



Office of
Deputy Commissioner
of Maritime Affairs

THE REPUBLIC OF LIBERIA
LIBERIA MARITIME AUTHORITY

Marine Notice

POL-012
Rev. 08/24

TO: ALL SHIPOWNERS, OPERATORS, MASTERS AND OFFICERS OF MERCHANT SHIPS, AGENTS, LIBERIAN AUDITORS AND RECOGNIZED ORGANIZATIONS, AND PORT STATE CONTROL AUTHORITIES

SUBJECT: Electronic Record Books (ERB) for Ships

- References:**
- (a) **MEPC Resolution 314(74) - Amendments to MARPOL Annexes I, II and V**
 - (b) **MEPC Resolution 312(74) - Guidelines for the use of ERB under MARPOL**
 - (c) **MEPC Resolution 383(81) – Amendments to the International Convention for the Control and Management of Ship’s Ballast Water and Sediments (BWM Convention)**
 - (d) **MEPC Resolution 372(80) – Guidelines for the use of ERB under the BWM Convention**
 - (e) **Assembly Resolution A.916(22) – Guidelines for the Recording of Events related to Navigation**
 - (f) **MSC/Circ.982 – Guidelines on Ergonomic Criteria for Bridge Equipment and Layout**
 - (g) **Liberian Regulations RLM-108, Sections 2.37, 2.37A, 2.37C, 2.37D, 10.296(2)**
 - (h) **Marine Notice RAD-008**

Supersedes: Marine Notice POL-012, Rev. 08/21

The following changes have been included:

- a. Added references (c) and (d) above
- b. Moved from section ‘BACKGROUND’ to section 13.0, that only ERBs approved by the Administration can be installed on Liberian registered ships
- c. Added ‘Declaration of BWM Convention ERB’ to section 13.0
- d. Added new Appendix III for ‘Declaration of BWM Convention ERB’

PURPOSE:

This Marine Notice provides updated implementation guidance on the use of Electronic Record Books (ERBs) under MARPOL, SOLAS and BWM Convention onboard Liberian flagged vessels.

The seventy-fourth session of IMO's Marine Environment Protection Committee (MEPC 74) adopted amendments to MARPOL Annexes I, II, V and VI related to ERBs and Guidelines for the use of ERBs under MARPOL. The amendments are contained in [reference \(a\)](#) and entered into force on 1 October 2020 and the Guidelines are in [reference \(b\)](#).

MEPC 80 adopted Guidelines for the use of ERBs under the BWM Convention, [reference \(d\)](#) and MEPC 81 adopted amendments to the BWM Convention related to ERBs, [reference \(c\)](#).

Regulation 28 of SOLAS Chapter V requires the records of navigational activities to be maintained in ships' logbook, which may be in electronic format; and regulation 17 of SOLAS Chapter IV requires a record of all incidents connected with the radiocommunication service which appear to be of importance to safety of life at sea, which may also be in electronic format. The BWM Convention requires each ship to have on board a Ballast Water record book that may be an electronic record system, which shall at least contain the information specified in Appendix II of the Convention.

The ERB referred to in this Marine Notice is a device or system, approved by the Administration and used to electronically record the required:

- entries for discharges, transfers and other operations as required under MARPOL:
 - o Annex I, regulations 17 (Part I) and 36 (Part II) and [reference \(g\)](#);
 - o Annex II, regulation 15 and [reference \(g\)](#);
 - o Annex V, regulation 10 and [reference \(g\)](#);
 - o Annex VI, regulations 12, 13 and 14;
- record book of engine parameters (NOx Technical Code, paragraph 6.2.2.7);
- record of navigational activities (Navigation Log Book) required under regulation 28 of SOLAS Chapter V and [reference \(g\)](#);
- record of engine room (machinery space) activities (Engine Room Log Book) under [reference \(g\)](#);
- record of radiocommunication services (GMDSS Radio Log) required under regulation 17 of SOLAS Chapter IV and [references \(g\)](#) and [\(h\)](#) in lieu of hard copy Record Books.
- record of ballast water operations (Ballast Water Record Book) required under regulation B-2 of the International Convention for the Control and Management of Ship's Ballast Water and Sediments, 2004 (BWM Convention) and [reference \(g\)](#)

