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NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 01-23

Subj: GUIDANCE FOR THE VOLUNTARY USE OF MARPOL ELECTRONIC RECORD BOOKS ON U.S. FLAG VESSELS

Ref:
(a) International Maritime Organization (IMO) Marine Environmental Protection Committee Resolution MEPC.312(74)
(b) International Maritime Organization (IMO) Marine Environmental Protection Committee Resolution MEPC.314(74)
(c) International Maritime Organization (IMO) Marine Environmental Protection Committee Resolution MEPC.316(74)
(d) International Maritime Organization (IMO) Marine Environmental Protection Committee Resolution MEPC.317(74)
(e) 46 CFR Part 8
(f) International Convention for the Prevention of Pollution from Ships (MARPOL), 2022
(g) The Code for Recognized organizations (RO Code)

PURPOSE. This Navigation and Vessel Inspection Circular (NVIC) provides guidance on the U.S. Coast Guard's process and criteria for assessing, accepting, and verifying onboard electronic record books under the amendments to MARPOL Annexes I, II, V and VI and the Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NOx Technical Code 2008). The United States adopted the MARPOL Convention amendments in references (b)-(d), which entered into force on October 01, 2020. This circular provides guidance for U.S.-flagged vessels that choose to comply with MARPOL record keeping requirements through the use of electronic record books. This circular also provides guidance for foreign-flagged vessels using electronic record books while operating in U.S. waters.

1. ACTION. Headquarters offices under the Assistant Commandant for Prevention Policy and Officers in Charge, Marine Inspection are encouraged to bring this circular to the attention of the marine industry and other marine interests within their areas of responsibility. Internet release is authorized.

2. DIRECTIVES AFFECTED. None.

3. BACKGROUND.

   a. As ship owners and operators increasingly focus on ways to operate in an environmentally responsible manner and aim to ease the burden associated with paperwork through electronic means, keeping operational logs in an electronic format has become a popular consideration. The use of electronic record books has benefits for the retention of records by companies, crew, and officers.

   b. The use of an electronic record book is an alternative method to a hard-copy record book. The electronic record book allows ships to utilize shipboard technology to reduce administrative burdens and contribute to onboard environmental initiatives (e.g., reduction of paper use). Existing U.S. regulations do not specifically address the design and installation of electronic record books on commercial vessels.

4. DISCLAIMER. This guidance is not a substitute for applicable legal requirements, nor is it itself a rule. It is not intended to nor does it impose legally-binding requirements on any party. It represents the Coast Guard's current posture 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. You can use an alternative approach for complying with these requirements if the approach satisfies the requirements of the applicable statutes and regulations.

5. DISCUSSION.

   a. In May of 2019, the IMO adopted amendments to MARPOL Annex I, II, V, VI, and the Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NOx Technical Code 2008), to enable the use of electronic record books, references (b)-(d). These amendments entered into force on October 1, 2020.

   b. Simultaneously, the IMO recognized the need to develop guidance for the use of electronic record books and adopted such guidelines with IMO Resolution MEPC.312(74), reference (a), enclosure (1).

6. PROCEDURE. This circular provides guidance for U.S.-flagged vessels choosing to use electronic record books to satisfy the recordkeeping and logbook requirements established in MARPOL. This circular sets forth the two-step process for assessing electronic record book systems for compliance with guidance issued by the IMO and the onboard verification and issuance of a "Declaration of MARPOL Electronic Record Book" certificate or letter. Coast Guard port state control officers will verify that foreign-flagged vessels using electronic record books while operating in U.S. waters do so in accordance with administration-approved documentation, as outlined below.

   a. Applicable record books: This circular applies to any U.S.-flagged vessel seeking to use electronic record books to meet the recordkeeping requirements in the following MARPOL regulations:

      (1) Oil Record Book, parts I and II (MARPOL Annex I, regulations 17.1 and 36.1);

      (2) Cargo Record book (MARPOL Annex II, regulation 15.1);

(3) Garbage Record Book, parts I and II (MARPOL Annex V, regulation 10.3);

