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# Table of contents

1 General Information............................................................................................................. 3  
2 Executive summary............................................................................................................. 4  
3 STM and e-compliance ....................................................................................................... 8  
4 IMO’s developments on e-certificates ............................................................................. 10  
5 E-compliance opportunities: log books ........................................................................... 13  
6 Regulatory developments: MRV, SCF Reference material ............................................ 15  
7 Building Blocks (BB)......................................................................................................... 17  
8 Appendices ......................................................................................................................... 18
1 General Information

Scope of this document

The objective of STM’s Activity 2 is to validate and operationalise STM services and stimulate system manufacturers to develop STM functionality in prototype systems. STM services in the test beds encompasses single reporting area with enhanced information sharing between Shore Centres, route exchange, route validation and route optimisation for just-in-time arrival and enhanced environmental performance, enhanced monitoring and shore based Deep Sea Assistance as well as e-Certificates. The demonstration of STM services carried out in the Action is of a much larger scale (i.e. testing on 300 vessels).

In such context, Sub-Activity 2.6 is specifically addressing e-certificates and this document, which coincides with STM’s milestone M13, provides:

- an outline on the work done, grouped under the concept of e-compliance; this is illustrated in Part 2 of this document;
- the building blocks enabling e-certificates to be deployed; this is addressed in Part 3;

Separate Appendices provide the supporting documents either consulted or produced within Sub- Activity 2.6 which this report is based on.
2 Executive summary

The context at a glance

Electronic ship certificates have reached the level of maturity required for deployment and some Maritime Administrations (e.g. Liberia) started adopting them. In the context of STM, and more generally in the context of “smart shipping”, e-certificates are:

a) part of the transport documents to be submitted to either a National Competent Authority for compliance verification purposes and/or to a private organization in support of certain services;

b) part of many documents that need to be consulted and/or updated during the ship operational life from both onboard and ashore;

c) made of information and data which are, partially or completely, shared with third parties.

In view of the above and based on the results of the work done in Sub-Activity 2.6, inclusion of electronic certificates within the scope of Shore Center(s) and of Fleet Operation Center(s) is an opportunity to align STM developments with the, concurrent and longer lasting, developments of:

- e-compliance in the maritime sector and beyond it, as stipulated by the EU Digital Transport and Logistic Forum (DTLF)
- smart shipping and smart logistics which is based on a coherent and coordinated share of information between public and private organisations.

In short, the context is that:

a) technical requirements for e-certificates are available and agreed

b) the starting points (demonstrators) provided by previous projects (MIELE, ANNA) are appropriate and re-usable although with some adaptations
c) the same approach/technology can be used for other documents having similar “information sharing” scopes, such as electronic log books, ship construction file(s), crew certificates and others

d) the possibility to include e-certificates in information sharing platforms such as Shore Center(s) and Fleet Operation Center(s) should be the main focus of the prototype(s) to be demonstrated within STM.

From a regulatory point of view, ship certificates are a relatively small part of the documents to be carried and/or to be consulted on board. From a smart shipping perspective, all these documents not just ship certificate should be electronically available to be remotely consulted and/or updated.

This includes e.g. log books and manuals. It is noted that several Administrations already accept electronic log books.

<table>
<thead>
<tr>
<th>Group</th>
<th>Issued by</th>
<th>Examples</th>
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</thead>
<tbody>
<tr>
<td>Ship certificates</td>
<td>Flag State/RO</td>
<td>Load line, DOC, ISM</td>
</tr>
<tr>
<td>Class certificates</td>
<td>Class</td>
<td>Hull, engine, operation</td>
</tr>
<tr>
<td>Equipment certificates</td>
<td>Flag state/RO</td>
<td>VDR</td>
</tr>
<tr>
<td>Ship documentation</td>
<td>Owner, Builder</td>
<td>Stability booklet, safety plan, mandatory operational routines: SOPEP, SMPEP etc.</td>
</tr>
<tr>
<td>Log books, records</td>
<td>Crew/Master</td>
<td>Deck, engine, drills</td>
</tr>
<tr>
<td>Crew certificates</td>
<td>Other authorities</td>
<td>Master, officers and ratings, Medical</td>
</tr>
<tr>
<td>Insurance</td>
<td>Insurance companies</td>
<td>Liability, pollution</td>
</tr>
<tr>
<td>Cargo and holds</td>
<td>Shipper, Operator</td>
<td>Cargo Info, DG manifest, Gas free certificate</td>
</tr>
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</table>
Overall conclusions & Future work

According to IMO’s FAL 40 results (April 2016), an acceleration is taking place on e-certificates world wide.

In line with the digitalization advocated in DGMOVE’s DTLF (Digital Transport and Logistic Forum), the matters of electronic log book (allowed by MARPOL) and of ship technical file (compulsory under SOLAS for certain ship types) are natural evolution of the e-certificates and should be included in future information exchange mechanisms.

Accordingly, four pilots are defined to be carried out within Sub-activity 2.6:

- P1 – electronic log book(s)
- P2 – e-certificates (ship)
- P3 – e-certificates (seafarers) P4 – Ship Construction File (SCF)

The related work is planned to start immediately with preliminary proofs of concepts for both certificates and log books followed by (2017-2018) pilot testing.

As far as integration into the Shore Center, this will be done within the other STM Activities and will also include integration of Monitoring Reporting and Verification (MRV) compliance.

The resulting prototype Shore Center is outlined in the following pages.
## STM VALIDATION – e-certificates definition

### Shore Center - Outline

<table>
<thead>
<tr>
<th>BRICKS</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>A1/B1 Connected ship NEPTUNE Software</td>
<td>Costa Crociere software for Fleet Management and Route Planning. Keeps ship routes and voyage planning under control and generates alarms to alert operators of anomalies.</td>
</tr>
<tr>
<td>A2 Ashore Shipowner center NEPTUNE-FOC</td>
<td>Ship owner shore center collects real-time data from all fleet ships. Proof of concept: Fleet Performance Governance is a monitoring system of onboard energy processes. The software helps ship owners and ship operators to monitor the emission of pollutants in compliance with SEEMP and MRV.</td>
</tr>
<tr>
<td>A3 Connected ship - Fleet Performance Governance</td>
<td>Proof of concept: collects data from all fleet ships of each single ship owner.</td>
</tr>
<tr>
<td>A4 Shore Shipowner center FPG-FOC</td>
<td>STM ship systems refers to ECDIS functionality, communication with ECDIS, STM module, communication with access point and online access point. STM equipment is not typically compatible with the Italian flag ships’ on board systems.</td>
</tr>
<tr>
<td>A5 Connected ship only through STM Ship Systems</td>
<td>Proof of concept: multi ship owner platform. Allows to monitor the ships, provides info useful for the Administration (Safety-Environment)</td>
</tr>
<tr>
<td>A6 Shore Center STM ITA</td>
<td>Transas Simulator NT Pro 5.000 ver. 5.35 is adopted.</td>
</tr>
<tr>
<td>C1 TRANSANAS simulator</td>
<td>In compliance with Dir.2010/65/EU Italy implemented B2MSW standard Message (output of AnNa Project)</td>
</tr>
<tr>
<td>C1 &amp; D2 Directive 2010/65/EU B2MSW ITA, standard Message</td>
<td>As required by SOLAS data related to VGM could be verified by the Competent Authorities</td>
</tr>
<tr>
<td>D3 Verified Gross Mass</td>
<td>Additional info interesting useful for Safety/Environmental issues could be added in B2MSW</td>
</tr>
<tr>
<td>D4 Directive 2010/65/EU (2020)</td>
<td>CeDA goal is to standardise reporting procedures and, for the shipping industry, to adopt the industry-driven standards for reporting formalities</td>
</tr>
<tr>
<td>D5 &amp; D6 Certified e-Document Authority crew &amp; ship e-certs</td>
<td>System dedicated to Electronic management of Log Books</td>
</tr>
<tr>
<td>D7 Electronic Log Book</td>
<td>System dedicated to Electronic management of Ship Construction Files</td>
</tr>
<tr>
<td>D8 Ship Construction File</td>
<td>Activity 1 system</td>
</tr>
<tr>
<td>B2 &amp; B4 Port-CDM and PCS</td>
<td>proof of concept: Technical-Nautical Services management (focus on tugs) and data sharing for Collaborative Decision Making</td>
</tr>
<tr>
<td>B3 Port manoeuvring (InfoTUGS for Rimorchiatori Napoletani)</td>
<td>State Property Information System</td>
</tr>
<tr>
<td>B4_1 Sistema Informativo del Demanio – SID</td>
<td>State Property Information System</td>
</tr>
<tr>
<td>B5_1 Man over board (Picasso project)</td>
<td>System developed in Monalisa 2.0 Project</td>
</tr>
<tr>
<td>B5 Indoor positioning system</td>
<td>System developed in Picasso Project</td>
</tr>
<tr>
<td>B2 Other simulators</td>
<td>For example IMAT (new implementing body) simulators</td>
</tr>
</tbody>
</table>
3 STM and e-compliance

The maritime sector asks for simplification and reduction of administrative burden, as an example, the results of a consultation with administrations and stakeholders carried out by BIMCO in 2014 are relevant. According to BIMCO’s Secretary General:

- “Shipping needs to be able to use the latest technology for its reporting – and recognition of electronic certificates ought to be a prerequisite in this day and age”.
- “BIMCO therefore urges the IMO Council to make firm decisions on the basis of the recommendations and remove unnecessary administrative burdens.”

On the basis of BIMCO’s report, an assessment of e-compliance including e-certificates was carried out within the ANNA Action suggesting (please see Appendix 01) to consider e-certificates, electronic log-books, reporting formalities (NMSW) and transport documents as complementary aspects of the same matter. ANNA’s assessment was taken forward within STM which specifically focused on:

a) IMO’s developments on e-certificates

b) e-compliance opportunities:
   - electronic log books
   - regulatory developments – MRV, SCF
   - digital transport documents for containerised freight

c) validation of previous work (MIELE, ANNA) in view of its extension, adaptation and/or re-use within STM

For the purpose of implementing e-administration, it is recommended to start with those topics for which availability of information in digital form (which is a fall-out of implementation of the RFD) is the main enabler. As an example this is the case for interoperability/common data model/MIG between RIS and MSW as well as e-certificates.
In general terms the first and most important measure to implement in order to facilitate e-administration and, more generally, a digital single market, is to agree and maintain a common MIG for MSW and to use it also when dealing with related e-administration matters.

Each of the above tasks is summarised in the following, making reference to the supporting documents produced/consulted. The list of such documents is provided in Part 4 of this report: supporting documents are provided as separate files.
4 IMO’s developments on e-certificates

Outline of work done:

- **Monitoring and contribution to the developments** within IMO FAL Committee meetings 39 and 40 *(please see Appendix 03)*: discusses electronic certificates for ships and proposes a solution based on a combination of printable electronic files, e.g. in PDF incorporating an electronic signature in the form of a QR code. The code can contain machine readable information about the certificate as well as an electronic signature. The memo also proposes to add a fully electronic format, e.g. in XML to the printable format for use in fully automated processing of certificates for in-house management by ship operators or for electronic clearance of ships.

- **Assessment of previous work with respect to compliance with IMO’s draft and final guidelines for e-certificates**: Delays in granting the license will also cause significant problems by hindering international trade, increasing cost of trade as well as causing lost revenue for the ship operators and cargo owners. Thus, efficient handling of certificates is a very important part of international trade. Making use of modern information and communication technology, i.e. introducing "electronic certificates" may significant improve on the efficiency, if done properly.

- **Familiarisation with ISO technology report (please see Appendix 02)**: each certificate be printed with a QR code, or other machine readable format, which is not just the digital signature, but actually the entire digitally signed electronic version, including all the information. Digital signatures need not be long, although it may not be possible to store the entire validation chain on the QR code, it can at least store the digital certificate of the direct issuer.

- **Assessment of ANNA’s CEDA in view of verification of compliance with ISO’s CEDA technology and of integrability into shore centers/fleet operation centers**: defines the guidelines for the management, release, conservation, distribution, approval, and recognition, at international level, of the
Certificates / Documents issued in an electronic format, of recognized type, for Italian flag ships. The duration and expiry of the certificates depends on their type. Some are connected to the existence of the ship itself and are valid until the ship does not change flag or size. According to the Italian law the digital certificate is such if "authenticated" with digital signature or qualified electronic signature. The digital signature is issued through a personal key system, so the certifying body should have about 300 accredited people. The certifying body should become a certifying body for certificates or rely on an entity of this type to have the certificates for the signatures.

- **Familiarisation with IACS (Classification Societies) standard for information sharing on e-certificates**: The societies shall not provide printed information except by special cases. It is the responsibility of individual flag States to access the information and produce any relevant reports based on the data collected. A set of standard report formats has been developed for presenting key information on ships and management companies to flag States in a consistent manner. It is anticipated that each society would implement systems for producing reports, in the agreed format, as part of their existing corporate database systems.

- **Study for integrability of NMSW and e-certificates based on IACS standard**: The Organization aims to reduce the administrative burden on Administrations, port State control officials, ships’ crews and other stakeholders caused, amongst other reasons, by reliance on traditional paper certificates. The purpose of these guidelines is to facilitate the use and acceptance of electronic certificates. Administrations should put in place the necessary procedures in order to ensure that all related stakeholders' needs, capacities, and expectations are taken into consideration before and during the implementation of electronic certificates.
Conclusion

IMO guidelines on e-certificates, approved on April 2016, and the available technologies as reviewed by ISO allow for deployment of e-certificates although not in a uniform way.

The concept of CEDA (Certified E-document Authority) is emerging as a platform to manage e-certificates. This concept is coherent with information sharing within Shore Center(s) and/or Fleet Operation Center(s).

Besides Competent Authorities and the involved shipowner, potential users of CEDA are ship agents, ship repair facilities, insurance companies and port facilities. This suggests interfacing CEDA and Shore Center(s).

Most of the data elements contained in the certificates are already included in reporting formalities (NMSW) however, IACS standard information sharing is not fully compatible with NMSW standard message (B2MSW). This can be solved by a translator (e.g. MIELE technology).
5 E-compliance opportunities: log books

Outline of work done:

- Familiarisation with IMO guidelines (2016) on electronic log books (please see Appendix 12): the work undertaken by the correspondence group in finalizing the draft guidance for the use of electronic record books under MARPOL; proposed amendments to Procedures for port State control, 2011 to facilitate the use of electronic record books under MARPOL; and draft unified interpretations to MARPOL to allow the use of electronic record books; This guidance is only applicable to the use of electronic record books on board to meet the requirements of record books under MARPOL.

To facilitate the use of electronic record books under MARPOL; and draft unified interpretations to MARPOL to allow the use of electronic record books:

1. the conclusions of the correspondence group; and
2. the issues for resolution when finalizing this draft guidance.

- Assessment (please see Appendix 11) of e-log book acceptance by Administrations (E-Log book approval): approval by Malta Maritime Authority, Danish Maritime, and Norwegian Maritime.

- Assessment of ANNA’s log book pilot in view of adaptations to STM scope: reduction of Administrative burdens.
Conclusion

Log books are regularly (some more than once daily) updated with information generated on board;

thanks to the increased ship automation most of that information is already electronically available on board. For this reason, several Administrations already accept electronically developed log-books. However these log books are not electronically provided/shared with the competent authority: this would be an aim of e-compliance.

In several instances information to be recorded is also relevant for Sea Traffic Management and for

Port Services. This is the case, e.g. of IMO Resolution A.916(22) on the recording of events related to navigation (please see Appendix 10); similarly part of the information contained in log books is also included in some reporting formalities dealt with by NMSW.

In view of a process of reducing administrative burden, IMO published in 2016 guidelines for e-log books (please see Appendix 12):

From the above it appears that electronic information sharing is very relevant between log-books (on board and in shore FOCs), NMSW and Port Community (PORT CDM).

Review and assessment of previous work on e-log books (ANNA) showed consistency with IMO’s guidelines and with STM Port CDM/Shore Center developments.