BACKGROUND:

Actions in recent years to improve protection of life at sea and the environment have led to the introduction of stricter standards through new international regulations and amendments to existing instruments. The resulting regulatory framework has created new recordkeeping obligations for shipowners, significantly increasing crew's on-board workload and undermining operational efficiency. The additional administrative burden of cumbersome daily paper record keeping requirements have elicited strong feedback from seafarers and been the source of fierce debates among shipping industry professionals. 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.

The Liberian Administration recognizes the burdens arising from the use of traditional paper versions of MARPOL and SOLAS Record or Log Books and the complexity of recording proper operational entries and is offering a Liberian Registry approved Electronic Record Book as a tool for training, cross checking or acting as an electronic alternative to the traditional paper Record or Log Book. Electronic Record Book's approved by the Liberian Registry provide increased accuracy, transparency, traceability and a secure audit trail of all entries.

APPLICABILITY

This Marine Notice applies to all Liberian flagged vessels that are required to maintain Record Books in accordance with mandatory IMO instruments and the Liberia Maritime Regulations. The printed version of the Liberian Registry approved ERB is also permitted to be utilized onboard by Liberian registered vessels, as an alternative substitute of the traditional paper Record Book.

REQUIREMENTS FOR APPROVAL OF ERB

The assessment criteria in this Marine Notice is to establish that the ERB has been developed and tested to standards in [references \(b\)](#), [\(d\)](#), [\(e\)](#), and [\(h\)](#) above; and if installed on the bridge, also consider the principles given in [reference \(f\)](#). The developer shall be able to demonstrate to the Administration the operation of the ERB in a demonstration environment representative of the shipboard installation. This demonstration will be inspected and tested to ensure that the system and functional requirements of the software have been satisfied.

1.0 Information to be submitted

- 1.1 The ERB product description
- 1.2 The ERB user documentation
- 1.3 The ERB test plan and completed test records
- 1.4 The ERB developer's quality management system certification
- 1.5 Completed assessment checklist in Appendix I of this Marine Notice.

2.0 Application of the ERB

- 2.1. The ERB specified herein is intended to support the recording of operations and to satisfy the recording requirements specified in the following mandatory IMO instruments and the Liberia Maritime Regulations:
 - 2.1.1 Oil Record Book, Parts I and II (MAROL Annex I, regulations 17.1 and 36.1) and [reference \(g\)](#)
 - 2.1.2 Cargo Record Book (MARPOL Annex II, regulation 15.1) and [reference \(g\)](#)
 - 2.1.3 Garbage Record Book, Parts I and II (MARPOL Annex V, regulation 10.3) and [reference \(g\)](#)

- 2.1.4 Ozone-Depleting Substances Record Book (MARPOL Annex VI, regulation 12.6)
- 2.1.5 Recording of the tier and on/off status of marine diesel engines (MARPOL Annex VI, regulation 13.5.3)
- 2.1.6 Record of Fuel Oil Changeover (MARPOL Annex VI, regulation 14.6)
- 2.1.7 Record Book of Engine Parameters (NOx Technical Code, paragraph 6.2.2.7).
- 2.1.8 Record of Navigational Activities ((Navigation Log Book) – SOLAS Chapter V, regulation 28) and **reference (g)**
- 2.1.9 Record of Engine Room Activities and Parameters (Engine Room Log Book) and **reference (g)**
- 2.1.10 Record of Radiocommunication Services (GMDSS Radio Log) – SOLAS Chapter IV, regulation 17) and **references (g) and (h)**
- 2.1.11 Other logs such as Medical Log, Compass Deviation Log – **Reference (g)**
- 2.1.12 Record of Ballast Water Operations (Ballast Water Record Book) – BWM Convention, regulation B-2 and reference **(g)**
- 2.2 ERBs under MARPOL shall be presented in the form specified in the relevant MARPOL Annexes and the NOx Technical Code. ERBs under SOLAS shall contain at least the information in **references (e), (h)**. ERB under BWM Convention shall contain at least the information in Appendix II of the BWM Convention.
- 2.3 The ERB shall have the capability to retain all records made for the minimum period as specified in the relevant MAROL Annexes; regulation B-2 of the BWM Convention; and **reference (g)**.