(4) Ozone-depleting Substances Record Book (MARPOL Annex VI, regulation 12.6);

(5) Recording of the tier and on/off status of marine diesel engines (MARPOL Annex VI, regulation 13.5.3);

(6) Record of Fuel Oil Changeover (MARPOL Annex VI, regulation 14.6); and

(7) Record Book of Engine Parameters (NO_x Technical Code, paragraph 6.2.2.7).

b. Manufacturers seeking assessment of electronic record books: Manufacturers of electronic record books seeking to obtain acknowledgment of assessment for general compliance of their product with reference (a) should email their request and supporting documentation noted below to the Coast Guard Office of Design and Engineering Standards (CG-ENG) at: CGENG@uscg.mil.

(1) Manufacturers should obtain and provide documentation attesting to the product's ability to comply with the various International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC) standards referenced within MEPC.312(74) from an Authorized Classification Society (ACS). The ACS making this attestation must possess authorization to issue the MARPOL certificate that corresponds to the electronic record book.[1] The documentation should attest to the product's ability to comply with the following:

i. Audit Logging requirements as outlined by ISO/IEC 27001:2006.

ii. Credential requirements as outlined by ISO 7498-2.

iii. Cryptography requirements as outlined by ISO 7498-2.

iv. Data Requirements as outlined by ISO/IEC 2382-1.

v. Digital Signature requirements as outlined by ISO 7498-2.

vi. Functional Unit requirements as outlined by ISO/IEC 2382-1:1993.

vii. Graphic Character requirements as outlined by ISO 1282-4.

viii. Portable Document Format requirements as outlined by ISO 32000.

ix. Private Key requirements as outlined by ISO/IEC 9594-8.

x. Public Key requirements as outlined by ISO/IEC 9594-8.

[1] See 46 CFR Part 8 and the individual ACS agreements at: https://www.dco.uscg.mil/Our-Organization/Assistant-Commandant-for-Prevention-Policy-CG-5P/Inspections-Compliance-CG-5PC-/Commercial-Vessel-Compliance/Flag-State-Control-Division/ClassSocAuth/

xi. Role Based Access Control requirements as outlined by ISO/IEC 27033-2:2012.

xii. Storage requirements as outlined by ISO/IEC 2382-1:1993.

(2) Following a review of the documentation requested in paragraph 1 of this section, CG-ENG may require in-person or virtual demonstration of the electronic record book by the manufacturer requesting the acknowledgment of assessment for general compliance.

(3) Electronic record books that receive an acknowledgment of assessment for general compliance with MEPC.312(74) will be listed on the Coast Guard's website (https://www.dco.uscg.mil/CG-ENG/). It is important to note that this acknowledgment by the Coast Guard does not constitute allowance for use on a particular U.S.-flagged vessel. This acceptance authorizes those electronic record books to be considered for use on a U.S.-flagged vessel, as outlined below.

c. U.S.-flagged vessels seeking use of assessed electronic record books: In order to use a Coast Guard assessed electronic record book to meet MARPOL requirements, ship owners and operators must obtain a Declaration of MARPOL Electronic Record Book. Per 46 CFR § 8.130, the Coast Guard has delegated authority to multiple ACS to issue convention certificates on behalf of the United States. For the purpose of electronic record books, an ACS with MARPOL delegations may issue a "Declaration of MARPOL Electronic Record Book" if the ACS possesses the specific authorization for the delegation from which that electronic record book stems.[2] For example, an ACS that may issue an International Oil Pollution Prevention Certificate on behalf of the United States may also issue the "Declaration of MARPOL Electronic Record Book" for Oil Record Book Parts I and II.

(1) Ship owners and operators seeking to use an accepted product listed on the Coast Guard's website (https://www.dco.uscg.mil/CG-ENG/) should apply to the ACS that issued the applicable IMO certification. Per the Recognized Organization (RO) Code, Part 2.3, an ACS and its staff responsible for carrying out the statutory certification and services related to the "Declaration of MARPOL Electronic Record Book" shall not be the designer, manufacturer, supplier, installer, purchaser, owner, user, or maintainer of the item subject to the statutory certification and services, nor the authorized representative of any of these parties.