Feasibility of STM log book, in a information sharing perspective with possibility to remotely update(e-compliance) was confirmed.
6 Regulatory developments: MRV, SCF

Outline of work done:

- Monitoring of maritime regulatory developments at both EU and IMO level in view of e-compliance;

- Assessment of MRV (Reg EU 2015/757) in view of info sharing potential. Significant potential for interoperability with FOC and with on board energy efficiency systems;

- Assessment of Ship Construction File (SCF) requirements. Significant potentials in view of shore based assistance for maintenance and/or emergency (ship repair). It is noted that this is an IMO requirement only for certain ship types (bulk carriers and oil tankers) and for structural repair only. However, the concept of “digital twin” and of “digitally available models and information” to be used on board when needed with possibly a shore support, is present. This is a basis for future voluntary shore supported on board maintenance and/or operational optimisation.
Conclusion

Both MRV and SCF are examples of modern regulations where the potentials for smart shipping and shore assisted operations are beyond the sea traffic management.

In a relatively short term, provided sufficient data exchange/connectivity is available, considerable information sharing will be dedicated to such type of operational support. Inclusion of MRV and of SCF type of solutions within Shore Center/FOC is to be pursued to avoid non cooperative information sharing.
7 Building Blocks (BB)

Main building blocks for electronic certificates are:

- BB1: IMO’s Guide for e-certificate (please see Appendix 07):

- BB2: ISO’s technology overview (please see Appendix 02):

Their use in view of allowing compatibility and information sharing with e-log books and other e-compliance future application (MRV and SCF, as an example) is possible and recommended.

Compatibility with Shore Center, Fleet Operation Center and Port CDM is feasible based on the re-use of NMSW technology and message implementation guide.
## 8 Appendices

<table>
<thead>
<tr>
<th>App01</th>
<th>ANNA results and suggested actions</th>
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<tbody>
<tr>
<td>App02</td>
<td>ISO Technical options for implementing electronic certificates. available results (MIELE, ANNA) and to assess STM pilots</td>
</tr>
</tbody>
</table>
| App03 | IMO FAL 40 developments related to e-certificates (17 documents). Among these documents (see also App03_01 FAL 40 Notes) the following are particularly relevant and have been used within the sub-activity:  
  - App03_02 FAL40-6 Report of the Correspondence Group  
  - App03_03 FAL 40-6-1 Review of IMO Compendium  
  - App03_04 FAL 40-6-2 Standardisation of electronic certificates (ISO); update of ISO technical options  
  - App03_05 FAL 40-WP.3 Report of the working group on Single Window |
<p>| App04 | ANNA’s CEDA approach. Selected for use in STM being In accordance with ISO technical options. |
| App05 | IACS standard for electronic exchange of information on certificates |
| App06 | IACStsIMO_FAL. Analysis of complementarity between reporting formalities and e-certificates |
| App07 | IMO’s Guidelines for e-certificates |
| App08 | Review of the IMO’s CEDA concept |
| App09 | IMO’s list of certificates and documents which need to be carried by ships (therefore need to be compliant to certain regulations and could be part of a e-compliance approach) with the indication of their specific characteristics e.g. log book or manual, containing data elements already used in other reporting formalities |
| App10 | IMO Resolution A.916(22) – Guidelines for the recording of Events related to navigation. Used to validate/update |
| App11 | Approvals of e-log books by some Administrations. No electronic information sharing foreseen |
| App12 | IMO (MEPC) Guidelines on electronic log books |
| App13 | Extract from IMO (MEPC) decision on e-log books |
| App14 | Prioritised list of electronic log books based on information sharing potential |</p>
<table>
<thead>
<tr>
<th>App15</th>
<th>ANNA’s e-log book approach. Validated for use in STM</th>
</tr>
</thead>
<tbody>
<tr>
<td>App17</td>
<td>Ship Construction File (SCF):</td>
</tr>
<tr>
<td></td>
<td>App17.01 Extract from IMO (MSC) report approving the SCF requirement for bulk carriers and tankers</td>
</tr>
<tr>
<td></td>
<td>App17.02 and App17.03 – Interim SCF Industrial standards</td>
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<tr>
<td></td>
<td>App17.04 Example (Class NK) of SCF information sharing system</td>
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38 partners from 13 countries - Creating a safer more efficient and environmentally friendly maritime sector

Demonstrating the function and business value of the Sea Traffic Management concept and its services.

SAFETY - ENVIRONMENT - EFFICIENCY

Swedish Maritime Administration ◦ SSPA ◦ RISE Viktoria ◦ Transas/ Wärtsilä Voyage ◦ Chalmers University of Technology ◦ The Swedish Meteorological and Hydrological Institute ◦ Danish Maritime Authority ◦ Navicon ◦ Novia University of Applied Sciences ◦ Fraunhofer ◦ Carnival Corp. ◦ Italian Ministry of Transport ◦ SASEMAR ◦ Valencia Port Authority ◦ Valencia Port Foundation ◦ CIMNE ◦ University of Catalonia ◦ Norwegian Coastal Administration ◦ GS1 ◦ Cyprus University of Technology ◦ Port of Barcelona ◦ Costa Crociere ◦ Svitzer ◦ OFFIS ◦ Finnish Transport Agency ◦ Southampton Solent University ◦ Frequentis ◦ Wärtsilä SAM Electronics ◦ University of Flensburg ◦ Airbus ◦ Maritiem Instituut Willem Barentsz ◦ SAAB TransponderTech AB ◦ University of Oldenburg ◦ Magellan ◦ Furuno Finland ◦ Rörvik ◦ University of Southampton ◦ HiQ

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M13 - e-Certificates definition (Appendix 01)

30 APRIL 2016
E-administration’s topics (A3.2)

**AnNA**

**Activity A3.2 – E-Administration’s matters**

Main Authors: E. Kuznetcova, C. Cerrini, E. Morea

<table>
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**NOTE.** This document was developed with the contributions of the following Beneficiaries: RINA, IB, MIT
Contributions received from Belgium were included in rev 2

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</tbody>
</table>

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E-administration's topics (A3.2)

1 LIST OF ABBREVIATIONS .............................................................................................................. 4

2 EXECUTIVE SUMMARY .................................................................................................................. 4
  2.1 AIM OF THE DOCUMENT ........................................................................................................ 4
  2.2 RESULTS AND RECOMMENDATIONS ON PRIORITIES ...................................................... 5

3 BACKGROUND ON E-ADMINISTRATION ...................................................................................... 6
  3.1 FOREWORD .............................................................................................................................. 6
  3.2 THE EU E-GOV AND E-MARITIME LONG TERM VISIONS .................................................. 6
  3.3 THE IMO ................................................................................................................................ 7
  3.4 ITALIAN MINISTRY OF TRANSPORT PRIORITIES ................................................................. 7
  3.5 INDUSTRIAL STAKEHOLDERS’ EXPECTATIONS ..................................................................... 7

4 E-ADMINISTRATION’S TOPICS ..................................................................................................... 11
  4.1 EA1 – IMO DEVELOPMENTS ..................................................................................................... 11
  4.2 EA2 – ILO MARITIME LABOUR CONVENTION (MLC) ............................................................ 11
  4.3 EA3 – ELECTRONIC LOG BOOKS (ELB) FOR SHIPS ............................................................ 11
  4.4 EA4 – ELECTRONIC SHIP CERTIFICATES ............................................................................ 12
  4.5 EA5 – CREW CERTIFICATES .................................................................................................... 13
  4.6 EA6 – BORDER CONTROL POLICE – SHORE PASS ............................................................... 13
  4.7 EA7 – CONSULATES ................................................................................................................ 13
  4.8 EA8 – MARINE EQUIPMENT DIRECTIVE (MED) ................................................................. 14
  4.9 EA9 – NON-EU MSW .............................................................................................................. 14
  4.10 E10 – RIS (RIVER INFORMATION SERVICES) ........................................................................ 15
  4.11 E11 – HNS (CONVENTION ON LIABILITY & COMPENSATION FOR DAMAGE IN CONNECTION WITH THE CARRIAGE OF HAZARDOUS AND NOXIOUS SUBSTANCES BY SEA) ......................................................... 15
  4.12 E12 – STCW CONVENTION ................................................................................................... 16

APPENDIX 1 – RESULTS OF THE IMO PUBLIC CONSULTATION ON ADMINISTRATIVE REQUIREMENTS IN MARITIME REGULATIONS (SEPARATE PDF FILE) ............................................................... 17

APPENDIX 2 – GENERAL .................................................................................................................... 17
  A2.1 LIST OF “TOPICS” .................................................................................................................. 17

APPENDIX 3 – E-ADMINISTRATION .................................................................................................. 17
  A3.3.1 REPORT OF THE IMO AD HOC STEERING GROUP FOR REDUCING ADMINISTRATIVE REQUIREMENTS (SEPARATE PDF FILE) .................................................................................................................. 17
  A3.3.2 HISTORY OF IMO ACTIVITIES TO FACILITATE ADMINISTRATIVE PROCEDURES FOR MARITIME TRANSPORT (SEPARATE WORD FILE) .................................................................................. 17
  A3.4.1 ITALIAN TRANSPORT POLICY PRIORITIES (IN ITALIAN – SEPARATE PDF FILE) ................................................................. 17
  A3.5.1 OUTCOME OF IMO COUNCIL ON ADMINISTRATIVE BURDENS EDITED BY BIMCO ................................................................................................................................. 17

APPENDIX 4 – E-ADMINISTRATION TOPICS................................................................................. 19
  A4.1.1 EXTRACT FROM IMO JOURNAL (SEPARATE PDF FILE) .................................................... 19
  A4.1.2 IMO-WCO AGREEMENT (PRESS RELEASE) ..................................................................... 19
  A4.2.1 MARITIME LABOUR CONVENTION, 2006 (SEPARATE PDF FILE) .................................... 19
  A4.3.1 LIST OF LOG BOOKS TO BE CARRIED ON BOARD .......................................................... 19
  A4.3.2 GUIDANCE FOR THE USE OF ELECTRONIC RECORD BOOKS UNDER MARPOL (IMO DOCUMENT MEPC 66/7) (SEPARATE PDF FILE) ................................................................................................. 19
  A4.3.3 COMMON DATA ELEMENTS BETWEEN LOG BOOKS AND REPORTING FORMALITIES ................................................................................................................................. 21
  A4.4.1 TERMS OF REFERENCE OF THE 2015 CG ON E-CERTIFICATES UNDER FAL .................................................................................................................. 22
  A4.4.2 LIST OF CERTIFICATES AND OTHER DOCUMENTS TO BE CARRIED ON BOARD. IMO CIRCULAR FAL.2/CIRC.127 (SEPARATE PDF FILE) .................................................................................. 23
  A4.4.3 COMMON DATA ELEMENTS BETWEEN E-CERTIFICATES AND REPORTING FORMALITIES (SEPARATE PDF FILE) ............................................................................................. 23
  A4.4.4 COMMON DATA ELEMENTS NEEDED BY EQUASIS DATABASES (SEPARATE PDF FILE) ................................................................................................................................. 23
  A4.4.5 ICT SOLUTIONS FOR STORAGE, MAINTENANCE AND RETRIEVAL OF SHIP E-CERTIFICATES (SEPARATE PDF FILE) ................................................................. 23
  A4.5.1 DIRECTIVE 2012/35/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL (SEPARATE PDF FILE) ................................................................................................. 24
<table>
<thead>
<tr>
<th>A4.7.1</th>
<th>PRONTUARIO AMMINISTRATIVO DI NAVIGAZIONE MARITTIMA AD USO DEGLI UFFICI CONSOLARI E DELL’UTENZA ARMATORIALE (SEPARATE PDF FILE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A4.7.2</td>
<td>GUIDELINES FOR SHIP INSPECTION AND CERTIFICATION IN PHILIPPINES (SEPARATE WORD FILE)</td>
</tr>
<tr>
<td>A4.10.1</td>
<td>DIRECTIVE 2005/44/EU – “RIS DIRECTIVE” (SEPARATE PDF FILE)</td>
</tr>
<tr>
<td>A4.10.2</td>
<td>COMMISSION REGULATION 164/2010 – TECHNICAL SPECIFICATIONS ON ELECTRONIC SHIP REPORTING ON RIS (SEPARATE PDF FILE)</td>
</tr>
<tr>
<td>A4.10.3</td>
<td>RFD-RIS CONNECTION AND ITALIAN CASE STUDIES (SEPARATE FOLDER CONTAINING WORD AND EXCEL FILES)</td>
</tr>
<tr>
<td>A4.11.1</td>
<td>HSN CONVENTION - OVERVIEW</td>
</tr>
<tr>
<td>A4.11.2</td>
<td>HSN CONVENTION – FULL TEXT</td>
</tr>
<tr>
<td>A4.12.1</td>
<td>THE MANILA AMENDMENTS TO THE ANNEX TO THE INTERNATIONAL CONVENTION ON STANDARDS OF TRAINING, CERTIFICATION AND WATCHKEEPING FOR SEAFARERS (STCW), 1978 (SEPARATE PDF FILE)</td>
</tr>
</tbody>
</table>
1 LIST OF ABBREVIATIONS

<table>
<thead>
<tr>
<th>Full text</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2013 (8450) dated 26/11/201 concerning the granting of Union financial aid for projects of common interest “AnNA” – 2012-EU-21019-S in the field of the trans-European transport networks (TEN-T)</td>
<td>Decision</td>
</tr>
<tr>
<td>ANNA Italian Team composed of the Beneficiary (Directorate General for Maritime Transport and Inland Waterways of MIT) and the Implementing bodies</td>
<td>AnNA IT</td>
</tr>
<tr>
<td>Ministry of Infrastructures and Transport - Directorate General for Supervision of Port Authorities, Port Infrastructures and maritime transport and inland navigation</td>
<td>MIT</td>
</tr>
<tr>
<td>Message Implementation Guide</td>
<td>MIG</td>
</tr>
<tr>
<td>Port Community System</td>
<td>PCS</td>
</tr>
<tr>
<td>Business to Maritime Single Window</td>
<td>B2MSW</td>
</tr>
<tr>
<td>Maritime Single Window to Maritime Single Window</td>
<td>MSW2MSW</td>
</tr>
<tr>
<td>International Maritime Organisation</td>
<td>IMO</td>
</tr>
<tr>
<td>AnNa e-maritime topic 1 – IMO developments</td>
<td>EA1</td>
</tr>
<tr>
<td>AnNa e-maritime topic 2 – ILO’s Maritime Labour Convention</td>
<td>EA2</td>
</tr>
<tr>
<td>AnNa e-maritime topic 3 – Electronic Log Books (ELB)</td>
<td>EA3</td>
</tr>
<tr>
<td>AnNa e-maritime topic 4 – Electronic Ship Certificates</td>
<td>EA4</td>
</tr>
<tr>
<td>AnNa e-maritime topic 5 – Crew Certificates</td>
<td>AE5</td>
</tr>
<tr>
<td>AnNa e-maritime topic 6 – CPB – Shore pass</td>
<td>AE6</td>
</tr>
<tr>
<td>AnNa e-maritime topic 7 – Consulates</td>
<td>EA7</td>
</tr>
<tr>
<td>AnNa e-maritime topic 8 – Marine Equipment Directive (MED)</td>
<td>EA8</td>
</tr>
<tr>
<td>AnNa e-maritime topic 9 – non-EU MSW</td>
<td>EA9</td>
</tr>
<tr>
<td>AnNa e-maritime topic 10 – RIS</td>
<td>EA10</td>
</tr>
<tr>
<td>(National) Maritime Single Window</td>
<td>(N)MSW</td>
</tr>
<tr>
<td>Reporting Formalities Directive / Directive 2010/65/EU</td>
<td>RFD</td>
</tr>
<tr>
<td>Baltic and International Maritime Council</td>
<td>BIMCO</td>
</tr>
<tr>
<td>Steering Group for Reducing Administrative Requirements</td>
<td>SG-RAR</td>
</tr>
<tr>
<td>Marine Environment Protection Committee</td>
<td>MEPC</td>
</tr>
<tr>
<td>World Customer Organisation</td>
<td>WCO</td>
</tr>
<tr>
<td>Maritime Labour Convention</td>
<td>MLC</td>
</tr>
<tr>
<td>Electronic Log Book</td>
<td>ELB</td>
</tr>
<tr>
<td>Certification E Document Authority</td>
<td>CEDA</td>
</tr>
<tr>
<td>River Information Services</td>
<td>RIS</td>
</tr>
<tr>
<td>Data Exchange Mechanism</td>
<td>DEM</td>
</tr>
<tr>
<td>SAFE SEA NET</td>
<td>SSN</td>
</tr>
</tbody>
</table>

2 EXECUTIVE SUMMARY

2.1 Aim of the document

According to the SAP, the aims of Sub-Act 3.2 are to:
- identify the potential measures proposed or considered by the EU Member States for realising (2015+)
  further simplification, harmonisation and cooperation:
  o across transport modes and having a direct consequence for the logistic sector in enabling improved allocation of resources and ultimately a more reliable and transparent service;
  o between authority sectors having a direct influence on the movement of goods and passengers, such as customs, cross-border, health, sanitation, etc.
- define a common strategy towards synergies in ICT related maritime and land transport freight flows – supply chain integration.