3.0 Updates to ERB

- 3.1 Any updates to the ERB shall not cause loss of existing records, nor make them unreadable, and shall continue to present all records in the form specified by mandatory IMO instruments and Liberia Maritime Regulations including the information in **references (e), and (h)**.

4.0 Signatures applied to the ERB

- 4.1 Electronic signatures applied to an ERB shall meet one or more of the authentication standards:
 - a. As the default method, two step verification using login with username and entering password; or
 - b. Signature pad with biometric pen; or
 - c. fingerprint scanner

5.0 Power supply, storage of data recorded in the ERB and operating environment

- 5.1 The ERB shall include an appropriate method for backing up data and data recovery if the system were to fail or not be available from the ships' network. It shall also be able to provide an alternate power supply 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.
- 5.2 The ERB shall have the capability to allow automatic backup of data in the system to offline storage. Backups shall 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.
- 5.3 The recorded data stored in the offline space shall be:
 - a. Developed using cryptography so that unauthorized access to the information is not possible;
 - b. Saved in a read-only format with no amendments able to be made to the record unless completed through the application or by a user with the appropriate level of authorization;
 - c. Held in a format that can be transferred from the point of record to another storage location, such as a removable storage peripheral device, or local and remote network storage;
 - d. Maintained in a format that ensures the longevity and integrity of the record;
 - e. Held in a format that allows output presentation and printing of the record.
- 5.4 This offline record shall be provided in PDF format and shall 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. Alternative formats may be used provided that the format allows 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.
- 5.5 The ERB and infrastructure related to the system, including computers and peripherals, shall be installed in compliance with IEC 60092 for electrical installations in a marine environment and IEC 60533 for electromagnetic compatibility, where applicable.

6.0 ERB description

- 6.1 The ERB description shall:
 - 6.1.1 Identify the software described by its name, version and date;
 - 6.1.2 Contain the name and address of the supplier and at least one distributor, if applicable;
 - 6.1.3 Describe the hardware and software operating environment for executing the software;

- 6.1.4 State the provisions made for supporting the operation and maintenance of the software;
- 6.1.5 Include information on data saving, restoring and back-up procedures;
- 6.1.6 Specify the type of user interface;
- 6.1.7 Provide information on the installation procedure.

7.0 ERB user documentation

7.1 The user documentation shall:

- 7.1.1 Contain all information necessary for use of the software product.
- 7.1.2 Describe all the functions stated in the software description and all the functions that the user can call.
- 7.1.3 Provide guidance to back-up and off-line storage of the ERB data.
- 7.1.4 State all limitations given in the software description.
- 7.1.5 Define the minimum and maximum required disk space for installation.
- 7.1.6 Be easy to understand by the master, chief engineer, and ship's staff.
- 7.1.7 Provide necessary information to learn how to use the software.
- 7.1.8 Provide a table of contents, or list of topics and an index.

8.0 ERB tests plan and completed test records

8.1 The ERB tests shall demonstrate that the software functional requirements are satisfied.

8.2 Test planning and specification:

- 8.2.1 All functions and features described in the product description and user documentation shall be tested.
- 8.2.2 Each function and feature shall be the subject of at least one test case.
- 8.2.3 Test cases shall be documented to include the test objective, input data, required results and the pass or fail criteria.
- 8.2.4 The test plan shall include criteria for determining whether testing as a whole, passes or fails.
- 8.2.5 The ERB tested shall be the same as the ERB under assessment.

8.3 Test reports and results:

A report shall be compiled to include:

- 8.3.1 An overall summary of the results of the test cases.
- 8.3.2 Demonstration that all the test cases have been executed according to the test plan.
- 8.3.3 A report for each test case that identifies the date of execution, the name and function of the test, a list of found anomalies and references to the corresponding anomaly report.

