navigation of the area possible.
  - b. ENCs, including all updates, must be displayed without any degradation of its information content according to the relevant chart content and display standard, as specified by the issuing authority.<sup>3</sup>
  - c. ENCs must be the latest version reasonably available, including the latest update.
  - d. All downloaded ENC data intended for the voyage must be displayed on an Electronic Chart System (ECS) that complies with the minimum standard for the applicable subchapter and route as described in Table 1.<sup>4</sup>

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<sup>3</sup> For ENCs the relevant standard is IHO S-52 – Specifications for Chart Content and Display Aspects of ECDIS. For IENCs the relevant standard is IHO S-52 and IEHG Inland ECDIS Standard (series). Where content display standards are not specified, manufactures are still responsible to portray the features.

<sup>4</sup> Manufacturers can ensure their systems display all data by testing their product to the appropriate test set(s). IHO S-64 – IHO Test Data Sets for ECDIS and/or the USACE IENC Standard Exchange Set (series).

- e. The ECS display must indicate the issuing authority, cell name, edition, and associated update(s) of the ENC.
- f. A type-approved EPFD must provide the position data to the ECS.

Table 1: Electronic Chart System Minimum Hardware Table

Applicable CFR (Vessel Type)	Seaward of Boundary Line <sup>5</sup>		Inside of Boundary Line	
	RTCM Class B ECS with IEC Hardware <sup>6</sup>	RTCM Class A or ECDIS	RTCM Class B ECS	RTCM Class B with Backup <sup>7</sup>
<b>46 CFR 26.03-4 (Uninspected Vessels)</b>	X	Optional	X	Optional
<b>46 CFR 28.225 (Commercial Fishing Vessels)</b>	X	Optional	X	Optional
<b>46 CFR 35.20-1 (Tank Vessels)</b>	X	Optional	N/A	X
<b>46 CFR 78.05-5 (Passenger Vessels: <i>H-Boats</i>)</b>	X	Optional	X	Optional
<b>46 CFR 97.05-5 (Cargo Vessels)</b>	X	Optional	N/A	X
<b>46 CFR 109.565 (MODU)</b>	X	Optional	N/A	X
<b>46 CFR 121.420 (Small Passenger Vessels: <i>K-Boats</i>)</b>	X	Optional	X	Optional
<b>46 CFR 130.330 (Offshore Supply Vessels)</b>	X	Optional	X	Optional
<b>46 CFR 140.705 (Towing Vessels)</b>	X	Optional	X	Optional
<b>46 CFR 167.65-45 (Public Nautical School Vessels)</b>	X	Optional	X	Optional
<b>46 CFR 169.809 (Sailing School Vessels)</b>	X	Optional	X	Optional
<b>46 CFR 184.420 (Small Passenger Vessels &lt;100GT: <i>T-Boats</i>)</b>	X	Optional	X	Optional
<b>46 CFR 196.05-5 (Oceanographic Research Vessels)</b>	X	Optional	N/A	X

<sup>5</sup> The boundary line, as defined in 46 CFR Part 7, delineates inland and offshore waters.

<sup>6</sup> Vessels in this category must use equipment that meets International Electrotechnical Commission (IEC) - IEC 60945, Maritime navigation and radiocommunication equipment and systems - General requirements - Methods of testing and required test results.

<sup>7</sup> Vessels in this category must also have a secondary/back-up RTCM Class B ECS or ENC-Derived Printed Paper Charts.

2. **ENC-Derived Paper Charts.** The following criteria applies to vessels electing to navigate with ENC-derived printed paper charts:
- The chart is of the area to be transited, printed using data from the National Ocean Service (NOS), U.S. Army Corps of Engineers (USACE), National Geospatial-Intelligence Agency (NGA), a river authority, or a foreign government.
  - The chart is printed in a large enough scale and portrays enough detail to make safe navigation of the areas possible.
  - The chart has been printed within 6 months of the intended voyage.
  - The chart complies with reference (c) which includes being printed on paper or other media that is comparable to traditional paper nautical charts, whether by a plotter or by lithographic processes. This includes being relatively stable – not easily torn and not susceptible to excessive stretching or shrinking – and has the ability to easily take on and erase penciled plot lines and notes, ink that does not smear or rub off and is somewhat water resistant.
3. **Electronic Publications and Rules.** Publications, as required by title 33 and title 46 of the CFR, can be kept in electronic format provided the following conditions are met:
- The information is provided by the originating agency, is the latest version, including the latest update reasonably available, and for the area to be transited.
  - The operator can access the information according to Table 2.