(2) An ACS may require the following information prior to issuing an approved "Declaration of MARPOL Electronic Record Book":

[2] A complete list of ACSs with individual authorizations is located on the Coast Guard's website: https://www.dco.uscg.mil/Our-Organization/Assistant-Commandant-for-Prevention-Policy-CG-5P/Inspections-Compliance-CG-5PC-/Commercial-Vessel-Compliance_/Flag-State-Control-Division/ClassSocAuth/.

i. the name of the ship;

ii. the IMO number;

iii. the official number;

iv. the gross tonnage; and

v. for each electronic record book sought to be implemented:

(a) the manufacturer;

(b) the supplier (if different);

(c) the installer (if different);

(d) the software name/version; and

(e) the date of installation for each electronic record book.

(3) Upon successful application and onboard verification by the ACS in accordance with reference (a) section 4, the vessel will be issued a "Declaration of MARPOL Electronic Record Book" from an ACS on behalf of the United States Government. This declaration will be required to be kept onboard the vessel for inspection.

(4) If a vessel is not serviced by an ACS, the owner or operator may apply to the local Officer in Charge, Marine Inspection (OCMI) for a "Declaration of MARPOL Electronic Record Book" to use an accepted product that is listed on the Coast Guard's website (https://www.dco.uscg.mil/CG-ENG/).

(a) Upon successful application and onboard verification by a Coast Guard marine inspector, in accordance with reference (a) section 4, the OCMI will issue a "Declaration of MARPOL Electronic Record Book" letter.

(b) This declaration will be required to be kept onboard the vessel for inspection.

(5) For inspection and surveying purposes, approved systems shall operate in accordance with reference (a).

(6) Ship owners and ship operators shall ensure the continued compliance with all MARPOL requirements.

d. Safety Management System (SMS): Vessels with a SMS and an electronic record book should have procedures for the use and maintenance of the electronic record books integrated into their SMS. The OCMI may survey or inspect the vessel to ensure the procedures for electronic record books are properly integrated within the vessel's SMS prior to issuing a "Declaration of MARPOL Electronic Record Book" certificate or letter.

e. Foreign-flagged vessels: While operating in U.S. waters, owners and operators of foreign-flagged vessels that elect to comply with MARPOL record keeping requirements through the use of electronic record books will be expected to demonstrate compliance with reference (a) through written documentation from their flag administration or from their Recognized Organization acting on behalf of the administration. Such written documentation should be carried on board the ship for the purpose of regulatory surveys or inspections.

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 in conjunction with the Office of Environmental Management, Commandant (CG-47). This NVIC is categorically excluded under current Department of Homeland Security (DHS) categorical exclusion (CATEX) A3 from further environmental analysis in accordance with "Implementation of the National Environmental Policy Act (NEPA)," DHS Instruction Manual 023-01-001-01 (series).

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 policy in this NVIC must be individually evaluated for compliance with the National Environmental Policy Act (NEPA), Department of Homeland Security (DHS) and Coast Guard NEPA policy, and compliance with all other applicable environmental mandates.

8. 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 the Federal Records Act (44 U.S.C. § 3101 *et seq*.), National Archives and Records Administration requirements, and the Information and Life Cycle Management Manual, COMDTINST M5212.12 (series). This policy does not create significant or substantial change to existing records management requirements.

9. CHANGES. This circular is available online at http://www.dco.uscg.mil/our-organization/nvic/. The Coast Guard will issue and post time sensitive amendments as an urgent change message on its website for the benefit of the industry. Interested parties may suggest improvements to this circular by writing to the office responsible for implementing this guidance listed under Contact Information.