9.0 Quality Management System (QMS)

- 9.1 The QMS adopted shall ensure that the provisions of ISO/IEC 90003:2018, Software engineering – Guidelines for the application of ISO 9001:2015 to computer software, or equivalent are incorporated.

10.0 Maintenance

- 10.1 Maintenance of the software shall be planned and controlled with maintenance records maintained that shall include:
 - 10.1.1 The list of problem reports received and their current status.
 - 10.1.2 The authority responsible for implementing corrective action.
 - 10.1.3 The priorities assigned to corrective actions.
 - 10.1.4 The results of corrective actions.
 - 10.1.5 The methods used to advise purchasers of the ERB of planned future changes.
 - 10.1.6 Means taken to advise purchasers of the ERB of planned future changes.

11.0 Inspection and Enforcement

- 11.1 The ERB shall 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 shall also have the ability to meet all flag State and survey requirements. In addition, the ERB shall meet all control provisions as set out in the relevant Annexes of MARPOL and in SOLAS. Such a system shall also meet any general requirements set out in the Procedures for Port State Control, as amended, as well as support the detection of violations and enforcement of the Convention as outlined in Article 6 of MARPOL.
- 11.2 The use of and reliance upon ERBs in no way relieves the Master of his/her existing duty to accurately maintain and present records during an inspection, as required by MARPOL and SOLAS. If a ship cannot produce the ERB; or a declaration; or letter of approval provided by the Administration during the PSC inspection, PSC officers have been authorized to examine an alternative verified copy of the records or a hard copy record book for verification.
- 11.3 To accommodate current procedures when investigating illegal discharges under MARPOL, the ERB shall 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 shall provide the following details in addition to those required under MARPOL for record books:

- a. 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);
- b. any changes that were made to the entries;
- c. the date and time of printing;
- d. the name and version number of the electronic record book from which the true copy was produced; and
- e. page numbering and number of pages to ensure the report is complete

12.0 Application for ERB approval

- 12.1 Third party developers shall complete and submit the information in section 1.0 above to RegsandStandards@liscr.com and make arrangements for a virtual presentation on the functionality of the ERB.
- 12.2 Arrangements to test the ERB using access to the developer's remote server or a local desktop version shall be provided to the Administration.

13.0 Approval of ERB, Declaration of MARPOL and BWM Convention ERB

- 13.1 Upon satisfactory completion of the ERB assessment taking into consideration all of the above criteria, the Liberian Administration will approve the ERB for a period of 3 years, which may be renewed upon application and satisfactory re-assessment.
- 13.2 Liberian flagged vessels are only authorized to use ERBs approved by the Administration, as the Record Books are required by mandatory IMO instruments and the Liberia Maritime Regulations. The ERB remains subject to periodic review by the Administration. A list of ERBs approved by the Administration may be obtained by contacting the Administration at RegsandStandards@liscr.com or on Liberian Registry website www.liscr.com under "the **Maritime/ Regulations & Standards/ Approved Electronic Record Books**"
- 13.3 To enable the use of ERB on Liberian registered ships, the Liberian Administration will require the following:
 - a. A copy of the letter of approval issued to the ERB developer to be carried on board the vessel for the ERB version installed;
 - b. A 'Declaration of MARPOL ERB' for MARPOL ERBs and a 'Declaration of BWM Convention ERB' issued by this Administration to be carried onboard the vessel following initial installation; and
 - c. In order to continue authorization to use the ERB, the latest version of approved ERB software, provided through annual maintenance and support upgrades, must be installed without causing data to be lost during an update.

13.4 New or revised software versions of an approved ERB shall be submitted as described in section 1.0 above for reassessment and approval. Once approved, a new letter of approval will be issued and for shipboard installations of the MARPOL and Ballast Water ERBs, a new ‘Declaration of MARPOL ERB’ and ‘Declaration of BWM Convention ERB’ will also be issued to identify the new software version.