Table 2: Electronic Publication/Rule Carriage

<b>Publication/Rule</b>	<b>Originator</b>	<b>Accessible without Internet</b>	<b>Accessible with Internet</b>
Navigation Rules	USCG	x	Optional
Vessel Traffic Service Rules	USCG	x	Optional
Coast Guard Light List	USCG	Optional	x
Local Notice to Mariners	USCG	Optional	x
U.S. Coast Pilot ®	NOAA	Optional	x
Tide Tables	NOAA	Optional	x
Tidal Current Tables	NOAA	Optional	x
Notice to Mariners	NGA	Optional	x
Sailing Directions	NGA	Optional	x
List of Lights	NGA	Optional	x
Notices to Navigation Interest	USACE	Optional	x
River Current Tables	River Authority	Optional	x

## **PROCEDURES FOR INSPECTING ELECTRONIC CHARTS, PUBLICATIONS, AND RULES**

This enclosure describes inspection procedures applicable to vessels electing to use one or more of the equivalencies described in Enclosure (1). Vessels may continue to comply with carriage requirements using official paper charts, maps, publications and electronic position fixing devices as required by titles 33 and 46 of the Code of Federal Regulations (CFR). This guidance provides a chart equivalency only for domestic requirements and does not provide a chart equivalency for requirements contained in the International Convention for the Safety of Life at Sea, 1974 (SOLAS) or for the purposes of SOLAS certificates. However, it does provide navigation publication equivalency for all U.S. vessels.

1. **Pre-Inspection.** Prior to commencing the inspection, inspectors should familiarize themselves with the latest editions and revisions of ENC's and navigational publications. A complete ENC is comprised of the latest edition available, plus the latest revisions. Issuance of a new edition supersedes all previous editions and revisions. Inspectors can determine whether a chart is an ENC by the same means used to validate the authenticity of a paper chart (e.g., issuing authority, edition, latest update, and visual inspection).
2. **Inspection of Electronic Chart System (ECS) Displays.**
  - a. The inspector should review the ECS display system type approval documentation or a manufacturer's declaration of conformity to verify it is the appropriate display system type in accordance with Enclosure (1), Table 1.
  - b. ENC data intended for portrayal must be displayable. The purpose of this is to ensure that the system can show all the features provided by the issuing authority. Minimum display sizes and requirements are:
    - i. RTCM Class A: 9.8" horizontal and 9.8" vertical
    - ii. RTCM Class B: 7.8" horizontal and 7.8" vertical
    - iii. ECDIS: 10.6" horizontal and 10.6" vertical
  - c. The inspector should verify the vessel position as shown on the ECS display is consistent with the vessel's actual position.
  - d. Marine inspectors should verify that the mariner has familiarization with system functions, such as waypoint plotting, voyage planning, and adjusting scales.
3. **Inspection of ENC-Derived Paper Charts.** The inspector should verify:
  - a. Each ENC-derived paper chart was printed within the last six months or has been manually corrected within the last six months prior to the inspection.
  - b. The charts provided encompass the entire area of operations of the vessel, which does not necessarily include the entirety of the route authorized on the Certificate of Inspection.
4. **Inspection of Electronic Publications and Rules.** The inspector should:

ENCLOSURE (2) TO NAVIGATION AND VESSEL INSPECTION CIRCULAR 01-16 – CH-3

- a. Spot check accessibility of electronic publications and rules; verify access is in accordance with Enclosure (1), Table 2.
  - b. Spot check to verify the electronic publications and rules provided are the latest version available.
5. **Deficiencies**. Vessels that do not comply with the regulations nor an equivalency described in Enclosure (1) should be issued a deficiency using the 33 or 46 CFR chart and/or publication carriage cite (e.g., 46 CFR 184.420 for a T-boat).