10. CONTACT INFORMATION. For more information on this section including equipment certification or design review, or questions regarding implementation of this NVIC, please contact CG-ENG staff electronically at CGENG@uscg.mil. Alternatively, you may contact CG-ENG staff via physical mail at:

COMMANDANT (CG-ENG)
US COAST GUARD HEADQUARTERS STOP 7430
2703 MARTIN LUTHER KING JR. AVE. S.E.
WASHINGTON, D.C. 20593-7430

11. FORMS/REPORTS. None.

W. R. Arguin
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Assistant Commandant for Prevention Policy

Enclosure: (1) MEPC.312(74) - "*Guidelines for the use of electronic record books under MARPOL*"

ANNEX 1

RESOLUTION MEPC.312(74)
(adopted on 17 May 2019)

GUIDELINES FOR THE USE OF ELECTRONIC RECORD BOOKS UNDER MARPOL

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by international conventions for the prevention and control of marine pollution from ships,

NOTING resolutions MEPC.314(74), MEPC.316(74) and MEPC.317(74), by which it adopted amendments to MARPOL Annexes I, II, V and VI and the Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NO_X Technical Code 2008), respectively, to enable the use of electronic record books,

RECOGNIZING the need to develop guidance for the use of electronic record books,

HAVING CONSIDERED, at its seventy-fourth session, the draft Guidelines for the use of electronic record books under MARPOL, prepared by the Sub-Committee on Pollution Prevention and Response, at its fifth session,

1 ADOPTS the *Guidelines for the use of electronic record books under MARPOL*, the text of which is set out in the annex to this resolution;

2 INVITES Governments to apply the Guidelines as soon as possible, or when the above-mentioned amendments to MARPOL Annexes I, II, V and VI and the NO_X Technical Code 2008 enter into force;

3 AGREES to keep the Guidelines under review in light of experience gained.

ANNEX

GUIDELINES FOR THE USE OF ELECTRONIC RECORD BOOKS UNDER MARPOL

1 INTRODUCTION

1.1 A key element of the International Convention for the Prevention of Pollution from Ships (MARPOL) regulations is the recording of discharges associated with the prevention of pollution from ships. A number of MARPOL Annexes require the recording of particular discharges.

1.2 The format for the recording of discharges under MARPOL is provided in the appendixes to the relevant MARPOL Annexes. Traditionally, the format of these record books has been provided in hard copy by the Administration. However, as companies and shipowners increasingly focus on ways to operate in an environmentally responsible manner and aim to reduce the heavy burden associated with paperwork through electronic means, the concept of operational logs in an electronic format has become a popular consideration.

1.3 It is considered that this approach to recording and reporting should be encouraged as it may have many benefits for the retention of records by companies, crew and officers.

1.4 It is expected that as companies and shipowners increasingly explore electronic record keeping, flag State Administrations will be requested to approve electronic recording systems (henceforth referred to as an electronic record book). This guidance aims to provide standardized information on approving an electronic record book to ensure the obligations of MARPOL are met and that there is a consistent approach to approving such systems.

2 APPLICATION

2.1 These Guidelines are only applicable to the use of electronic record books on board to meet the requirements of the following record books and recording requirements under the MARPOL Annexes and the Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NO_X Technical Code):

.1 Oil Record Book, parts I and II (MARPOL Annex I, regulations 17.1 and 36.1);

.2 Cargo Record Book (MARPOL Annex II, regulation 15.1);

.3 Garbage Record Book, parts I and II (MARPOL Annex V, regulation 10.3);

.4 Ozone-depleting Substances Record Book (MARPOL Annex VI, regulation 12.6);

.5 recording of the tier and on/off status of marine diesel engines (MARPOL Annex VI, regulation 13.5.3);

.6 Record of Fuel Oil Changeover (MARPOL Annex VI, regulation 14.6); and

.7 Record Book of Engine Parameters (NO_X Technical Code, paragraph 6.2.2.7).

2.2 The use of an electronic record book to record operational logs is an alternative method to a hard copy record book. The electronic record book may allow ships to utilize their technology to reduce administrative burdens and contribute to on board environmental initiatives, e.g. reduction of paper use.

2.3 These Guidelines do not provide information on the management of electronic access to, or electronic versions of, certificates and other documents that do not log continuous operations of a ship.