14.0 Basic Procedures for installation and use of ERB on Liberian vessels

- 14.1 When the order is fulfilled and the ERB arrives or is downloaded onboard, a senior officer of the crew, maker’s technician, or other authorized party shall install the software.
- 14.2 The installation of the ERB for recording navigational activities shall take into consideration guidelines on ergonomic criteria for bridge equipment and layout in [reference \(f\)](#) and shall not give rise to electromagnetic interference which will affect the proper functioning of navigational systems and equipment on board.
- 14.3 For Voyage Data Recorders (VDR) installed on or after 1 July 2014, the information in the ERB for navigational activities shall also be recorded in the VDR.
- 14.4 After the ERB installation is complete, the ship shall apply for a ‘Declaration of MARPOL ERB (see Appendix II) and/or ‘Declaration of BWM Convention ERB’ (See Appendix III) by emailing RegsandStandards@liscr.com with the name of the ship, the date the ERB was installed, the name of the installer and the version installed onboard; including a copy of the report of installation and testing.
- 14.5 The Administration will provide the vessel with a ‘Declaration of MARPOL ERB’ and/or ‘Declaration of BWM Convention ERB’ as evidence that the vessel is in conformance with Flag requirements.
- 14.6 The MARPOL and Ballast Water ERB and may officially be used on board after the vessel receives the ‘Declaration of MARPOL ERB’ and ‘Declaration of BWM Convention’ from the Liberian Administration.
- 14.7 The SOLAS ERB may officially be used on board after the vessel receives a copy of the ERB approval letter issued by the Administration.

Questions regarding this Marine Notice and fees for ERB approval should be referred to E-mail: RegsandStandards@liscr.com.

APPENDICES

APPENDIX I – ERB Assessment Review Questionnaire

APPENDIX II – Format of Declaration of MARPOL ERB

APPENDIX III – Format of Declaration of BWM Convention ERB

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APPENDIX I

Electronic Record Book (ERB) Assessment Review Questionnaire

	<p>MARITIME OPERATIONS DEPARTMENT</p> <p>REGULATIONS AND STANDARDS</p>	<p>LISCR, LLC Attn: Regs and Standards 22980 Indian Creek Drive Suite 200 Dulles, VA 20166 USA Tel : +1-703-790-3434 Fax: +1- 703-790-5655 Email: RegsandStandards@liscr.com</p>
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**INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS,
1973, AS MODIFIED BY THE PROTOCOL OF 1978- MARPOL CONVENTION**

**INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974 – SOLAS
CONVENTION**

This report for the approval of electronic record books is provided in order to assess whether electronic record books meet the standard as set out in Resolution MEPC.312(74) and MSC/Circ.916 for installation onboard Liberian registered ships.

NAME OF DEVELOPER:	VERSION OF SYSTEM:	
	Developers contact information	
	NAME:	
YEAR:	ADDRESS:	
	Tel:	Telex:
	Fax:	E-Mail:

PLACE REVIEWED:	
DATE REVIEWED:	

Summary:

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 (NOx Technical Code 2008), respectively, to enable the use of electronic record books to meet the requirements for Record Books: Oil Record Book, Parts I and II (MAROL Annex I, regulations 17.1 and 36.1) , Cargo Record Book (MARPOL Annex II, regulation 15.1), Garbage Record Book, Parts I and II (MARPOL Annex V, regulation 10.3), Ozone-Depleting Substances Record Book (MARPOL Annex V, regulation 12.6), Recording of the tier and on/off status of marine diesel engines (MARPOL Annex VI, regulation 13.5.3), Record of Fuel Oil Changeover (MARPOL Annex VI, regulation 14.6), Record Book of Engine Parameters (NOx Technical Code, paragraph 6.2.2.7).

Resolution MEPC.312(74) adopted the Guidelines for the use of electronic record books (ERB) under MARPOL.

Regulation 28 of SOLAS Chapter V requires records of navigational activities in accordance with Guidelines in Resolution A.916(22), which may be in electronic format; and Regulation 17 of SOLAS Chapter IV and Marine Notice RAD-008 requires records to be kept of all incidents connected with the radiocommunication service, which may also be in electronic format.