In order to do that, within the Sub-Act, an evaluation should be made of the measures on transport, logistics and trade that could be further elaborated in order to develop Maritime Single Windows as effective tools for the development of integrated ICT transport networks. These results will have to be incorporated into the report covering ANNA’s Milestone 13.

In practical terms, to perform the work in Sub-Act 3.2 was divided in 3 perspectives, namely e-administration (led by Italy), Trade&Customs (led by Sweden) and Transport Modes (led by France). So, this document looks at the future from the perspective of e_Administration. Each perspective was further subdivided into “topics”, each one of which is a possible “measure” already under consideration and/or to be considered in order to foster further simplification beyond 2015 (see Appendix 2.1 for the full list of topics for each perspective).

The aim of this document is to provide an insight on the results of Sub-Act 3.2 regarding to “e-maritime” perspective. Accordingly the document is organized as follows:

- the background on e-administration is provided in section 3
- each topic is described in section 4 providing, respectively, a description of the needs/subject, its status, the work done in AnNa (e.g. desk study, demonstrator, pilot, other) and the result
- recommendations for inclusion, as appropriate, in AnNa milestone 13 are provided in section 2.2
- details, relevant documents and/or other specific information are provided in Appendices (respectively Appendix 2 and 3 related to matters dealt with in sections 2 and 3 of this document).

2.2 Results and recommendations on priorities

Based on the desk studies carried out as reported in this document, the following is recommended:

a) For the purposes of the AnNa Action, some of the e-Administration topics should be further investigated by means of carrying out a more insight analysis and/or developing a small pilot/demonstrator. Accordingly MIT, within Activity 3, at the date of issue of this document is finalising studies as per Table 2.2.1 below. These studies are either reported in this document or will be reported, by the end of the Action, as an additional task within sub-activity 3.2 or 3.3 as appropriate.

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Study</th>
<th>IT tool</th>
<th>Demo</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>EA1</td>
<td>IMO developments (FAL)</td>
<td>✓</td>
<td></td>
<td></td>
<td>FAL40 preparation</td>
</tr>
<tr>
<td>EA2</td>
<td>ILO MLC (Maritime Labour Convention)</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EA3</td>
<td>Electronic Ship Log Book</td>
<td>✓ ✓ ✓</td>
<td></td>
<td></td>
<td>See Appendices A4.3.1 to A4.3.3</td>
</tr>
<tr>
<td>EA4</td>
<td>Electronic ship certificates (SOLAS-MARPOL)</td>
<td>✓ ✓ ✓</td>
<td></td>
<td></td>
<td>See App. A4.4.1 to A4.4.5 and extra report</td>
</tr>
<tr>
<td>EA5</td>
<td>Crew «certificates» HTW (including certification of training on board)</td>
<td>✓ ✓ ✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EA6</td>
<td>Control Border Police related (e.g. shore pass)</td>
<td>✓ ✓ ✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EA7</td>
<td>Administrative fulfilment for ships abroad (Embassies/Consulates)</td>
<td>✓ ✓ ✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EA8</td>
<td>Revised marine equipment Directive</td>
<td>✓ ✓ ✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EA9</td>
<td>Other non EU MSW compatibility</td>
<td>✓ ✓ ✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EA9bis</td>
<td>Don't Panic</td>
<td>✓ ✓ ✓</td>
<td></td>
<td></td>
<td>Italian Helpdesk for reporting to non-Italian MSWs during the start-up phase (JULY-DECEMBER 2015)</td>
</tr>
<tr>
<td>EA10</td>
<td>Integration with RIS</td>
<td>✓ ✓ ✓</td>
<td></td>
<td></td>
<td>See Appendices A4.10.1 to A4.10.3</td>
</tr>
</tbody>
</table>

1 E-maritime refers to the initiative as defined by the European Commission and launched in the framework of the action plan attached to the 2006 White Paper on transport policy
b) For the purpose of implementing e-administration, it is recommended to start with those topics for which availability of information in digital form (which is a fall-out of implementation of the RFD) is the main enabler. As an example this is the case for interoperability/common data model/MIG between RIS and MSW as well as e-certificates.

c) In general terms the first and most important measure to implement in order to facilitate e-administration and, more generally, a digital single market, is to agree and maintain a common MIG for MSW and to use it also when dealing with related e-administration matters.

3 BACKGROUND ON E-ADMINISTRATION

3.1 Foreword
The advent of the MSW (in EU through the implementation of RFD and world-wide according to the revised annex to the FAL Convention) will naturally foster the use of a growing amount of electronic data exchanged with Administrations in the near future. This is in line with and part of what is generally called e-government (e-gov). It is noted that the term e-gov usually covers a range of activities such as electronic interactions between citizens and administrations or the digitalization of the public Administration. Rather than e-gov, interactions with administrations will be referred as “e-administration” in this document.

As a follow-up of the establishment of the MSW, future e-administration developments are quite obvious and/or easy to forecast: once a few issues are solved (the most important of which are data privacy and security which, however, do not present any technical difficulty), hundreds of initiatives could be taken thank to two main reasons:

- several Member States will have, in its NMSW, an electronic “non stop shop” (or SPOC – single point of contact) where to lodge/retrieve/store data in electronic format
- a single (or a very limited number) of electronic formats will be used, as a minimum for all the data elements foreseen by RFD; hence a world wide standardized “language” (e.g. the AnNa MIG) will exist.

The main issue on e-administration topics is to define priorities. In other words, it will be important to have as widely as possible an agreed “strategic agenda” so that the same topics are implemented at the same time at least at EU level. The work done on EU level could afterwards provide considerable input at IMO level. In this perspective EU Member States could clearly take the lead in this worldwide race.

3.2 The EU e-gov and e-maritime long term visions
The European Commission in 2009 has committed itself to improve the competitiveness of the European maritime transport sector and recognised e-Maritime initiative as being one of the key initiatives in this field. The e-Maritime initiative builds upon the guidelines set in the Lisbon Agenda and the White Paper on Transport policy and outlines measures related to:

- promoting interoperable e-Maritime systems
- actions to define e-Maritime standards
- measures for the implementation of National Single Windows
- actions to support the intelligent use of data
- actions to optimise traffic inside and around ports
- actions to support e-services for seafarers

Since then, the so-called EU e-Maritime initiative was assessed in different ways, including public consultation and various projects both R&D (co-financed under FP7, such as e.g. e-Mar) and TEN-T. As a result, important information were collected concerning a future implementation of e-maritime, its impact and its costs.

It is now quite clear to EU Administrations that the future of the international transport and trade is closely linked to the e-documentation. Transport is expected to be a significant enabler/beneficiary from the EU

2 EU GDPR (General Data Protection Regulation) also is to be considered once available
digital single market which, according to Commission’s estimates, could generate up to € 340 billion of additional growth and hundreds of thousands of new jobs (cf. Political Guidelines issued by President Juncker for 2014-2019 – “A new start for Europe: Agenda for Jobs, Growth, fairness and democratic change”). All these aspects are included in a new initiative called DTLF (Digital Transport and Logistic Forum) 3 launched by DGMOVE in July 2015 that aims at promoting a wide use of e-documents for transport.

3.3 The IMO

At the IMO level, e-administration is dealt with at two levels:

a) Strategy. It is a matter for IMO’s Council which established in 2012 the Ad Hoc Steering Group for Reducing Administrative Requirements (SG-RAR) whose report (2014) is included as Appendix 3.3.1 contains the results and analysis of the first-ever public consultation undertaken by the IMO on reduction of administrative burden and calls inter alia for:

- Electronic certificates and other documents to be equivalent as original paper documents.
- An electronic “single window” information exchange system should be introduced to fulfil multiple reporting requirements.
- Ship owners, administrations, classification societies and commercial parties etc. to accept electronic or software solutions as a suitable replacement for paper documentation.

b) Operational. Most of the topics are dealt with the FAL (Facilitation Committee) since the aim of these actions is to facilitate trade and business. However, some specific topics are considered by other Committees. The matter of electronic log books discussed in the MEPC as far as log books required by MARPOL Convention is considered is a good example. In Appendix 3.3.2 a synthesis of relevant developments at FAL is provided.

3.4 Italian Ministry of Transport priorities

Digitalisation of transport aiming at increased efficiency of administrative processes and at reducing administrative burden to operators is priority #4 in the Italian Transport Policy Priority package issued by the Ministry of Transport in July 2014 (see Appendix 3.4.1). Accordingly, an high level pre-deployment plan covering maritime e-administration matters was designed by MIT (see Fig. 3.4.1) and is being pursued, among others through ANNA’s Activity 3.

3.5 Industrial stakeholders’ expectations

In general terms, industry and trade ask for simplification and reduction of administrative burden (see AnNa milestone 6 and the NMSW is perceived as a potentially significant enabling factor. In view of example, and in order to provide some insight on how administrative formalities are perceived in the maritime world, in the following the results of a consultation with administrations and stakeholders carried

3 For more information see: www.dtlf.eu
out by BIMCO are summarized (for the whole Outcome of IMO Council on Administrative Burdens edited by BIMCO see Appendix 3.5.1 and Appendix 1 for the published report):
- Figures 3.5.1 and 3.5.2 provide basic statistical information related to the consultation process;
- According to BIMCO’s Secretary General “Shipping needs to be able to use the latest technology for its reporting – and recognition of electronic certificates ought to be a prerequisite in this day and age.
- “BIMCO therefore urges the IMO Council to make firm decisions on the basis of the recommendations and remove unnecessary administrative burdens.”

While being in agreement with BIMCO we underlined other recommended actions:
- Using electronic reporting (basic but so important!)
- Acceptance of electronic record-keeping (see also the MEPC work on e-log book and section 4.3 of this document)
Fig. 3.5.1. (reproduced from BIMCO Study)
Fig. 3.5.2. (reproduced from BIMCO Study)
4 E-ADMINISTRATION’S TOPICS

4.1 EA1 – IMO developments

Background and aims:
E-administration matters are a priority at the IMO (see section 3.3 of this document). The aim of this topic is to monitor IMO’s relevant developments/plans so as to take them into account in planning (2015+) simplification, harmonization and cooperation work.

Summary of work done:
Monitoring FAL Committee meetings (each 18 months) and, where relevant, other IMO’s Committees work.

Results:
Specific aspects are injected, as appropriate, in the work of e-administration topics (see following para 4.2 to 4.11).

It is to be noted that considerable work was done with the revised annex to the FAL Convention (which was finalized at the 39th Session of FAL in September 2014) and includes the obligation of exchanging electronically the formalities requested by the annex of the Convention. The 40th FAL Committee (to be held tentatively in March or April 2016) will adopt the revised annex. Such requirement should enter into force approximately in 2018 with a 12 months of “period of grace” during which both paper and electronic support will be acceptable. In Appendix 4.1.1 an article published on the IMO’s journal is attached which provides some details.

It is also noted that during the 39th FAL Committee (2014) it was agreed to leave to the WCO the technical task of keeping the FAL Compendium (which includes format of messages) updated. An implementing meeting to this effect was held in March 2015 (see Appendix 4.1.2).

Recommendations:
None (next FAL Committee Meeting will be held after completion of ANNA).

4.2 EA2 – ILO Maritime Labour Convention (MLC)

Background and aims:
The recently entered into force MLC Convention (compulsory worldwide) includes reporting requirements on e.g. working/worked hours of seafarers and similar; relevant Competent Authorities are responsible to monitor and control compliance with maximum daily working hours and minimum resting periods.

Summary of work done:
The MLC was analysed to understand how Member States should monitor compliance with the legislation. The Maritime Labour Convention (see Appendix 4.2.1) in Regulation 2.3 regarding hours of work and hours of rest establish that each Member shall require that records of seafarer’s daily hours of work or of their daily hours of rest be maintained to allow monitoring of compliance with this Convention.

Results:
The information, to be provided and/or to be verified on board regularly, should contain crew details (e.g. name, surname, rank) most of which are included in the crew declaration, hence will be already available electronically in the NMSW in a standardized format. The date format necessary for timesheet is also present (date of arrival/departure) and time format could be taken from other FALs.

Recommendations:
It would be desirable that data related to work/rest hours of seafarers were standardized and provided in the same format of the FAL forms, since both documents are generated on board and should be in electronic format.

4.3 EA3 – Electronic Log Books (ELB) for ships

Background and aims:
According to international conventions each ship has to keep onboard updated information (sometimes more than once a day), carry on board and have those ready for inspection by port state control officials. Depending on the ship type and/or service up to some 15 log books are requested; few additional log books might be requested by national legislation (see Appendix 4.3.1 for the list). Compilation of these books is a time consuming and, as some of the data are the same, repetitive task. This is particularly acute if electronic versions of log books are not accepted by the Administration.

It is to be noted that part of the information to be recorded in the log is also part of the reporting formalities covered by the RFD. The advent of the NSW will create the conditions for reducing part of the paperwork on board since part of the digital information to be submitted can be retrieved from log books or viceversa. This could also foster the acceptance of electronic log books by Administrations (see also Appendix 4.3.2).
The list of required log books is provided in Appendix 4.3.1 including the indication of partial superposition with one or more reporting formality.

**Results**

The list of common data elements between log books and reporting formalities is provided in Appendix 4.3.3. In red are indicated the notes made by Italy in AnNa perspective.

**Recommendations**

A high level gap analysis should be undertaken: since legal requirements could prevent some "e-" solution, it would be useful to e.g. draw a chart with international legal requirements (IMO, EU and/or other) and a roadmap on how it would be possible to amend these requirements in order to achieve a "e-" solutions.

### 4.4 EA4 – Electronic ship certificates

**Background and aims:**

According to international conventions and depending on the type of ship and service it is engaged in, a ship has to keep on board more than 50 certificates and/or documents in their original version, valid (typical 5 year expiration period, however in some cases renewal is on an yearly basis) and shown upon request by either the flag state and/or port state inspections as well as by private bodies (certification companies). A typical example of this latter case is the vetting inspection carried out by oil companies before awarding a ship the contract to carry their oil.

Keeping the certificate updated and available on board in its original version is a complex and time consuming activity also in view of the fact that the certificate, when is to be renewed, is to be endorsed (signed) by the flag state administration or its authorized representative being it a consulate or a classification society.

The reduction of administrative burden which would be achieved if electronic version of certificates are accepted is easy to understand and would be beneficial for both the ship owner and the administration. For this reason, a correspondence group is working under the supervision of the FAL Committee at the IMO level since 2013 (see section 3.3 for some details) and a preliminary guideline for development of e-certificates is available mainly to cope with the electronic transmission and the use of certificates in pdf version. While this is already an important step toward simplification and dematerialization, the real facilitation will be achieved when “fully electronic” issued certificates be allowed. This is the aim of the FAL Correspondence Group currently working (terms of reference provided in Appendix 4.4.1).

Similarly to the ELB case discussed in para 4.3, part of the information needed to fill certificates is included in the data set of the reporting formalities covered by RFD will be available, in digital form, in MSWs.

It is further noted that, once certificates are electronic and can be downloaded from a SPOC, it is conceivable that a similar service can be offered to shipowners for other documents which have to be kept on board such as e.g. manuals.

**Summary of work done:**

The list of ship certificates and other documents to be kept on board is provided in Appendix 4.4.2. Common data elements between e-certificates and reporting formalities are provided taken from the AnNa workgroup on the part C of the Directive that has identified the Data elements required by any Member State on the certificates and this mapping is available in Appendix 4.4.3.