2.4 These Guidelines do not address the exchange of information from a ship to a company headquarters or other body, as this exchange is not a requirement of record books under MARPOL.

2.5 If a shipowner decides to use an electronic record book to record operational logs, instead of a hard copy record book, the following guidance should be taken into consideration by the Administration when approving the electronic record book for use.

3 DEFINITIONS

For the purposes of these Guidelines, the following definitions apply to the extent consistent with MARPOL:

.1 **Administration:** means the Government of the State under whose authority the ship is operating. With respect to a ship entitled to fly a flag of any State, the Administration is the Government of that State. With respect to fixed or floating platforms engaged in exploration and exploitation of the seabed and subsoil thereof adjacent to the coast over which the coastal State exercises sovereign rights for the purposes of exploration and exploitation of their natural resources, the Administration is the Government of the coastal State concerned.

.2 **Audit Logging:** means logs recording user activities, exceptions and information security events, where logs are kept for an agreed period to assist in future investigations and access control monitoring (ISO/IEC 27001:2006). The time and date for the log should be Universal Co-ordinated Time (UTC) derived from ship's time.

.3 **Backup:** means to make a duplicate copy of a file, program, etc. as a safeguard against loss or corruption of the original. The specific properties of the backup such as its format, frequency, storage location, retention period, are unique to each business organization and should be defined in accordance with a Business Continuity Plan.

.4 **Business Continuity Plan:** means a collection of procedures and information that is developed, compiled and maintained in readiness for use in the event of an emergency or disaster.

.5 **Company:** means the Owner of the ship or any other organization or person such as the Manager or the Bareboat Charterer, who has assumed the responsibility for the operation of the ship from the shipowner and who on assuming such responsibility has agreed to take over all the duties and responsibility imposed.

.6 **Credentials:** means data that is transferred to establish the claimed identity of an entity. (ISO 7498-2). Examples of credentials include a unique code/password, electronic key, digital certificate, hardware key, biometric data (e.g. fingerprint).

.7 **Cryptography:** means the discipline which embodies principles, means and methods for the transformation of data in order to hide its information content, prevent its undetected modification and/or prevent its unauthorized use (ISO 7498-2).

.8 **Data:** means a re-interpretable representation of information in a formalized manner suitable for communication, interpretation or processing (ISO/IEC 2382-1).

.9 **Digital certificate:** means a cryptographic transformation (see "cryptography") of a data unit in an asymmetric (public key) cryptosystem, using a Digital Signature to unite an identity with a public key.

.10 **Digital signature:** means data appended to, or a cryptographic transformation (see "cryptography") of, a data unit that allows a recipient of the data unit to prove the source and integrity of the data unit and protect against forgery e.g. by the recipient (ISO 7498-2).

.11 **Document:** means books, manuals, plans, instructions and similar media that are not certificates and are used to convey a ship's information.

.12 **Electronic record book:** means a device or system used to electronically record the entries for discharges, transfers and other operations as required under MARPOL Annexes and the NO_X Technical Code.

.13 **Functional Unit:** means an entity of hardware, software, or both, capable of accomplishing a specified purpose ISO/IEC 2382-1:1993 Information technology-Vocabulary- Part 1: Fundamental terms, definition 10.01.40.

.14 **Graphic character:** means a character, other than a *control character*, that has a visual representation and is normally produced by writing, printing or displaying (ISO 2382-4).

.15 **IEC 60092 (series):** means standards published by the International Electrotechnical Commission (IEC) on Electrical Installations on Ships.

.16 **IEC 60533:** means standard published by the International Electrotechnical Commission (IEC) on Electrical and Electronic Installations on Ships – Electromagnetic Compatibility.

.17 **Offline:** means usage #1. Pertaining to the operation of a functional unit when not under the direct control of the system with which it is associated. Offline units are not available for immediate use on demand by the system. Offline units may be independently operated. Usage #2. Pertaining to equipment that is disconnected from a system, is not in operation, and usually has its main power source disconnected or turned off.