IMPORTANT NOTICE

The approval of ERBs in no way relieves shipowners of their existing duty to accurately maintain and produce records during an inspection, as required by MARPOL and SOLAS.

Sincerely,	
	Name of Reviewer

		<p><u>These Guidelines are only applicable to the use of ERBs on board and use to meet the requirements of the following record books and recording requirements under the MARPOL Annexes, the Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NOx Technical Code) and SOLAS :</u></p> <p><u>.1 Oil Record Book, parts I and II (MARPOL Annex I, regulations 17.1 and 36.1);</u></p> <p><u>.2 Cargo Record Book (MARPOL Annex II, regulation 15.1);</u></p> <p><u>.3 Garbage Record Book, parts I and II (MARPOL Annex V, regulation 10.3);</u></p> <p><u>.4 Ozone-depleting Substances Record Book (MARPOL Annex VI, regulation 12.6);</u></p> <p><u>.5 recording of the tier and on/off status of marine diesel engines (MARPOL Annex VI, regulation 13.5.3);</u></p> <p><u>.6 Record of Fuel Oil Changeover (MARPOL Annex VI, regulation 14.6); and</u></p> <p><u>.7 Record Book of Engine Parameters (NOx Technical Code, paragraph 6.2.2.7);</u></p> <p><u>.8 Record of Navigational Activities (Navigation Log Book) – SOLAS Chapter V, regulation 28);</u></p> <p><u>.9 Record of Engine Room Activities and Parameters (Engine Room Log Book);</u></p> <p><u>.10 Record of Radiocommunication Services (GMDSS Radio Log) – SOLAS Chapter IV;</u></p> <p><u>.11 Other logs such as Medical Log, Compass Deviation Log</u></p>
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Ability of the electronic record book to meet regulations under MARPOL and SOLAS

		Y	N	Comments
1	The software shall include compulsory fields in each operation, based on MARPOL and SOLAS requirements. Some of the compulsory fields are listed below as an example: Start and End Time; Latitude and Longitude; Receiver Details; Attachments; Retained Quantities; General condition of the ship, such as cargo, draft. Details related to the voyage			
2	The system shall allow only a complete entry to be saved for verification by the master. For example, for a MARPOL Annex V discharge at sea, the entry shall not be able to be saved without the entry of the latitude and longitude of the discharge; and for a Navigation log, the entry shall not be able to be saved without every line of the navigation log in each page completed.			
3	It shall be possible to automatically input required data to ensure accuracy (suggested).			
4	If data can be automatically entered from equipment such as GPS; the source of data and the data shall also be able to be manually entered.			
5	Automatic data value inputs shall be protected by measures aimed at preventing attempts at manipulation or falsification.			
6	The system shall automatically record any attempts to manipulate or falsify any data.			
7	The system shall display entry fields and request data formats that are as consistent as possible with other electronic reporting required by IMO and other shipboard systems? (Required) Example:			

	<p>Dates shall be entered in dd-MONTH-yyyy format, e.g. 16-MAR-2009.</p> <p>Position shall be entered in xx deg xx min N/S, xx deg xx min E/W</p> <p>Time shall be entered in hh:mm</p>			
8	In order to comply with MARPOL requirements, the electronic record book (ERB) shall have the capability to retain all records made for the minimum period as specified in each Annex of MARPOL, SOLA and Liberian Regulations			
9	The system shall have the capability to produce a hard copy of verified records for the master to certify as a true copy, upon request from relevant authorities			
Updates to the electronic record book				
		Y	N	Comments
10	The Developer shall ensure that the approved ERB is reviewed and appropriately updated to ensure any relevant MARPOL/SOLAS amendments are incorporated in the electronic record book -Explain how			
11	The Developer shall ensure that any updates will not cause loss of existing records, nor make them unreadable, and the system continue to present all records in the form specified by MARPOL/SOLAS			
Security and accountability of the ERB				
		Y	N	Comments
12	The system shall ensure that all access to the application requires a unique personal login identifier and password for each user, thus making the user accountable for any false entries or omission			
13	The system shall implement audit logging to 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 accessed or amended an entry			
14	The electronic signatures applied to the ERB shall meet authentication standards			
15	Records and entries shall be protected by measures aimed at preventing and detecting attempts at unauthorized deletion, destruction or amendment			
16	The ERB shall secure the information against unauthorized or untraceable changes after an entry is saved			
17	Changes to the entry by the same user or a different user shall automatically be recorded and made visible both in the system and in any output presentation or printed versions of the electronic log book			
18	The entry shall appear in the list of entries in a format that makes it clear that the entry has been amended			
19	To create transparency of changes to saved or verified entries, the system shall retain both the original entry and amendments			
20	An entry requiring amendment shall record the reason and user identifier for the officer making the amendment, for verification by the master			
21	The original and all amendments shall be retained and visible			