It has been identified and analysed the xml format agreed between IMO and IACS about the common data elements needed by EQUASIS databases, detailed in paragraph 3.3 of Appendix 4.4.4.

Possible ICT solutions for maintenance and distribution of e-certificates (so called CEDA) are described in Appendix 4.4.5.

**Results:**

The following matters are to be considered in order to foster the adoption of e-certificates:

- a) E-document certification (so called CEDA – Certification E Document Authority), beyond what described in Appendix 4.4.5
- b) replacing the signature in paper certificate with an equivalent for e-certificates
- c) means to interface NMSW to e-certificate repository
- d) whom the e-certificate should be made available to and how
- e) aspects related to class and/or insurance
- f) processes to be adopted when a ship (hence her certificates) changes flag and/or classification society
- g) other issues
- h) possible pilot demonstrator
4.5 **EA5 – Crew certificates**

**Background and aims:**
Seafarers’ required skills vary depending on the rank, role and type of ship on board which they work and, as specified in the STCW Convention, have to be certified. From the dematerialization point of view, seafarers’ certificates are different from ship certificates as they are held by the individuals and are not related to a ship: a seafarer could work, in a short period of time, on several different ships belonging to different shipowners and different flags.

Besides bringing on board their certificates of competence, seafarers are requested (at least under Italian legislation) to periodically update their list of competences (and certificates) to the maritime Administration. This is typically currently done on paper; however some of the requested information is included in the reporting formalities (name, surname, rank) and/or on log books, therefore they are electronically available in the NMSW, hence the process of monitoring and updating seafarers competences by Administrations can be facilitated and made continuous (rather than periodic as it is today).

Furthermore, the Directive 2012/35/EU (Appendix 4.5.1) requests Member States to make available to the Commission (EMSA) on a yearly basis and in electronic format information on seafarers (listed in Annex V of Directive 2012/35/EU). Part of the required information (name, surname, nationality and date of birth) is the same as requested by RFD in the crew list; most if not all the remaining are in the crew certificates.

**Summary of work done:**
As far as Italy is concerned, a preliminary study was carried out aiming at interfacing Italian NMSW with the system (SIGEMAR) through which Italian Administration is currently reporting crew data to EMSA.

**Results:**
High level specifications for integration of SIGEMAR with Italian NMSW (document in Italian, not attached).

**Recommendations:**
An analysis similar to what done in Italy is recommended to be carried out in other Countries which have an approach to Directive 2012/35/EU similar to Italy. Interface between national crew competencies info management systems (such as Italian SIGEMAR) if present and NMSW should be developed in the future as appropriate. EMSA should recover those crew data required by Directive 2012/35 which are also required by RFD only once e.g. from communication NMSW-SSN

4.6 **EA6 – Border Control Police – Shore pass**

**Background and aims:**
Both cruise passengers and crew (of any ship) is staying for a limited amount of hours in a country during a ship call to a port, are generally exempted from the request of VISA and are given the so called “shore pass”. The shore pass is generally granted by the local Border Control Police on the basis of the list of persons which will disembark (for a few hours) and related data, e.g. passport details and expiration date.

**Summary of work done:**
Ship owner has all data necessary for the issue of the shore passes for crew; for passengers one part of data is available on the basis of FAL6, other data requested can be obtained by ship owner from passengers. The most important issue is to define electronic format for passport data which will speed up border checks and hence the issuance of shore passes.

**Results:**
Since crew and passenger lists data are electronically available in the NMSW, the process of granting the shore pass can be made electronic and greatly simplified.

**Recommendations:**
It is recommended use the same electronic format for ship reporting formalities and shore pass issuance.

4.7 **EA7 – Consulates**

**Aims:**
Ships require various certificates issued by their flag state confirming their compliance with various international conventions related to safety and environment protection that the vessel is required to comply with. If a ship at the time when a certificate expires is not in a port of flag state (at least under Italian legislation), it is necessary to contact the flag state consulate on the foreign territory, ask them the new certificate or the renewal of it and wait until the new (or renewal) certificate is ready to be collected by the ship Master. This way takes time for the captain and the console and is therefore very costly and burden for the shipowner.
Summary of work done:
As far as Italian Consulates are concerned, their functions are described in ministerial document "Administrative handbook of maritime navigation for consular and master’s use" (Appendix 4.7.1 in Italian). A limited analysis was also done for some non EU Countries in order to check if their Consulates discharge similar tasks.

Results:
Embassies/consulates are primarily concerned in the following activities:
- issuance, renewal and extension of the ship certificates
- management of crew certificates
- in some cases management of ship logbooks.

The same administrative work is also done by e.g. embassies/consulates of Russia, Philippines (Appendix 4.7.2) and India (http://www.dgshipping.gov.in/Content/PageUrl.aspx?page_name=ShipManualChap15).

Most likely the same happens to all other EU and non-EU Countries.

Recommendations:
Once the e-certificates and e-logbooks are introduced (see section 4.4 and 4.3 of this document), all process will become faster and more efficient and the need to call to Consulates will probably vanish or at least greatly reduce.

4.8 EA8 – Marine Equipment Directive (MED)
Aims:
The New Marine Equipment Directive 2014/90/EU in Article 11 (see Appendix 4.8.1) sets out the conditions for the use of an Electronic tag instead of, or in addition to the wheel mark. Behind every item with electronic tag there is also a certificate which could become electronic too (see section 4.4 of this document). When one item of the equipment will be provided with Electronic tag, it's expected that related (electronic) information will have to be lodged in a suitable information system of the Administration; this information system would possibly be NMSW.
In case some data elements contained in the e-tag is the same of any of those of the RFD such data elements should have the same electronic format (MIG).

Summary of work done:
Analysis of the Directive and monitoring of related initiatives.
Results:
A study on use of e-tag for the purpose of the Directive is (2015) underway at DGMOVE. Results will be available in due time.
Recommendations:
No major technological issue is expected to prevent the implementation of article 11. Accordingly, the matter is simply to be monitored and no further action is considered necessary.

4.9 EA9 – Non-EU MSW
Aims:
Nowadays since the NMSW already exist in some non-EU countries (e.g. Korea) it would be appropriate to understand how they are made and how they function in order to be able to interact with them easily.
For non-EU Countries which have not yet the NMSW would be appropriate for us (e.g. AnNa) to collaborate in order to shape their future NMSW in such way to be compatible with ours.
Actually the results of MSW2MSW pilot will be very interesting also with regard to non-EU countries for the reasons given above.

Summary of work done:
Within the MIELE project at July 2011 some NMSW was analysed in detail (Singapore, Republic of Korea and Japan) for understand establishment, services, operational and business model, technology used etc.
Results:
From the study mentioned above it was observed:
- Widespread use of Standards, even starting from different initiatives (UN/EDIFACT, ebMS e ebXML, UNeDocs, …)
- Attention to "normalization" of Inspection/Control processes, even if they belong to different Authorities (with peculiarity of having different information systems)
- Always starting from objectives to promote the Trading and decreases the orientation to the various mandatory requirements.

**Recommendations:**
It's recommended to check periodically the available information regarding non-EU MSW and in particular the web site of UNECE (http://www.unece.org/cefact/single_window/welcome.html), dedicated to various Single Windows (not only maritime).

### 4.10 E10 – RIS (River Information Services)

**Background and aims:**
River information services (RIS) are information services to support traffic and transport management in inland navigation. It comprise services such as fairway information, traffic information, traffic management, calamity abatement support, information for transport management, statistics and customs services and waterway charges and port dues.

Harmonization of RIS is the subject of EU Directive 2005/44/EU (Appendix 4.10.1) which:
- at para 3(c) of article 4 specifies that RIS is to “enable, as far as ship reporting is required by national or international regulations, the competent authorities to receive electronic ship reports of the required data from ships. In cross-border transport, this information shall be transmitted to the competent authorities of the neighbouring State and any such transmission shall be completed before arrival of the vessels at the border”
- at para 7 of Article 4 indicates that interoperability of RIS is to be verified by the Commission and in the definitions specifies that “interoperability means that services, data contents, data exchange formats and frequencies are harmonised in such a way that RIS users have access to the same services and information on a European level”
- in article 5 indicates that Technical guidelines and specifications are to be defined by the Commission covering a number of areas among which (para 1(b) of article 5) electronic ship reporting.

Technical specifications for electronic ship reporting on RIS are provided in Commission Regulation 164/2010 (provided in Appendix 4.10.2). It is noted that these specifications include a MIG.

Interoperability of NMSW and RIS would avoid un-necessary “electronic” burden. Clearly this is important for such EU Countries with a significant inland navigation sector.

**Summary of work done:**
To analyse the current situation we checked the data elements requested by the RFD for the maritime sector and by the EU Regulation 164/2010 for river navigation and it was detected that all the 62 RIS data elements are included into the RFD data elements (see Appendix 4.10.3).

**Results:**
The RIS messages (ERINOT, PAXLST and BERMAN) and possible RFD messages (UN/EDIFACT, CUSPER and WCO) were analysed for the 62 common data elements aiming at checking if the related formats are the same and, when different, defining conversion rules (see Appendix 4.10.3).

Simple case studies were carried out for RIS Italy (section 4 of Appendix 4.10.3) resulting in a proposed data conversion method and tools based on the DEM (Data Exchange Mechanism) also considered in ANNA’s MSW2MSW pilot.

**Recommendations:**
Consider the proposed data conversion method and tool for use in large RIS systems e.g. Romania, Belgium.

### 4.11 E11 – HNS (Convention on Liability & Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea)

**Aims:**
As suggested by Romania during ANNA Consortium Meeting in Roma (January 2015), a preliminary assessment of the HNS Convention in view of judging its relevance for future e-administration initiatives.

**Summary of work done:**
Preliminary assessment of HNS Convention (attached as Appendix 4.11.1 and 4.11.2)

**Results:**
The Convention, from an e-government point of view, requires certificates to be issued and made available. More specifically, the certificates required are “insurance certificates”, see article 12 of the Convention part of which is reproduced in the following figure 4.11.1.
In principle there is no difference from the certificate requested by HSN Convention and any other ship certificate requested by other Conventions. However, there is quite a significant aspect to be considered, from an organizational/governance point of view in the fact that the certificate is issued after “an appropriate authority of a State” has determined that the ship fulfills the requirements and, being an insurance matter, not necessarily the appropriate authority is the Ministry of Transport which is typically in charge of issuing all or almost all the other ship certificates. Such “appropriate authority” (in Italy being an ad hoc agency of the Ministry of Economic Development which interfaces with insurer companies) would therefore be a “National Competent Authority” as defined by Directive 2010/95 whom part of the information lodged in the MSW should be provided to in order to issue e-certificates.

In IT terms this is not an issue, in organizational/governance terms it could be.

Recommendations
Consider the matter, from a governance point of view, when e-certificates are dealt with.

4.12 E12 – STCW Convention

Aims:
The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), 1978 sets qualification standards for masters, officers and watch personnel on seagoing merchant ships. There are 133 IMO signatory countries in the world. Every country issues a document showing the level of mariner certification and the capacity and limitations of each. The 1995 amendments, adopted by a Conference, represented a major revision of the Convention, so currently all professional mariner certifications must be STCW 95 Compliant.

Summary of work done:
Next major revisions to the STCW Convention, and its associated Code were adopted on 25 June 2010 and enter into force on 1 January 2012, with a five-year transitional period until 1 January 2017. The changes regarding new certification requirements were analysed.

Results:
The 2010 amendments to the STCW Convention (see Appendix 4.12.1) require all flag states to furnish information on the status of certificates and endorsements to other parties and companies on request, and by 1st January 2017 the information has to be available electronically in English.

Recommendations:
Considering the fact that from 1 June 2015 the reporting formalities must be in electronic form and as mentioned in EA5 of this document some data of the crew certificates must be periodically transmitted to EMSA electronically, it would be appropriate to use the same format adopted for the formalities listed above also for the crew certificates.
Appendix 1—Results of the IMO Public Consultation on Administrative Requirements in Maritime Regulations (separate pdf file)

Appendix 2—General

A2.1 List of “topics”

In the following table, reproduced from the minutes of Sub-Act 3.2 meeting held on 26 February 2015, a list of “topics” for each of the 3 “perspectives” is provided. It is noted that the list is subject to adaptations during the Sub-Act progress, hence the following table is to be considered updated only as far as the “e-maritime” perspective is concerned.

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>France</th>
<th>Italy</th>
<th>Sweden</th>
<th>Netherlands</th>
<th>Romania</th>
<th>Latvia</th>
<th>Belgium</th>
<th>Bulgaria</th>
<th>Cyprus</th>
<th>Portugal</th>
<th>Greece</th>
<th>Spain</th>
<th>Slovenia</th>
<th>UK</th>
<th>TOTAL</th>
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</thead>
<tbody>
<tr>
<td>EA1</td>
<td>IMO developments (FAL)</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
<td>EA2</td>
<td>ILO MLC (Maritime Labour Convention)</td>
<td>x</td>
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<tr>
<td>EA3</td>
<td>Electronic Ship LogBook</td>
<td>x</td>
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<tr>
<td>EA4</td>
<td>Electronic ship certificates (SOLAS-MARPOL)</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
<td>EA5</td>
<td>Crew «certificates» HTW (including certification of training on board)</td>
<td>x</td>
<td>x</td>
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<tr>
<td>EA6</td>
<td>Control Border Police related (e.g. shore pass)</td>
<td>x</td>
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<tr>
<td>EA7</td>
<td>Administrative fulfilment for ships abroad (Embassies/Consulates)</td>
<td>x</td>
<td>x</td>
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<tr>
<td>EA8</td>
<td>Revised marine equipment Directive</td>
<td>x</td>
<td>X</td>
<td>x</td>
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<tr>
<td>EA9</td>
<td>Other non EU MSW compatibility</td>
<td>x</td>
<td></td>
<td>x</td>
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<td>2</td>
</tr>
<tr>
<td>EA10</td>
<td>Integration with RIS</td>
<td>x</td>
<td>X</td>
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<tr>
<td>EA11</td>
<td>HNS declaration</td>
<td>x</td>
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</tbody>
</table>

Appendix 3—E-Administration

A3.3.1 Report of the IMO Ad Hoc Steering Group for Reducing Administrative Requirements (separate pdf file)

A3.3.2 History of IMO activities to facilitate administrative procedures for maritime transport (separate word file)

A3.4.1 Italian Transport Policy Priorities (in Italian - separate pdf file)

A3.5.1 Outcome of IMO Council on Administrative Burdens edited by BIMCO

BIMCO attended the 113th session of the IMO’s Council

The key findings of the report with regard to reducing red tape include, among other things:
• Electronic certificates and similar documents to have equal validity as original paper certificates.
• An electronic "single window" information exchange system should be introduced to fulfil multiple reporting requirements.
• Ship owners, administrations, classification societies and commercial parties etc. to accept electronic solutions as a suitable replacement for paper documentation.
• Identifying and reducing possible administrative burdens before approving new or amending existing IMO regulations.

The council was, in general, very positive about the report and agreed to instruct its three committees: the Maritime Safety Committee (MSC), the Marine Environment Protection Committee (MEPC) and Facilitation Committee (FAL) to further consider the report’s findings and recommendations. The three committees will be asked to report back as soon as possible on the implications and feasibility with regard to implementation. At the same time, council decided to draft an Assembly Resolution stating IMO’s commitment to reduce administrative requirements in the future by taking into account the following principles:

• The use and acceptance of e-solutions (e.g. e-certificates) in support of new and existing regulatory requirements, accompanied by the appropriate implementation and the enforcement criteria;
• The need for a systematic approach throughout IMO with regard to better regulation
• Establish an IMO goal to adopt a single window approach to information exchange, and encourage member states and organisations to also implement this principle.

To accommodate IMO’s role and responsibility as host of an internationally trusted web-based information portal, council decided to assess the need to update the existing IMO information site (GISIS).

For more information: http://administrativeburdens.bimco.org
### A4.1.1 Extract from IMO Journal (separate pdf file)

### A4.1.2 IMO-WCO agreement (press release)

IMO's Julian Abril and Alper Keele have attended a bilateral meeting with the World Customs Organization (WCO) last week in Istanbul, during which both organizations shared their experiences on implementation of national single window prototype project.