.18 **Portable Document Format (PDF):** means a digital form for representing documents that enables users to exchange and view electronic documents easily and reliably, independent of the environment in which they were created and the environment in which they are viewed or printed (ISO 32000).

.19 **Port:** means any port, terminal, offshore terminal, ship and repair yard or roadstead which is normally used for the loading, unloading, repair and anchoring of ships, or any other place at which a ship can call.

.20 **Key:** means a sequence of symbols that controls the operation of encipherment and decipherment (see "cryptography").

.21 **Private key:** means (in a public key cryptosystem) that key of a user's key pair which is known only by that user (ISO/IEC 9594-8).

.22 **Public key:** means (in a public key cryptosystem) that key of a user's key pair which is publicly known (ISO/IEC 9594-8).

.23 **Role Based Access Control (RBAC):** means a control mechanism that provides different access levels to guarantee that individuals and devices can only gain access to and perform operations on network elements, stored information, and information flows for which they are authorized (ISO/IEC 27033-2:2012).

.24 **Shipowner:** means one who owns or operates a ship, whether a person, a corporation or other legal entity, and any person acting on behalf of the owner or operator.

.25 **Signature:** means the handwritten means of identifying the signer of a document or an electronic equivalent which is uniquely and securely linked to an individual.

.26 **Standardized:** means the prescription of an authoritative rule, principle, means of judgement or estimation, criterion, measure of correctness, measure of perfection or some definite degree of any quality that determines what is adequate for a purpose.

.27 **Storage (device):** means a functional unit into which data can be placed, in which they can be retained, and from which they can be retrieved (ISO/IEC 2382-1:1993 Information technology – Vocabulary – Part 1: #;Fundamental terms).

4 SYSTEM SPECIFICATIONS

4.1 Ability of the electronic record book to meet regulations under MARPOL

4.1.1 The use and output presentation of any electronic record book approved by an Administration should satisfy the requirements of all relevant regulations under MARPOL.

4.1.2 As MARPOL specifies the recording of a range of information for specific circumstances, an approved system should only allow a complete entry to be saved for verification by the master. For example, for a MARPOL Annex V discharge at sea, the entry should not be able to be saved without the entry of the latitude and longitude of the discharge. It is suggested that where possible, technology which can automatically input required data be installed to ensure accuracy. In the case of equipment failure, manual input should be allowed and the change of the source of data recorded. The automatic data value inputs should be protected by measures aimed at preventing attempts at manipulation or falsification. The system should automatically record any attempts to manipulate or falsify any data.

4.1.3 To assist with consistent recording of data such as dates and positions, the system should be developed to display entry fields and request data formats that are as consistent as possible with other electronic reporting required by IMO and other shipboard systems. Electronic record books should be presented in the form as specified in relevant MARPOL Annexes in order to assist the smooth transition from hard copy record books to electronic ones.

4.1.4 In order to comply with MARPOL requirements, an electronic record book should have the capability to retain all records made for the minimum period as specified in each Annex of MARPOL. The capability to produce a hard copy of verified records for the master to certify as a true copy, upon request from relevant authorities, should also be provided.

4.2 Updates to the electronic record book

As MARPOL and its Annexes continue to evolve, it is essential that all approved electronic record books are reviewed and appropriately updated to ensure relevant MARPOL amendments are incorporated in the electronic record book. Any updates should not cause loss of existing records, nor make them unreadable, and the system should continue to present all records in the form specified by MARPOL. Updates to the system should be completed prior to the entry into force of the relevant MARPOL amendments.

4.3 Security and accountability of the electronic record book

4.3.1 To ensure the security of an electronic record book, it is critical that the system implements Role Based Access Control. At a minimum, all access to the application should use a unique personal login identifier and password for each user. This level of security ensures that the user making entries into the application is accountable for any false entries or omissions.

4.3.2 MARPOL requires the signature of the relevant officer entering a record. As such, the electronic record book should implement Audit Logging. Audit Logging should record a user code, identifying symbol, such as a graphic character, or an equivalent identifier against each entry to uniquely identify the user and whether the user provided accessed or amended an entry.