22	The ERB shall require the information recorded to be verified (example: regulation 17 of MARPOL Annex I requires that each page of the Oil Record Book be signed by the master of the ship). The master shall be provided with an authentication factor in the form of additional credentials to allow verification			
23	The ERB shall be able to log and identify the entries made, amended or verified by time, to 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 is consistent with MARPOL (example: 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)			
24	The ERB shall 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 shall reflect a term such as "pending" or "awaiting verification". Once the master has verified an entry, a term such as "verified" shall be automatically reflected)			
25	If an entry is amended after the master has verified it, the ERB shall automatically return the entry to "pending" or "re-verification" notifying the master that the entry requires re-verification			
26	The system shall provide a reminder that verification by the master is required to ensure that entries are verified in a timely manner			
27	Entries that are not verified shall be accompanied by comments advising of the reason for non-verification			
28	The ERB shall allow for a receipt when waste is discharged to a reception facility or the endorsement provided during regulatory surveys or inspections to be identified or attached to the relevant entry in the system			

Storage of data recorded in the electronic record book

		Y	N	Comments
29	The system shall include an appropriate method for backing up data and data recovery if the system were to fail or not be available from the ships' network			
30	The ERB shall have the capability to allow automatic backup of data in the system to offline storage to 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			
31	The recorded data shall be stored in the offline space: <ul style="list-style-type: none"> 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			
Inspection and Enforcement				
		Y	N	Comments
32	The ERB shall have the ability to meet the company verification/audit requirements (such as integration with the ships Safety Management System)			
33	The ERB shall support the detection of violations and enforcement of the Conventions			
34	The ERB shall 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			
35	<p>All printed pages shall provide the following details in addition to those required for record books:</p> <ol style="list-style-type: none"> 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 II

Format of Declaration of MARPOL Electronic Record Book



THE REPUBLIC OF LIBERIA

LIBERIA MARITIME AUTHORITY

DECLARATION OF MARPOL ELECTRONIC RECORD BOOK

Issued under the authority of the Government of:
Republic of Liberia

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

LIBERIA

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 guidance 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)

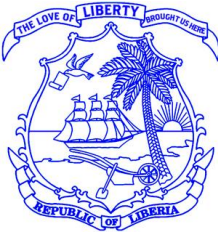
A copy of this declaration should be carried on board a ship fitted with this Electronic Record Book at all times.

Name
Signature
Date:

(Seal or stamp of the issuing Authority)

APPENDIX III

Format of Declaration of BWM Convention Electronic Record Book



THE REPUBLIC OF LIBERIA

LIBERIA MARITIME AUTHORITY

DECLARATION OF BWM CONVENTION ELECTRONIC RECORD BOOK

Issued under the authority of the Government of:

Republic of Liberia

In reference to the requirements set out in the

International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (BWM Convention)

Name of ship
IMO number
Flag State of ship
Gross tonnage

LIBERIA

This is to declare that the electronic system designed to record entries in accordance with the BWM Convention installed on board the ship listed above has been assessed by this Administration to meet the relevant requirements as set out in the BWM Convention 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:

(Seal or stamp of the issuing Authority)