The meeting also discussed the regular updating of the "IMO Compendium of facilitation and electronic business" (FAL 39) that the technical maintenance of the compendium would be carried out by WCO and then distributed as a joint IMO-WCO publication.

The compendium aims to encourage the use of modern information and communication technology and, in particular, Electronic Data Interchange (EDI), to transmit information related to maritime transport. The procedures for data exchange were discussed during the meeting and will be taken forward by the next WCO Data Model Project Team (DMPT) meeting in March, in which the IMO Secretariat will participate.

Source and Image Credit: IMO

### A4.2.1 Maritime Labour Convention, 2006 (separate pdf file)

#### A4.3.1 List of Log Books to be carried on board

<table>
<thead>
<tr>
<th>LOGBOOKS</th>
<th>FAL.2/Circ.127</th>
<th>MEPC.1/Circ.817</th>
<th>MSC.1/Circ.1462</th>
<th>Ship type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>On board training and drills record</strong>&lt;br&gt;Fire drills shall be conducted and recorded in accordance with the provisions of regulations III/19.3 and III/19.5.</td>
<td>SOLAS 1974, regulation II-2/15.2.2.5</td>
<td>SOLAS 1974, regulation II-2/15.2.2.5</td>
<td>SOLAS 1974, regulation II-2/15.2.2.5</td>
<td>All ships to which the referenced convention applies</td>
</tr>
<tr>
<td><strong>Records of navigational activities</strong>&lt;br&gt;All ships engaged on international voyages shall keep on board a record of navigational activities and incidents including drills and pre-departure tests. When such information is not maintained in the ship's logbook, it shall be maintained in another form approved by the Administration.</td>
<td>SOLAS 1974, regulations V/26 and V/28.1</td>
<td>SOLAS 1974, regulations V/26 and V/28.1</td>
<td>SOLAS 1974, regulations V/26 and V/28.1</td>
<td>All ships to which the referenced convention applies</td>
</tr>
<tr>
<td><strong>Oil Record Book</strong>&lt;br&gt;Every oil tanker of 150 gross tonnage and above and every ship of 400 gross tonnage and above other than an oil tanker shall be provided with an Oil Record Book, Part I (Machinery space operations). Every oil tanker of 150 gross tonnage and above shall also be provided with an Oil Record Book, Part II (Cargo/ballast operations).</td>
<td>MARPOL Annex I, regulations 17 and 36</td>
<td>MARPOL Annex I, regulations 17 and 36</td>
<td>MARPOL Annex I, regulations 17 and 36</td>
<td>All ships to which the referenced convention applies</td>
</tr>
<tr>
<td>Record Type</td>
<td>Reference</td>
<td>Applicability</td>
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<tr>
<td>---------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>--------------------------------------------</td>
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<tr>
<td><strong>Garbage Record Book</strong></td>
<td>MARPOL Annex V, regulation 10</td>
<td>All ships to which the referenced convention applies</td>
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</tr>
<tr>
<td>Every ship of 400 gross tonnage and above and every ship which is certified to carry 15 persons or more engaged in voyages to ports or offshore terminals under the jurisdiction of other Parties to the Convention and every fixed and floating platform engaged in exploration and exploitation of the seabed shall be provided with a Garbage Record Book.</td>
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</tr>
<tr>
<td><strong>Ozone-depleting Substances Record Book</strong></td>
<td>MARPOL Annex VI, regulation 12.6</td>
<td>All ships to which the referenced convention applies</td>
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</tr>
<tr>
<td>Each ship subject to MARPOL Annex VI, regulation 6.1 that has rechargeable systems that contain ozone-depleting substances shall maintain an ozone-depleting substances record book.</td>
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</tr>
<tr>
<td><strong>Fuel Oil Changeover Procedure and Logbook (record of fuel changeover)</strong></td>
<td>MARPOL Annex VI, regulation 14.6</td>
<td>All ships to which the referenced convention applies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Those ships using separate fuel oils to comply with MARPOL Annex VI, regulation 14.3 and entering or leaving an emission control area shall carry a written procedure showing how the fuel oil changeover is to be done. The volume of low-sulphur fuel oils in each tank as well as the date, time and position of the ship when any fuel oil changeover operation is completed prior to the entry into an emission control area or commenced after exit from such an area shall be recorded in such logbook as prescribed by the Administration.</td>
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<tr>
<td><strong>Records of hours of rest</strong></td>
<td>STCW Code, section A-VIII/1; Maritime Labour Convention, 2006; Seafarers' Hours of Work and the Manning of Ships Convention, 1996 (No. 180); IMO/ILO Guidelines for the development of tables of seafarers' shipboard working arrangements and formats of records of seafarers' hours of work or hours of rest</td>
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</tr>
<tr>
<td>Records of daily hours of rest of seafarers shall be maintained on board.</td>
<td>Note: The Maritime Labour Convention, 2006 shall come into force on 20/08/2013.</td>
<td>All ships to which the referenced convention applies</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bunker Delivery Note and Representative Sample</strong></td>
<td>MARPOL Annex VI, regulations 18.6 and 18.8.1</td>
<td>All ships to which the referenced convention applies</td>
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</tr>
<tr>
<td>Bunker Delivery Note and representative sample of the fuel oil delivered shall be kept on board in accordance with requirements of MARPOL Annex VI, regulations 18.6 and 18.8.1.</td>
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</tr>
<tr>
<td><strong>Record Book of Engine Parameters</strong></td>
<td>NOx Technical Code, paragraph 2.3.7</td>
<td>All ships to which the referenced convention applies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Where the Engine Parameter Check method in accordance with paragraph 6.2 of the NOx Technical Code is used to verify compliance, if any adjustments or modifications are made to an engine after its pre-certification, a full record of such adjustments or modifications shall be recorded in the engine's Record Book of Engine Parameters.</td>
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</tr>
<tr>
<td><strong>Cargo record book</strong></td>
<td>MARPOL Annex II, regulation 15.2</td>
<td>Cargo ships</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ships carrying noxious liquid substances in bulk shall be</td>
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</tbody>
</table>
provided with a Cargo Record Book, whether as part of the ship’s official log book or otherwise, in the form specified in appendix II to Annex II.

<table>
<thead>
<tr>
<th>Dangerous goods manifest or stowage plan</th>
<th>SOLAS 1974, regulations VII/4.5 and VII/7-2; MARPOL Annex III, regulation 4</th>
<th>Any ship carrying dangerous goods in packaged form</th>
</tr>
</thead>
</table>

Each ship carrying dangerous goods in packaged form shall have a special list or manifest setting forth, in accordance with the classification set out in the IMDG Code, the dangerous goods on board and the location thereof. Each ship carrying dangerous goods in solid form in bulk shall have a list or manifest setting forth the dangerous goods on board and the location thereof. A detailed stowage plan, which identifies by class and sets out the location of all dangerous goods on board, may be used in place of such a special list or manifest. A copy of one of these documents shall be made available before departure to the person or organization designated by the port State authority.

Registro Infortuni (injuries log book) | ITALIAN NATIONAL REQUIREMENT | All ships |
Scheda rilevamento infortunio (injury detail) | | All ships |
Registro Stupefacenti (drugs logbook) | | All ships |

A4.3.2 Guidance for the use of Electronic Record Books under MARPOL (IMO document MEPC 66/7 (separate pdf file))

A4.3.3 Common data elements between Log Books and Reporting Formalities

| LOGBOOKS | FAL.2/Circ.127 | SOLAS 1974, regulations V/26 and V/28.1 | Arrival/Departure (A/D) and in case of casualty and/or injury |
|-------------------------------------------------|-----------------------------------------|--------------------------------------------------|
| Records of navigational activities | MEPC.1/Circ.817 | SOLAS 1974, regulations V/26 and V/28.1 | Arrival/Departure (A/D) and in case of casualty and/or injury |
| All ships engaged on international voyages shall keep on board a record of navigational activities and incidents including drills and pre-departure tests. When such information is not maintained in the ship’s logbook, it shall be maintained in another form approved by the Administration. NB It’s necessary to register the activities in the port, in navigation, at anchor and also the casualty and/or injuries. | FAL.1/Circ.1462 | SOLAS 1974, regulations VII/4.5 and VII/7-2; MARPOL Annex III, regulation 4 | Produces the Waste Declaration requested by the RFD in A/D |

Garbage Record Book | MARPOL Annex V, regulation 10 | All ships to which the referenced convention applies | Produces the Waste Declaration requested by the RFD in A/D |
Every ship of 400 gross tonnage and above and every ship which is certified to carry 15 persons or more engaged in voyages to ports or offshore terminals under the jurisdiction of other Parties to the Convention and every fixed and floating platform engaged in exploration and exploitation of the seabed shall be provided with a Garbage Record Book.

Dangerous goods manifest or stowage plan | SOLAS 1974, regulations VII/4.5 and VII/7-2; MARPOL Annex III, regulation 4 | Any ship carrying dangerous goods in packaged form | Produces the FAL 7 requested by the RFD in A/D |
Each ship carrying dangerous goods in packaged form shall have a special list or manifest setting forth, in accordance with the classification set out in the IMDG Code, the dangerous goods on board and the location thereof. Each ship carrying dangerous goods in solid form in bulk shall have a list or manifest setting forth the dangerous goods on board and the location thereof. A detailed stowage plan may be used in place of such a special list or manifest. A copy of one of these documents shall be made available before departure to the person or organization designated by the port State authority.
A4.4.1 Terms of Reference of the 2015 CG on e-certificates under FAL

Below the mail circulated on January 2015 by US Coast Guard (Coordinator of the CG)

Dear Colleagues,

I am writing to follow my message from December 19, 2014. Please see the attached copy. Please let me know soonest if you wish to be removed from my Correspondence Group mailing list.

In general, I view the goal of our work as removing barriers to the use of electronic certificates and documents rather than, at this time, establishing requirements. We do this primarily by helping the Organization identify and set standards and expectations. At some point in the future, when the use and acceptance of electronic certificates are common, the benefits are being realized, and the infrastructure is in place, we might have a discussion similar to the debates about requiring electronic reporting in the last few FAL sessions.

Here are my interpretations on the scope of our work for each term of reference (TOR):

.1 continue to gather experience of the implementation and use of electronic certificates and propose revisions to the guidelines, as needed;

Coordinator: Through this TOR, we are expected to continue refining the FAL Circular (see attached) by incorporating our lessons learned through implementation of processes/systems for electronic certificates and recognizing the best practices of other, more advanced sectors that use electronic certificates. I welcome your recommendations to improve the guidelines.

.2 develop a model framework for implementing electronic certificates;

Coordinator: Through this TOR, we are asked to consider the many models for the life-cycle of electronic certificates, including creating, distributing, maintaining, validating, protecting, revising, and closing. I plan to use the examples submitted by members of our Group to identify core features of the life-cycle processes and the systems used to implement it. If you plan to submit work for this TOR, I ask that you include a description of your views about the core features of your model. In the meantime, I plan to being a table of features that should be in the life-cycle and I will forward it to you for your information and consideration.

.3 consider alternatives to the need for using traditional signatures, stamps and seals to issue and approve electronic certificates;

Coordinator: Through this TOR, we are asked to consider the need for written and electronic signatures, stamps, and seals on electronic certificates. Please recall our discussion in the Working Group at FAL 39 about whether what type of authentication indicator might be used on a certificate that is accessed online through a secure system maintained by
the certificate issuer. For example, a certificate available through an Administration's database might be considered as valid simply because it must have gone through the internal processes to create and post it to be on the site. Or, should we develop a format for the required unique tracking number that indicates authenticity? I am sure there are many methods to show an electronic certificate is valid without the need for a signature, seal, or stamp and I welcome your feedback and recommendations.

I advise the Committee on possibilities for industry standards to support use of electronic certificates; and

Coordinator: Through this TOR, we are asked to research existing industry standards (e.g. ISO, IEC, and others) that we can reference in the guidelines to help make use and acceptance of electronic certificates easy and consistent. In this regard, I expect there are some industry sectors with whom we do not traditionally work, but who have developed standards for electronic business. I urge you to think creatively and reach out to non-maritime organizations in search of helpful industry standards. I will create a list that we can use to gain a sense of advantages and disadvantages for the possibilities of industry standards. In addition, we might be able to identify ways that our industry standards partners can help us by identifying opportunities for new standards development.

I expect we need to have our work completed by December to give us time to reach consensus on our Correspondence Group report to the Committee and meet the 12-week deadline before FAL 40.

I am at your disposal if you have questions or need more information. Please do not hesitate to call, write, or (best) visit. We made great progress to creating the possibilities for a more efficient and economical paperless environment that helps remove burdens from all the stakeholders. Your experience, expertise, and judgment make us successful and I look forward to learning from you and continuing our work together.

Best Regards,

Roger E. Butturini, PE, PMP
U.S. Coast Guard
Correspondence Group Coordinator

A4.4.2 List of Certificates and other documents to be carried on board. IMO circular FAL.2/Circ.127 (separate pdf file)

A4.4.3 Common data elements between e-certificates and reporting formalities (separate pdf file)

A4.4.4 Common data elements needed by EQUASIS databases (separate pdf file)

A4.4.5 ICT solutions for storage, maintenance and retrieval of ship e-certificates (separate pdf file)
A4.5.1 Directive 2012/35/EU of the European parliament and of the council (separate pdf file)

A4.7.1 Prontuario amministrativo di navigazione marittima ad uso degli uffici consolari e dell’utenza armatoriale (separate pdf file)

A4.7.2 Guidelines for ship inspection and certification in Philippines (separate word file)

A4.8.1 Directive 2014/90/EU of the European parliament and of the council (separate pdf file)

A4.10.1 Directive 2005/44/EU – “RIS DIRECTIVE” (separate pdf file)


A4.10.3 RFD-RIS connection and Italian case studies (separate folder containing word and excel files)

A4.11.1 HSN Convention - Overview

A4.11.2 HSN Convention – Full text

A4.12.1 The Manila Amendments to the annex to the International Convention on Standards of Training, certification and Watchkeeping for Seafarers (STCW), 1978 (separate pdf file)
M13 - e-Certificates definition (Appendix 02)

30 APRIL 2016
E-BUSINESS POSSIBILITIES FOR THE FACILITATION OF MARITIME TRAFFIC

Information paper from ISO TC8 on technical options for implementing electronic certificates

Submitted by the International Organization for Standardization (ISO)

SUMMARY

Executive summary: Implementation of electronic certificates can be done in various ways and this document discusses some options that are already available. The document also discusses some technology and standards that are needed to support the implementation of electronic certificates.

Strategic direction: 8
High-level action: 8.0.3
Planned output: 8.0.3.1
Action to be taken: Paragraph 3
Related document: FAL 38/5

1 ISO TC8 has participated in the Correspondence Group on electronic access to, or electronic versions of, certificates and documents required to be carried on ships. During this period, ISO TC8 members have also participated in the EU e-Compliance project1, one of which goals is to facilitate shipping by introducing modern information technology in complying with rules and regulations. Some of the results from this project may be of interest in the further work on electronic certificates in IMO and is therefore presented here with the permit of the project partners. The results are set out in the annex.

2 Some of the technological solutions proposed in the annex will require standardisation and ISO TC8 reiterates its availability to the Facilitation Committee if required to assist in developing such standards. Some relevant standards could be:

.1 XML formats for representation of certificate information, e.g. based on the ISO 28005 series of standards;

1 http://www.e-compliance-project.eu/
Electronic signatures for the XML file; and
Standards for embedding this information including electronic signatures in QR codes.

**Action requested of the Committee**

The Committee is invited to note the information provided, and take action as appropriate.

***
ANNEX

An overview and comparison of possible technologies that can be used to implement electronic certificates.