4.3.3 Electronic signatures applied to an electronic record book should meet authentication standards, as adopted by the Administration.

4.3.4 Records and entries should be protected by measures aimed at preventing and detecting attempts at unauthorized deletion, destruction or amendment. After an entry is saved by the user, the system should secure the information against unauthorized or untraceable changes. Any change(s) to the entry by the same user or a different user should be automatically recorded and made visible both in the system and in any output presentation or printed versions of the electronic record book. The entry should appear in the list of entries in a format that makes it clear that the entry has been amended. To create transparency of changes to saved or verified entries, it is essential that the system is designed to retain both the original entry and the amendment(s).

4.3.5 If an entry requires amendment, it is recommended that the reason and user identifier, for the officer making the amendment, be recorded for verification by the master. The original entries and all amendments should be retained and visible.

4.3.6 MARPOL also requires that information in the record book be verified (e.g. regulation 17 of MARPOL Annex I requires that each page of the Oil Record Book be signed by the master of the ship). For verification of a single or series of saved entries by the master, the electronic record book should have an additional authentication factor to allow verification. This additional authentication factor should be in the form of additional credentials supplied by the master at the time of verification.

4.3.7 The electronic record book should also be able to log and identify the entries made, amended or verified by time. This will assist in identifying those situations where actions requiring an entry are undertaken over days or weeks and all entered at one time, where such an approach to making entries is consistent with MARPOL (e.g. regulation 10 of MARPOL Annex V requires entries to be "promptly recorded" and "signed for on the date of discharge or incineration" by the officer in charge).

4.3.8 To provide for different stages of the data entry and approval process, the electronic record book should provide a status field for each entry that clearly determines the verification stage of the entry. For example, when an entry has been saved in the system by the user, the entry should reflect a term such as "pending" or "awaiting verification". Once the master has verified an entry, a term such as "verified" should be automatically reflected.

4.3.9 If an entry is amended after the master has verified it, the electronic record book should automatically return the entry to "pending" or "re-verification" notifying the master that the entry requires re-verification.

4.3.10 To ensure that entries are verified in a timely manner, the system should provide a reminder that verification by the master is required. It is recommended that where possible, verifications occur prior to arrival in port. Entries not verified should be accompanied by comments advising of the reason for non-verification.

4.3.11 If a recorded entry correlates with a receipt for services (such as a receipt received when waste is discharged to a reception facility), or the endorsement provided during regulatory surveys or inspections (such as endorsement of the Cargo Record Book), the electronic record book should allow this receipt or endorsement to be identified or attached to the relevant entry in the system. This receipt can be referenced in the system with a hard copy receipt or endorsement made available upon request. Alternatively, the receipt or endorsement can be attached to the entry in any form deemed acceptable by the Administration (such as a scanned copy of the original in PDF), and the original retained.

4.4 Storage of data recorded in the electronic record book

4.4.1 To create the same level of confidence as a hard copy record book, any electronic record book should form part of the Information Technology Business Continuity Plan. This includes having an appropriate method for backing up data and data recovery if the system were to fail or not be available from the ships' network. Consideration should also be given to alternate power supplies to ensure consistent access to the system. Both data recovery and power sources are essential to allow ongoing entries to be made and facilitate port State control (PSC) inspections.

4.4.2 The electronic record book should have the capability to allow automatic backup of data in the system to offline storage. Backups should ensure the offline record is updated automatically every time changes are made to entries to ensure the backing up process is not forgotten by the user.

4.4.3 The recorded data stored in the offline space should be:

.1 developed using cryptography so that unauthorized access to the information is not possible, and so that once the data has been saved it is in a read-only format with no amendments able to be made to the record (unless done so through the application or by a user with the appropriate level of authorization);

.2 in a format that can be transferred from the point of record to another storage location. Examples include a local (removable) storage peripheral device, local and remote network storage;

.3 maintained in a format that ensures the longevity and integrity of the record; and

.4 in a format that allows output presentation and printing of the record.