Table of Contents
Summary 2
Abbreviations and definition 2
1 Introduction 3
PART ONE: POSSIBILITIES FOR IMPLEMENTATION 4
2 Certificate types and information contents 4
  2.1 General type of certificates 4
  2.2 Ship certificates 4
  2.3 Class certificates 5
  2.4 Equipment certificates 5
  2.5 Ship documentation 5
  2.6 Log books, records 6
  2.7 Crew certificates 6
  2.8 Insurance 6
  2.9 Cargo and holds 6
3 Requirements to electronic certificates 6
  3.1 General operations on certificates 6
  3.2 Different information storage locations 7
  3.3 General life cycle 8
  3.4 Local or central checks of certificates 8
  3.5 Integration with single window (SW) 9
  3.6 Other requirements 9
  3.7 Summary of requirements 10
4 Electronic certificate implementations 10
  4.1 PDF with stamp and signature 10
  4.2 Paper with QR code 11
  4.3 Paper with electronic signature and central check 12
  4.4 Electronic document available from FS/RO Internet site 12
  4.5 Use of CDeA 13
  4.6 Use of electronic formats, e.g. XML 13
5 Comparison of methods of electronic access 14
6 Summary and recommendation 14
PART TWO: TECHNICAL DETAILS 16
7 Electronic signatures 16
  7.1 Hash Function 16
  7.2 Digital Signatures 17
  7.3 Electronic Signatures on Paper 17
  7.4 Key Security 18
  7.5 Implementation 19
  7.6 Revoked Certificates 19
  7.7 Conclusions 19
8 QR code 19
9 Electronic certificate data in ISO 28005 compliant format 20
10 Need for standards 20
Part Three: An example 21
11 Sample certificate printed format 21
12 XML encoding 22
13 Compressed plain text format 24
References 25
Summary

This memo discusses electronic certificates for ships and proposes a solution based on a combination of printable electronic files, e.g. in PDF incorporating an electronic signature in the form of a QR code. The code can contain machine readable information about the certificate as well as an electronic signature. The memo also proposes to add a fully electronic format, e.g. in XML to the printable format for use in fully automated processing of certificates for in-house management by ship operators or for electronic clearance of ships.

Abbreviations and definition

CeDA – Certified e-Document Authority (CeDA) refers to a trusted third party (TTP) that securely stores electronic document and certifies the contents and transmission of electronic documents for the promotion of use of electronic documents. A third party (trusted party) may be a port authority or port organization or port control (security) organization depending on IMO member states environment.

Company – The organization responsible for the management of certificates issued to a ship. This may also include certificates related to cargo, cargo carrying or crew. This may be a management company, the shipowner or others. It may also in some cases be several different organizations.

Endorsement – Two types of endorsements need to be accommodated: 1) Endorsement related to mandatory surveys or verifications during the validity period of the certificate; and 2) endorsements extending the validity of the certificate.

FS – Flag State

GISIS – IMO Global Integrated Shipping Information System

PDF – Portable Document Format (Adobe registered trademark)

PS – Port State (Inspection)

QR – Quick Response (Code): Two dimensional printable and optically readable data encoding.

RO – Recognized Organization

XML – Extensible Markup Language

2 See http://gisis.imo.org/Public/Default.aspx
1 Introduction

The certificates perform an important role in proving proof of compliance with rules and regulations or documentation that the holder is capable of performing certain operations safely and securely.

Allowing the holder to perform these operations without sufficient proof that the related requirements are satisfied can have severe costs in terms of reduced safety or security and a significantly heightened risk that the operation may result in loss of lives, health or damage to environment or property.

Delays in granting the license will also cause significant problems by hindering international trade, increasing cost of trade as well as causing lost revenue for the ship operators and cargo owners.

Thus, efficient handling of certificates is a very important part of international trade. Making use of modern information and communication technology, i.e. introducing "electronic certificates" may significant improve on the efficiency, if done properly.

This annex gives an overview of some possible methods to implement electronic access to ship certificates.

The text is structured as three main parts. Part 1 (sections 2 to 6) discusses how electronic certificates can be implemented and gives a comparison of methods and recommendations.

Part 2 (sections 7 to 10) discusses the technology that may be used to implement the electronic certificates and also suggests what standards may be needed.

Part 3 (sections 11 to 13) gives an example of how an electronic certificate could be implemented with current technology.

This document is general in nature and will not reflect all variants of how certificates are managed by various flag or port states. Some examples are also exaggerated to highlight certain problems that may occur. Thus, the document cannot be used as representing actual certificate management in the world in general or in any particular part of the world.

References to other sources or documents are given as a number in square brackets and a list of references can be found at the end of the paper.
PART ONE: POSSIBILITIES FOR IMPLEMENTATION

2 Certificate types and information contents

2.1 General type of certificates

Certificates can very generally be divided into the following categories [2].

<table>
<thead>
<tr>
<th>Group</th>
<th>Issued by</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ship certificates</td>
<td>Flag State/RO</td>
<td>Load line, DOC, ISM</td>
</tr>
<tr>
<td>Class certificates</td>
<td>Class</td>
<td>Hull, engine, operation</td>
</tr>
<tr>
<td>Equipment certificates</td>
<td>Flag state/RO</td>
<td>VDR</td>
</tr>
<tr>
<td>Ship documentation</td>
<td>Owner, Builder</td>
<td>Stability booklet, safety plan, mandatory</td>
</tr>
<tr>
<td></td>
<td></td>
<td>operational routines: SOPEP, SMPEP etc.</td>
</tr>
<tr>
<td>Log books, records</td>
<td>Crew/Master</td>
<td>Deck, engine, drills</td>
</tr>
<tr>
<td>Crew certificates</td>
<td>Other authorities</td>
<td>Master, officers and ratings, Medical</td>
</tr>
<tr>
<td>Insurance</td>
<td>Insurance companies</td>
<td>Liability, pollution</td>
</tr>
<tr>
<td>Cargo and holds</td>
<td>Shipper, Operator</td>
<td>Cargo info, DG manifest, Gas free certificate.</td>
</tr>
</tbody>
</table>

In general, the information that is necessary to include in a certificate is limited. The following sections will go through some types of certificates and discuss the information requirements for each of them.

2.2 Ship certificates

If one looks through the most common ship certificates, one finds that all will require all or some of the following data elements:

1. Type of certificate.
2. Certificate number or identity code.
3. Issuing organization.
4. Issued on behalf of (if issuing is RO)
5. Registry and registration code.
6. Issue date and place.
7. Valid to date.
8. Name of ship.
9. IMO number.
10. "Distinctive numbers or letters".
11. Port and year of registry.

One may also want to incorporate historic data about updates and renewals of the certificate. Note that some physical or organizational changes for the ship also will change data in the certificate descriptions.
In addition, the specific certificates will contain a few more data elements as listed below. Note that this list is not authoritative, but is intended as an example only.

<table>
<thead>
<tr>
<th>Certificate</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>International Tonnage Certificate</td>
<td>Length, Breadth, Moulded depth amidships to upper deck, gross tonnage, net tonnage.</td>
</tr>
<tr>
<td>International Load Line Certificate</td>
<td>Length, freeboard and load line for the different areas and periods relevant (summer, winter, tropical, freshwater, timber etc.).</td>
</tr>
<tr>
<td>Minimum safe manning document</td>
<td>Type of ship, engine room manning, type of voyages, propulsion power, gross tonnage, trading area, GMDSS sea areas, minimum manning for crew categories.</td>
</tr>
<tr>
<td>International Oil Pollution Prevention Certificate</td>
<td>Gross tonnage, ship type, deadweight if oil tanker.</td>
</tr>
<tr>
<td>International Sewage Pollution Prevention Certificate</td>
<td>Gross tonnage, maximum number of persons onboard, type of ship, type and description of sewage system.</td>
</tr>
<tr>
<td>Document of Compliance (ISM compliance for Company)</td>
<td>Company name and address, type of ship for which certificate is valid.</td>
</tr>
<tr>
<td>Safety Management Certificate</td>
<td>Type of ship and name and address of company.</td>
</tr>
<tr>
<td>International Ship Security Certificate</td>
<td>Type of ship and name and address of company.</td>
</tr>
<tr>
<td>International Anti-fouling System Certificate</td>
<td>Gross tonnage and description of system or non-application of system.</td>
</tr>
<tr>
<td>International Air Pollution Prevention Certificate</td>
<td>Gross tonnage.</td>
</tr>
<tr>
<td>Cargo Ship Safety Construction Certificate</td>
<td>Type of ship, gross tonnage and deadweight for oil tankers.</td>
</tr>
</tbody>
</table>

2.3 Class certificates

The general class certificate or certificates will contain much of the same information as in the previous section as well as the class notation and any relevant restriction in operation.

2.4 Equipment certificates

Equipment certificates will in general contain more technical details than the general certificates. Some examples are included below.

<table>
<thead>
<tr>
<th>Certificate</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voyage data recorder system-certificate of compliance</td>
<td>Ship type, VDR type and description, details about technical performance and inspections.</td>
</tr>
<tr>
<td>Cargo Ship Safety Equipment Certificate</td>
<td>Type of ship, gross tonnage and deadweight for oil tankers.</td>
</tr>
<tr>
<td>Cargo Ship Safety Radio Certificate</td>
<td>MMSI, Call sign, Radio equipment details.</td>
</tr>
</tbody>
</table>

2.5 Ship documentation

This is typically large data sets, containing drawings, safety plans, procedures etc. Inspections will verify that the documentation is on board and that it is the same as that approved by the relevant authorities.
There is a significant operational and cost gain for ship operators if this documentation can be stored electronically instead as paper. Electronic formats would also allow integration with electronic checklist systems and log books.

The verification and inspection problem is similar to that of certificates, except that the documents are extremely more bulky and that the desire to have it in electronic form only is higher.

2.6 Log books, records

Log books are similar to ship documentation, but are continuously updated with entries critical to operation. Electronic log books are already available where the logging systems themselves are approved by authorities and where checks of the logs themselves are done by checking the systems remotely or locally.

Log book and records will not be directly discussed in this paper, but some of the proposed technology is relevant also for these.

2.7 Crew certificates

Crew needs certain certificates to undertake the different critical tasks on board the ship. This is in general described in the STCW code.

Electronic certificates are different from ship certificates in that they follow crew members that go on and off the ship. Some additional mechanisms are needed to cater for this issue as, e.g. connecting them to the crew identity card.

This document does not discuss particulars of electronic crew certificates, but some of the proposed technology will be applicable also to this type of document.

2.8 Insurance

These are similar to the general certificates, but will contain additional information:

1. Owner and address (holder of insurance)
2. Insurance coverage (PI, Hull, Oil, Bunker, etc.)

Insurance documents will also vary over time and are not issued by governmental authorities. They need to be handled a bit differently than ship certificates, but some of the technical solutions for the latter may also be used for insurance.

2.9 Cargo and holds

These are specific certificates issued after certain cargo related operations have been performed, e.g. gas free certificates and clean hold certificates. They are more related to insurance documents than general ship certificates as they are issued at higher frequency and not necessarily by governmental authorities. However, the technology for implementation may be the same.

3 Requirements to electronic certificates

3.1 General operations on certificates

Related to certificates and with reference to figure 2, there are several basic operations that can be defined for certificates:
1. **Issue original certificate**: After inspection or other validation of performance or capabilities relevant for certification.

2. **Endorse certificate**: Periodically or after changes endorse certificate after a survey or other inspection, without extending validity.

3. **Endorse certificate to extend validity**: This could be done as routine or as an exceptional action to extend a certificate's validity until a new version can be issued.

4. **Reissue certificate**: A renewed version of the certificate is issued by the competent authority.

5. **Check certificate**: As part of ship clearance process or other operations, a list of certificates is checked to see if ship has appropriate certification. This may also include more extensive checks of certificate validity.

6. **Maintain certificate**: Ship operator (Company) needs to maintain list of certificates, validity and expiration dates related to each ship, with adequate consideration of trade area, type of cargo and crew.

### 3.2 Different information storage locations

Certificate information will in general have to be stored both onboard the ship (as a physical certificate) and in some form of central database maintained by the issuing authority. The operating company also needs to keep track of all certificates and status. In cases where the issuing authority delegates the right to issue certificates to a third party (Recognized Organization: RO), there may also be a second central database involved. This picture may also be even more complicated if a "Certified e-Document Authority" (CeDA) is charged with keeping track of the certificate status for public access.

In addition to this, the ship may also issue electronic "copies" of the certificates, e.g. a fax or a PDF file, for use in remote inspection of certificates (see section 3.4).

The main question arising out of this system is where the authoritative version of the certificate status resides. The natural may be to rely on the original stored on the ship and follow the information flow from there, but this depends on the possibility of operators to access the different databases as well as the ship documents. This is illustrated in figure 1.

![Certificate status code or electronic document flow](image)

**Figure 1: Certificate status code or electronic document flow**

The same picture will also apply to updates in certificate status through endorsements to the certificate as well as extensions of validity resulting from endorsements (see section 3.3).

As a general rule one assumes that authoritative certificate and its endorsements are stored onboard the ship and that this is the "origin" of the authoritative certificate status. The status
will be communicated to the RO (if an RO is used) by the surveyor and then to the issuing authority which will have to maintain an updated list of certificates and their status for the ships under their flag. If a CeDA is used, this organisation will also need an updated status, either from the RO or from the authority itself.

Electronic processing of certificates can in principle be implemented by accessing certificate status in any part of this chain. The problem with this is that there is generally a time delay between the updates of the data bases for each step in the flow and one may not have access to the correct status at a given time.

Another problem is that it may be possible to forge or suppress endorsed information at any stage in the chain and in particular on the original as stored onboard.

### 3.3 General life cycle

The issuance, inspection, endorsement, renewal and withdrawal of certificates can be said to follow a general sequence as show in figure 2. This does not include in-house management of the certificates by the Company.

![Generalized life cycle for certificates](image)

**Figure 2: Generalized life cycle for certificates**

In general and unless special mechanisms are mandated, there will normally be a delay between updates to the onboard certificate status and this being reflected in public or other data bases. This means that any inspector cannot necessarily rely on the data stored in the databases. It also means that if a certificate is revoked or refused endorsement before the expiration date, there may still be old "originals" onboard or in data bases that does not reflect the actual certificate status: The certificate is still valid on the old paper copy, but the actual status is that it is revoked or that it did not pass inspection.

This may be alleviated if the surveyor and the inspector both can be guaranteed to have access to the same and continuously available central data base. Otherwise, there is a potential problem of not approving a certificate that actually was renewed or, alternatively, approving a certificate that has been withdrawn.

### 3.4 Local or central checks of certificates

The inspector may check certificates by:

1. going onboard to investigate the actual papers;
2. he or she can check certificates in the office by inspecting copies of the ship papers; or
3. by accessing a central data base.
The latter two options are preferred to speed up clearance for ships when entering or leaving port. Going on board may be necessary from time to time, but will entail delays and general slowing down of clearance as well as more work for port state officials.

However, as mentioned above, office checks of certificates may introduce new possibilities for misunderstandings or wilful forgery unless appropriate measures are taken to avoid this.

3.5 Integration with single window (SW)

There is a strong drive in many parts of the world towards making ships' port clearance electronic and more efficient through the use of single window solutions. Integrating ship certificates in the single window is a logical extension, but fully automated processing is only possible if the certificate is available in an electronically machine readable form, e.g. XML.

Much of the information in the certificates is already available from the FAL forms that are already the current basis for clearance. Thus, it makes sense to look at compatible electronic formats as e.g. the ISO 28005 series of standards for electronic port clearance [3][4]. As discussed in part three, it will be relatively easy to extend this standard to cover most of the information needed to implement electronic certificates.

3.6 Other requirements

From the above discussions there are three main problems that can occur:

1. Wilful fraud where the copy of the certificate used for inspection does not correspond to the actual compliance status. This may apply both to onboard and office inspection of certificates;

2. Not approving a certificate during inspection, as one has no access to a later endorsement that has not yet been uploaded to the data set used for verification. This may lead to unnecessary delays in clearance; and

3. Approving an invalid certificate when the certificate has been made invalid by revocation or lack of endorsement, if the new status is not yet reflected in the data set used for verification.

There are basically two issues here: 1) Establishing the validity of the version of the certificate one inspects; and 2) making sure that there is no difference between the version one inspects and the actual status of the certificate. These problems must be seen in light of the different ways to inspect the certificates:

1. One should be able to inspect certificates on board the ship as part of, e.g. a physical port state inspection. This may relate to details in certificates not investigated in a more general office certificate checks;

2. One should be able to inspect and approve certificates prior to ship arrival or departure to speed up port clearance processes and avoiding delays and extraneous work after ship arrival.

In addition, the system should also as far as possible simplify the process of maintaining the ship's certificate status by the operating Company. This will have the added benefit of making the general system even more attractive to the ship operators as it also gives operational benefits to their internal operation.
3.7 Summary of requirements

With the reference to the comparison table in section 5, the following requirements can be defined:

.1 it must be possible to make the issuance process as simple as possible, including the flow from surveyor, to the onboard documents and further to the shore based status update;

.2 the renewal and endorsement process must likewise be as simple as possible;

.3 the process of revoking or denying an endorsement to a certificate must also be as simple and safe as possible;

.4 the form of certificate must support avoidance and detection of fraud. It must be difficult to modify and easy to detect modifications;

.5 the form should also make it unlikely that a certificate is not accepted although the ship has passed the conformance inspections. This may happen if there are problems with communication between surveyor and issuing organisation. This may make it difficult for the inspector to access to the latest status of certificate;

.6 vice versa, it should also be unlikely that a no longer valid certificate is wrongly accepted;

.7 it should be possible to perform safe and secure inspection based on information in port officers’ offices. This will reduce the delay for clearance of ship;

.8 it should be possible to perform safe and secure inspection onboard the ship, based on local information stored on the ship;

.9 in exceptional cases, it should be possible to perform safe and secure inspection in both above locations without access to Internet or to a central data base;

.10 the complexity of the certificate management system maintained by the issuing organisation should be minimized to reduce investments and operational costs for the data server system;

.11 it should be possible to integrate automatic check of electronic certificates in a single window (SW) system. In this case the ship or the agent can submit relevant certificate information through the single window; and

.12 the certificate format should also support simple management of the ship's certificates by the Company.

4 Electronic certificate implementations

4.1 PDF with stamp and signature

The traditional certificate can be implemented as, e.g. a PDF file that can be printed out on demand or transferred from the ship to shore by electronic mail or other means. Main workflow could be as described below. Without any form of unique signature on the
document, it is not possible to protect efficiently against fraud, unless a central database is used for validation.

<table>
<thead>
<tr>
<th>Survey and approval</th>
<th>On board, surveyor register approval at own PC or sends email to central office.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial issue</td>
<td>A new electronic certificate is issued as a PDF file as well as paper.</td>
</tr>
<tr>
<td>Renewal and endorsement</td>
<td>By signature on paper. Not possible to transmit to shore other than as fax.</td>
</tr>
<tr>
<td>Revoking certificate</td>
<td>Only in central office, old certificates may be onboard until expiry.</td>
</tr>
<tr>
<td>Inspection on ship</td>
<td>Manually check paper copy and signatures.</td>
</tr>
<tr>
<td>Inspection on shore</td>
<td>Manually check PDF/fax with signatures.</td>
</tr>
</tbody>
</table>

As multiple copies of the electronic certificate may exist, one cannot rely on deleting the file when one revokes the certificate.

### 4.2 Paper with QR code

One may also additionally sign the PDF certificate with an electronic signature embedded in a QR code in the PDF.

Using a QR code would make it possible to verify authenticity by an offline application on a mobile unit, e.g. PC or mobile phone, even by investigating the paper copy alone. In this case, the QR code would contain a signature code as well as code referencing the issuer, e.g. through the IMO GISIS system. However, the validation would be sensitive to wilful forgery, e.g. by changing text in certificate before copying in a valid QR code.

The QR coded signature can cross check all data on the certificate, but unless this data is also available as electronic information, it is difficult for the inspector to verify that the data is correct.

The work process is outlined below.

<table>
<thead>
<tr>
<th>Survey and approval</th>
<th>On board, surveyor register approval at own PC or sends email to central office.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial issue</td>
<td>A new electronic certificate is issued as a PDF file with a QR code. No paper copy is needed.</td>
</tr>
<tr>
<td>Renewal and endorsement</td>
<td>The endorsement should normally be given as a new electronic QR on the same certificate, issued from central office or surveyor. Alternatively or in addition, a normal endorsement signature can be added to a paper document. This will not be electronically transferrable to shore, other as a traditional fax until the new electronic version has been received.</td>
</tr>
<tr>
<td>Revoking certificate</td>
<td>Immediately in central database, but old certificate copies can still be falsely used until expiry date, unless checked against central database.</td>
</tr>
<tr>
<td>Inspection on ship</td>
<td>Can be verified automatically and by checking key data elements manually (ship identity and expiry date). Otherwise have to rely on manual inspection of paper copies.</td>
</tr>
<tr>
<td>Inspection on shore</td>
<td>Same as on board, but less secure with respect to faxed documents when electronically are not yet available.</td>
</tr>
</tbody>
</table>
4.3 Paper with electronic signature and central check

If a QR code is used, it can also embed a reference to an online resource that can further verify the status with respect to pending revoking or renewing the certificate by accessing a central database.

PDF also supports embedded electronic signature of documents and this may be used in this case. PDF signatures must be validated through the Internet so access to the net is necessary for proper validation.

Note also that Adobe support local issuing of new certificates by using certification keys stored on protected USB hardware devices. This can be used for immediate issue of endorsements or for renewals as new printable PDF files. This is a safe method that can be used to avoid forgery or loss of certification codes. However, use of the Adobe mechanisms for issuing certificates requires a paid for license from Adobe.

The Internet address for validation should not be embedded in the QR directly as that may be used to fake the Internet verification process. The QR should contain a reference code, e.g., using the IMO GISIS database as repository that points to relevant data for authentication. This means that the surveyor needs to download data from GISIS during or before the inspection of the certificate.

The surveyor needs to be able to access the central repository to execute the verification. This requires online access to Internet.

One needs to create some safe-guards related to protection of keys for the signature creation. This means that the generation of the signature should not be done locally by the surveyor, but done by the central data system. Alternatively, one may rely on a hardware protected USB type key device that the surveyors will get from the issuing authority. Several certification codes can be stored on the same physical device.

<table>
<thead>
<tr>
<th>Survey and approval</th>
<th>On board, surveyor register approval at own PC or sends email to central office. A new certificate can be generated immediately or after a short processing time.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial issue</td>
<td>Immediately or after a short delay from survey. Electronic issue only.</td>
</tr>
<tr>
<td>Renewal and endorsement</td>
<td>As new electronic file that can be generated immediately from central server, but can use paper copy if necessary.</td>
</tr>
<tr>
<td>Revoking certificate</td>
<td>Immediately in central database. Old certificate copies cannot easily be used.</td>
</tr>
<tr>
<td>Inspection on ship</td>
<td>Can be verified automatically against central database.</td>
</tr>
<tr>
<td>Inspection on shore</td>
<td>Can be verified automatically against central database.</td>
</tr>
</tbody>
</table>

The central check will require access to Internet and the central data base, but lack of this would still not make this method less certain or simple than checking paper based certificates.

4.4 Electronic document available from FS/RO Internet site

The actual electronic certificate can also be made available from a secure web service maintained by the flag state or the RO. Any inspectors would then need to be able to access this data base. This will further minimize or remove the time gap between inspection and time when the centrally issued certificate is updated. By accessing the data base, one would always get access to the most updated version. However, it depends on the maintaining organization being able to keep the delays at a minimum and also to make sure that the data base is available at all times.
Having an electronic version on the certificate onboard the ship and in the management office would also act as backup in the rare cases where the central data base is not accessible.

Use of the system will be as for the previous section, but it may be somewhat more complicated to handle paper backups. The inspector would also need to have and maintain credentials for the specific certificates in the Organization's data base.

For the responsible organization, this is not significantly different from the alternative presented in the previous section. The PDF needs to be available in addition to the authentication function, but authentication is probably sufficient in the centrally stored PDF itself.

4.5 Use of CDeA

The use of a central repository for electronic certificates has some benefits:

-1 the flag State administration or the RO do not have to implement an own data base with sufficient reliability for general use. They can use a trusted third party and reduce implementation and operational costs; and

-2 it provides a central repository for ship certificates independent of one having the exact information related one specific ship or flag state. However, if the certificate has a QR-code, this is less of an issue.

The drawback of this solution is of course to determine how the implementation and operational costs shall be divided as well as introducing some additional delays and complexity in the work processes.

Equasis\(^3\) is already operating a similar service for port state control, including already extensive certificate information, and could be upgraded to provide a more general certificate validation service.

Work processes will be the same as for the previous solution. A minor improvement would be that certificates would be available from one server, independent of who issued the certificates.

4.6 Use of electronic formats, e.g. XML

The certificate could also be issued as a fully electronic "message", e.g., in XML format. In this case it would need to contain the same information as in the paper certificate as well as a proper digital signature verifying the correctness of the data. The XML message could also contain information as discussed previously, e.g. reference to a verification data server.

The electronic certificate could also be implemented as a printed document with a QR code containing all the XML data elements as well as verification sources. This would allow ships to operate with printed documents for rare cases where no electronic processing is available and also get all benefits of having electronic verification and processing available.

Electronic certificates of this form would also simplify management of certificates by the responsible operators. The data could be transferred directly into databases or management software systems. This would make it much easier to keep track of all certificates, send them to agents when necessary and to keep an overview of renewal and expiry issues.

---

Another benefit of a fully electronic certificate is that it can be automatically processed by port state data systems, e.g. as part of the local single window implementation.

The work processes will be identical to those listed for section 4.3 with additional benefits as indicated above.

5 Comparison of methods of electronic access

The below table has one column for each of the discussed solutions for electronic certificates with the first column representing the traditional paper based certificates. More details of the certificate solutions can be found in the corresponding subsections. Each row corresponds to one of the requirements listed in section 3.7.

Each cell has then got an indication of how well a specific certificate type satisfies the corresponding requirements. Scale is from "--" as none at all to "++" as very well. The traditional certificate can be used as reference.

<table>
<thead>
<tr>
<th></th>
<th>Traditional paper</th>
<th>Printable on board</th>
<th>Printable with QR</th>
<th>Printable with QR and central check</th>
<th>Centrally available certificate with QR</th>
<th>Use of CeDA</th>
<th>XML coding added</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issue certificate</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Issue renewals</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Revoke</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Counter fraud</td>
<td>--</td>
<td>--</td>
<td>-</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Wrong denial</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Wrong acceptance</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Check on shore</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Check on ship</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Internet access</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>+</td>
<td>+</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Complexity</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>+</td>
<td>+</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>SW integration</td>
<td>--</td>
<td>--</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Management</td>
<td>--</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>++</td>
<td>++</td>
</tr>
</tbody>
</table>

6 Summary and recommendation

Electronic certificates are certainly possible and as will be discussed in the coming sections, much of the required technology and standards are already available. One should also observe that the different options discussed here are modular in the sense that one can select different options or build improved services without losing functionality. The Adobe electronic signature is well suited to the problem of electronic certificates and contains most functionality one needs. However, it has some cost implications for the users. Another attractive option would be to create a gradual implementation of electronic certificates by going through the following steps:

.1 Printable PDF with embedded QR, where the QR code contains enough information to ensure a reasonable verification of key values on certificate (expiry dates, IMO number, key elements of certificate terms). Use signature keys available from IMO GISIS for validation. This can be
implemented by the flag states that wish to. A paper copy can be printed out and kept as backup on the ship in case the electronic systems fail.

.2 Develop XML format for electronic certificate information and sign that with electronic signature as used in QR code above. This file can then be used in single window clearance in ports where the format is accepted. Inspectors on the ship can also use this format if they want to. Electronic formats with signature simplify process of checking certificates. This will be an addition to the printable certificate.

.3 Extend QR code to also include data from the XML file. Inspectors can then scan and validate the data without direct access or use of the XML file. This will also be a backup solution to a fully electronic processing in cases where Internet access or servers are unavailable.

.4 Implement individual or centralized repository for current electronic certificates in XML and printable formats, with appropriate signatures for validation. This can be the main mechanisms for maintenance and inspection of certificates. Mechanism in point 3 will act as backup for server or Internet failure.

Neither of these steps will require that all flag states implement the solution. It will provide efficiency gains for those that do and will allow a phased implementation in cases where some states need to use more time on the issue.

The critical issue is to agree on common standards so that implementation can start where it is possible and desirable.
PART TWO: TECHNICAL DETAILS

7 Electronic signatures

RSA encryption\(^4\) forms the basis for most of the world’s secure communications, including on the Internet.

The encryption uses asymmetric cryptography, and is based on a class of mathematical problems for which it is hard to find solutions, but easy to verify the solution. The classical example of this kind of problems is prime factorization: Given a number N which is a multiple of two primes. The time to find the primes will increase with the square root of N as N increases; however, if one of the primes is known, finding the second will be a near instantaneous task.

In asymmetric cryptography, a pair of separate but mathematically linked keys is generated. A public key is used to encrypt plain text or to verify a digital signature, while a private key is used to decrypt the ciphered text or to sign a document digitally. The mathematical link between the keys is created in a way that it is impossible or extremely difficult to calculate the private key from the public key. Typically the public key is made available for all relevant parties, while the private key is kept secret.

For regular encryption, this means that anyone with access to the public key may encrypt a text, but only the holder of the private key can decrypt the text; for signing, only the holder of the private key can create a valid signature, but anyone with access to the public key may verify the signature.

7.1 Hash Function

A hash function\(^5\) maps an arbitrary string of data into a fixed length output. A "good" hash function has the following three properties:

1. It is impossible to recreate the original data from the Hash – it is not invertible.
2. Any change in the underlying data will produce a change in the Hash function.
3. It is deterministic – hashing the same data again will produce an identical string. (Compare to padding functions, which are typically non deterministic).

Condition two is impossible to obtain exactly if the size of the hash function is smaller than the total variation of the data, as at least some changes must be mapped to identical hashes. However, in practice, for an appropriate choice of hash function, it is inconceivable that anyone could make a desired change to the underlying data without altering its hash.

\(^4\) http://mathworld.wolfram.com/RSAEncryption.html
\(^5\) http://mathworld.wolfram.com/HashFunction.html
7.2 Digital Signatures

It is now common for documents to be digitally signed. This is done using RSA cryptography and hash functions. In order to be able to verify the sender and the validity of a document, a hash function is used and a RSA key pair is generated; the sender and receiver knows the hash function and the public key, while only the sender has access to the private key.

The document text is passed through the hash function, generating a string of typically 1024 bits. This string is then run through the RSA decryption algorithm, using the sender’s private key. This generates a new string which is appended to the document as a signature.

As the hash function and public key is known to the receiver, the signature can be run through the RSA encryption algorithm and compared to the hash of the received document. If the hash of the document is equal to the encrypted signature, the signature is valid and the document has not been changed since the signature was added.

7.3 Electronic Signatures on Paper

In the above description, we casually assumed that "the text of the document is passed to the hash function". To sign a paper document, this might mean that someone has to manually enter all the data. That would not be an acceptable solution; however, there are a variety of ways to store information on paper in a machine readable form. The most common way is the barcode, which is slowly giving way to matrix codes like the QR code. A QR code can be used to encode all the information on a certificate as plain text with addition of the signature of the issuer. Most certificates contain limited information (most of the text being standard text present on every certificate) and QR codes can take up to around 3000 characters or bytes, which should be sufficient. This is further discussed in section 8.

Source Wikipedia Commons, Author Acdx

Figure 3: Diagram showing the creation and verification of a digital signature.

---

6 http://www.nacs.org/LinkClick.aspx?fileticket=D1FpVAvvJuo%3D&tabid=1426&mid=4802
The QR code containing the entire signed digital certificate can be added to the paper version of the certificate; this can then be read and authenticated by any smart phone or similar device. The issuer can issue a new certificate securely by email or can do it instantaneously on board the ship, and it can be printed and stored on board. Due to the digital signature validation, holograms and physical embossments on the paper is not necessary. The information on the paper version will be for record keeping and can also help the captain or the management company keep track of the certificates. The certificate's validity can be checked by scanning the QR code, and as it is digitally signed, further validation is not necessary.

The reviewer should never look at the information on the paper version, as the securely signed version is available as soon as the QR code is scanned. Of course, one might check that the electronic version is identical to the paper version, but in effect, the paper is just a print of the electronic version.