4.4.4 This offline record may be provided in any format deemed appropriate by the Administration and should be digitally signed by the master. The properties of the digital signature need to appear on the offline record, including the title; full name of the signer; and date and time of signing. It is recommended that the document be presented in PDF; however, an alternative format may be used. Alternative formats should allow the exchange and view of electronic documents independent of the environment in which they were created and the environment in which they are viewed or printed, in a simple way and with fidelity.

4.4.5 An electronic record book and infrastructure related to the system including computers and peripherals, should be installed in compliance with IEC 60092 and IEC 60533, where applicable.

5 DECLARATION

5.1 Any electronic system deemed to meet the above criteria should be provided with written confirmation by the Administration and carried on board the ship for the purpose of regulatory surveys or inspections. An example of a declaration can be seen in the appendix.

5.2 Delegating the assessment of the electronic record book against these Guidelines and the issuing of a declaration on behalf of the Administration by recognized organizations (ROs) is at the discretion of the Administration.

6 MARPOL INSPECTION AND ENFORCEMENT

6.1 Inspection

6.1.1 An electronic record book should have the ability to meet the company verification/audit requirements (such as integration with the ships Safety Management System (International Safety Management Code)). The record book should also have the ability to meet all flag State and survey requirements. In addition, an electronic record book should meet all control provisions as set out in the relevant Annexes of MARPOL. Such a system should also meet any general requirements set out in the *Procedures for port State control, 2017* (resolution A.1119(30)), as amended, as well as support the detection of violations and enforcement of the Convention as outlined in Article 6 of MARPOL.

6.1.2 The use of and reliance upon electronic record books in no way relieves shipowners of their existing duty to accurately maintain and produce records during an inspection, as required by MARPOL. It is recommended that if a ship cannot produce the electronic record book or a declaration provided by the Administration during the PSC inspection, the PSC officer should request to view an alternative verified copy of the records or a hard copy record book for verification.

6.2 Equipment requirements during an inspection

As the electronic record book will be presented using the ships' onboard equipment, it should not be necessary for officers to carry additional equipment (e.g. electronic devices to view the records) during inspections. Officers may choose to carry additional equipment on board to aid in the verification process if the ships' onboard equipment is unavailable.

6.3 Prosecution

To accommodate current procedures when investigating illegal discharges under MARPOL, the electronic record book should allow for the specific entry, relevant page, pages or the entirety of the electronic record book to be printed at the time of an investigation and each printed page physically signed by the master to certify it as a "true copy". All printed pages should provide the following details in addition to those required under MARPOL for record books:

.1 the title and full name of the person that entered the record (in addition to the person's unique username and/or ID in the electronic record book);

.2 any changes that were made to the entries;

.3 the date and time of printing;

.4 the name and version number of the electronic record book from which the true copy was produced; and

.5 page numbering and number of pages to ensure the report is complete.

APPENDIX

EXAMPLE DECLARATION

DECLARATION OF MARPOL ELECTRONIC RECORD BOOK

Issued under the authority of the Government of:
……
(full designation of the country)

In reference to the requirements set out in the
International Convention for the Prevention of Pollution from Ships (MARPOL)

Name of ship……

IMO number ……

Flag State of ship…….

Gross tonnage……..

This is to declare that the electronic system designed to record entries in accordance with MARPOL Annex(es) …….. installed on board the ship listed above has been assessed by this Administration to meet the relevant requirements as set out in MARPOL and is consistent with the Guidelines developed by the International Maritime Organization (IMO).

Electronic Record Book Manufacturer	----------
Electronic Record Book Supplier	----------
Electronic Record Book Installer	----------
Electronic Record Book Software Name/Version	----------
Electronic Record Book is in accordance with MEPC Resolution/s	----------
Date of installation (dd/mm/yy)	----------

A copy of this declaration should be carried on board a ship fitted with this Electronic Record Book at all times.

……	……	……
NAME	SIGNATURE	DATE (dd/mm/yy)

Seal or stamp of the Authority, as appropriate

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