There is no need to regard the electronic and paper versions as in any way different. If the paper version is available, the QR code can be scanned to get the electronic version; if the electronic version is available, this can be printed complete with the QR code.

7.4 Key Security

An encryption system is only as secure as its private encryption key. However, it is not necessary to have only one key. An issuer could change their private key every day, publishing a new public key, and the application which authenticates the information just has to use the right public key by looking up the key used on the date of issue of the certificate.

It is also possible to require that the key is stored on a special hardware device, e.g. a USB unit, and further protect it by personal passwords for each user. Only the issuer of keys can write to the device and only the user knowing the password can use the key it to sign certificates.

A digital signature can also be used to authenticate other issuers. For instance, a flag State may delegate the management of certificates to some other entity. This can be done by using a mechanism similar to public key certificate which is commonly used on the Internet.

The flag State creates a key pair and digitally signed certificate which is used to validate other certificate issuers. The entity with the right to issue certificates creates their own key pair and signed certificate. The entity's certificate is then signed by the flag State, using the flag State's certificate and private key. This certificate is then used for signing when the entity issues a certificate for a ship.

This creates a validation path; the flag State's original certificate and public key can be used to verify that the certificate for the ship has been issued by an entity with the right to do so.

The certificates for validation of other issuers should be issued with a relatively short expiry date, because while it is impossible to revoke a valid certificate, a certificate becomes useless after a certain date and will no longer be useful for creating further certificates.

These validation key chains mean that new certificates can be issued locally, because each party has their own certificate and their own key. There is no need for the flag State to share their private key with any parties, and it should be a closely guarded secret and changed regularly. They only need to sign the certificates of their delegation authorities, and in the event of fraud it provides a chain of liability conceivably right down to the individuals who authorized the signing of particular certificates.

---

7.5 Implementation

All the technology that is needed for implementation already exists and is in common use. OpenSSL\(^8\) will allow the creation of digitally signed certificates, and can be used to provide digital signatures to a document. Open source software to translate text into QR codes and back again already exists. All that is required is an App which displays the information in the QR code in a readable format, and makes use of OpenSSL to validate the signatures.

7.6 Revoked Certificates

A digital signature only protects against a certificate being fraudulently issued or fraudulently altered since it is impossible to revoke a properly signed digital document (although the signature may expire). If it is suspected that a certificate might have been revoked, the issuing authority, who must keep records of revocations, must be contacted. However, this should be relatively rare. In any event, most places in the world have internet, and it is a relatively simple task to look up an online database to make sure that a certificate with a valid certificate has not been revoked. This would be an extra service. Even in areas or ports where one cannot obtain internet access, it would be a relatively simple task for an app to store the certificates that it validated until such time as it was connected to the internet, at which time it could inform the user if any of the certificates that were digitally signed have since been revoked.

7.7 Conclusions

We then propose the following – that each certificate be printed with a QR code, or other machine readable format, which is not just the digital signature, but actually the entire digitally signed electronic version, including all the information. Digital signatures need not be long, although it may not be possible to store the entire validation chain on the QR code, it can at least store the digital certificate of the direct issuer.

8 QR code

QR (Quick Response) code is a type of two-dimensional barcode designed by Denso Wave, originally for use in the Japanese automotive industry. The use of QR code has quickly gained popularity in both commercial and non-commercial applications, as they can store a fairly large amount of data and can be scanned and decoded with commonly available equipment, e.g. a mobile phone equipped with a camera.

There are four encoding standards for the QR codes; numeric, alphanumeric, byte/binary and Japanese characters. Extensions may also be used. The encoding affects how much data can be stored in the code, as the number of bits used per character is dependent on the encoding.

QR code also has error correction based on the Reed-Solomon algorithm. Because of this, the data stored in the code can be reconstructed even if parts of the code have been destroyed, is dirty or overwritten. The error correction is of variable level; a code with low error correction can store more data, but will be less robust to damage than a code with high error correction.

---

\(^8\) The OpenSSL Project is a collaborative, open source project to develop a robust, commercial-grade, full-featured toolkit. It is widely used throughout internet security, and is the de facto standard implementation. Their website is at http://www.openssl.org/
The QR code is of variable size, ranging from 21x21 modules for version 1 to 177x177 modules for version 40.

The maximum amount of data that can be stored, e.g. in a version 40 QR code with low error correction, is 7089 numeric characters, 4296 alphanumeric characters, 2953 bytes or 1817 Japanese characters.

Due to the nature of the data in the certificates, it would be reasonable to use either alphanumeric or byte encoding. The alphanumeric encoding has some limitations, like upper-case letters only and few special characters; these limitations are inconvenient with XML style text and standard representation of encrypted signatures and key data. It would therefore seem like the byte encoding is best for the purpose of representing the certificate data.

9 Electronic certificate data in ISO 28005 compliant format

There are many certificates and documents the ship has to carry on board and it will be necessary to analyse the actual encoding requirements in detail before one decides how to encode all this or rather the necessary parts of this information in electronic documents.

However, the core information needed by surveyors is not normally that extensive and some examples are giving in part three of this paper. Almost all information elements are already available in ISO 28005-2 [4] and it is simple to create a new part of the 28005 series covering electronic certificates. This would also ensure compatibility and semantic interoperability with other electronic reporting systems using this standard or standards that have a semantic mapping to ISO 28005.

10 Need for standards

International standards will be necessary for the efficient implementation of electronic certificates. Issuer, user and inspectors must all agree on the format used and the same format should be used for all nationalities. The below table lists the main standards that are necessary and suggests who can develop these standards.

IMO means that the specifications are of a policy related nature and need to be agreed on by legislators and users represented in IMO. IS means that the specifications are technical in nature and can be developed by international standards organisations, typically ISO based on performance requirements from IMO.

<table>
<thead>
<tr>
<th>Required data content in each document</th>
<th>IMO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance requirements for producing and inspecting the documents</td>
<td>IMO</td>
</tr>
<tr>
<td>Performance requirements for central repository of keys and documents</td>
<td>IMO</td>
</tr>
<tr>
<td>Digital representation of data elements in XML or other formats</td>
<td>IS</td>
</tr>
<tr>
<td>Methods for signing documents (from performance standards)</td>
<td>IS</td>
</tr>
<tr>
<td>Methods for printing data and signature on paper documents</td>
<td>IS</td>
</tr>
<tr>
<td>Access methods for central data bases</td>
<td>IS</td>
</tr>
</tbody>
</table>

---

9 A “module” is a light or dark square, and is the smallest element of a QR code.
### Part Three: An Example

#### 11 Sample certificate printed format

**CERTIFICATE OF INTERNATIONAL REGISTRY**

<table>
<thead>
<tr>
<th>Particulars of ship</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of ship</td>
<td>M/S Ship of the future</td>
<td></td>
</tr>
<tr>
<td>Official Number</td>
<td>986714</td>
<td>Year / port of registration</td>
</tr>
<tr>
<td>Radio call sign</td>
<td>A14G5</td>
<td>IMO Number</td>
</tr>
<tr>
<td><strong>Type of ship</strong></td>
<td>General cargo</td>
<td><strong>No of decks</strong></td>
</tr>
<tr>
<td><strong>Type of propulsion</strong></td>
<td>Motor ship</td>
<td>1</td>
</tr>
<tr>
<td><strong>Country built</strong></td>
<td>Sweden</td>
<td><strong>Details</strong></td>
</tr>
<tr>
<td><strong>Material in hull</strong></td>
<td>Steel</td>
<td>Single screw</td>
</tr>
<tr>
<td><strong>Stern</strong></td>
<td>Raked</td>
<td><strong>Length at waterline</strong></td>
</tr>
<tr>
<td><strong>Moulded depth</strong></td>
<td>6.5 m</td>
<td><strong>Moulded draught</strong></td>
</tr>
<tr>
<td><strong>Yard</strong></td>
<td>Shipbuilders AB, Gothenburg</td>
<td></td>
</tr>
</tbody>
</table>

**Particulars of Propelling Engine**

<table>
<thead>
<tr>
<th>No of sets engines</th>
<th>1</th>
<th><strong>Type engine</strong></th>
<th>Internal combustion</th>
</tr>
</thead>
<tbody>
<tr>
<td>No of shafts</td>
<td>1</td>
<td><strong>Power</strong></td>
<td>1 400 kw</td>
</tr>
<tr>
<td>Year of build</td>
<td>2006</td>
<td><strong>Cylinders per set</strong></td>
<td>6</td>
</tr>
<tr>
<td>Length of stroke</td>
<td>400 mm</td>
<td><strong>Diameter cylinder</strong></td>
<td>300 mm</td>
</tr>
<tr>
<td>Estimated speed of ship</td>
<td>16 knots</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Engine maker</strong></td>
<td>Hansen Maskinfabrikk AB</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Particulars of Tonnage**

<table>
<thead>
<tr>
<th>Gross tonnage</th>
<th>12 000 tons</th>
<th>Net tonnage</th>
<th>10 000 tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registered tonnage</td>
<td>12 000 tons</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Certificate issued to owner:**

Shipholding Ltd  
23 Great road  
Sea village, UK  

**Issued at and date:**

Hometown, Some state, July 23rd 2013

**Expires at:**

July 22nd 2015

**Signature – Stamp/Seal**

---

\ :\FAL\39\INF.2.doc
The below listing show how the same information as is represented in the printed document in section 8.1 can be encoded in XML. The format is based on the ISO 28005-2 standard for electronic port clearance, but with additional elements added to cover the needs of the certificate data set. The XML file amounts to about 3.5 kilo-byte which is not within the capacity of the QR code. Section 8.3 shows how one can construct a simple text based encoding of the XML that reduces data set size to around 1 kilo-byte. Alternatively, one could also compress the XML-file which will typically reduce it to about 1.5 kilo-byte.

```xml
<?xml version="1.0" ?>
<EPCElectronicShipCertificate
 xmlns="http://e-certificates"
 xmlns:epc="http://www.iso.org/28005-2"
 targetNamespace="http://www.iso.org/28005-2">
  <EPCCertificateHeader>
    <OfficialNumber>986714</OfficialNumber>
    <ShipID>
      <ShipName>M/S Ship of the future</ShipName>
      <IMONumber>9988776</IMONumber>
      <CallSign>A14G5</CallSign>
    </ShipID>
    <IssuedTo>
      <Name>Shipholding Ltd</Name>
      <PostalAddress>
        <StreetName>Great road</StreetName>
        <StreetNumber>23</StreetNumber>
        <CityName>Sea village</CityName>
        <Country>UK</Country>
      </PostalAddress>
    </IssuedTo>
    <IssuedBy>
      <Name>International ship register</Name>
      <CityName>Hometown</CityName>
      <Country>XX</Country>
      <GISIS>12345</GISIS>
    </IssuedBy>
    <IssueDate>2013-07-23</IssueDate>
    <ExpireDate>2015-07-22</ExpireDate>
    <Version>1</Version>
  </EPCCertificateHeader>
  <EPCCertificateBody>
    <RegistrationPort>
      <Name>Hometown</Name>
      <Facility/>
      <CountryCode>XX</CountryCode>
      <UNLoCode>HOM</UNLoCode>
    </RegistrationPort>
    <ShipBuilder>
      <Name>Shipbuilders AB</Name>
      <RegistrationCountryCode>SE</RegistrationCountryCode>
    </ShipBuilder>
    <ShipDescription>
      <ShipTypeContent>50</ShipTypeContent>
      <Decks>1</Decks>
      <KeelLaid>2008</KeelLaid>
      <HullMaterial>Steel</HullMaterial>
      <Speed>16.0</Speed>
      <Comment>Stern Raked, Transom</Comment>
    </ShipDescription>
    <PropulsionDescription>
```

[1:FAL39INF.2.doc]
<PropulsionType>Motor</PropulsionType>
<PropulsorType>SingleScrew</PropulsorType>
<SetOfEngines>1</SetOfEngines>
<Shafts>1</Shafts>
<EngineSet>
  <EngineType>InternalCombustion</EngineType>
  <Power>1400</Power>
  <BuildYear>2006</BuildYear>
  <Cylinders>6</Cylinders>
  <StrokeLength>0.4</StrokeLength>
  <Diameter>0.3</Diameter>
  <EngineBuilder>
    <Name>Hansen Maskinfabrikk AB</Name>
    <RegistrationCountryCode>SE</RegistrationCountryCode>
  </EngineBuilder>
</EngineSet>
<LengthOverall>82.5</LengthOverall>
<LengthWaterline>80.0</LengthWaterline>
<Beam>12.0</Beam>
<MouldedDepth>6.5</MouldedDepth>
<MouldedDraught>5.8</MouldedDraught>
<GrossTonnage>12000</GrossTonnage>
<NetTonnage>10000</NetTonnage>
<RegisteredTonnage>10000</RegisteredTonnage>
Compressed plain text format

QR codes can contain up to 4296 alphanumeric characters or 2954 bytes. There are various ways to compress the data set shown in section 8.2 and in this section, a simple text encoding scheme is demonstrated. This can be used to retain all information while also making it easy to access without direct electronic compression. However, this is just one possible way to do this.

---

```plaintext
e:ch:
:::cc:RegistryCertificate
:::cn:986714
:::si:
:::sn:M/S Ship of the future
:::in:9988776
:::cc:AI4G5
:::lt:
:::na:Shipholding Ltd
:::pa:
:::sn:Great road
:::so:23
:::cn:Sea village
:::co:UK
:::ib:
:::na:International ship register
:::cn:Hometown
:::co :XX
:::gl:12345
:::id:2013-07-23
:::ed:2015-07-22
:::ver:1
:::ob:
:::rp:
:::na:Hometown
:::cc:XX
:::ul:HOM
:::sb:
:::na:Shipbuilders AB
:::cc:SE
:::sd:
:::st:50
:::rd:1
:::ki:2008
:::hm:Steel
:::sp:16.0
:::cm:Stern Raked, Transom
:::pd:
:::pt:Motor
:::pr:SingleScrew
:::se:1
:::sh:1
:::es:
:::et:InternalCombustion
:::pw:1400
:::by:2006
:::cy:6
:::si:0.4
:::di:0.3
:::eb:
:::na:Hansen Maskinfabrikk AB
:::cc:SE
:::lo:82.5
:::lw:80.0
:::be:12.0
:::me:6.5
:::mr:5.8
:::gt:12000
:::nt:10000
:::rt:10000
:::si:
:::dv:FWwW2U58bztLi4cIE/mp+nsBNZg=
:::sv:MTha3zLoj8Tg content omitted
:::ki:
:::cv:MIIcDCCAYQCMAwDQYJ content omitted
```
References


M13 - e-Certificates definition (Appendix 03)

30 APRIL 2016
M13- REQUIREMENTS FOR ACCESS TO, OR ELECTRONIC VERSIONS OF, CERTIFICATES AND DOCUMENTS, INCLUDING RECORD BOOKS REQUIRED TO BE CARRIED ON SHIPS
• Introduction – Scope of this document

• Part 1 – Executive summary

• Part 2 - REQUIREMENTS FOR ACCESS TO, OR ELECTRONIC VERSIONS OF, CERTIFICATES AND DOCUMENTS, INCLUDING RECORD BOOKS REQUIRED TO BE CARRIED ON SHIPS : Report of the Correspondence Group

• Part 3 - REQUIREMENTS FOR ACCESS TO, OR ELECTRONIC VERSIONS OF, CERTIFICATES AND DOCUMENTS, INCLUDING RECORD BOOKS REQUIRED TO BE CARRIED ON SHIPS : Review of the IMO Compendium on Facilitation and Electronic Business

• Part 4 - REQUIREMENTS FOR ACCESS TO, OR ELECTRONIC VERSIONS OF, CERTIFICATES AND DOCUMENTS, INCLUDING RECORD BOOKS REQUIRED TO BE CARRIED ON SHIPS: Future Proof and Cost-Effective Standardization of Electronic Ship Certificates

• Part 5 - REQUIREMENTS FOR ACCESS TO, OR ELECTRONIC VERSIONS OF, CERTIFICATES AND DOCUMENTS, INCLUDING RECORD BOOKS REQUIRED TO BE CARRIED ON SHIPS: GUIDELINES ON THE FACILITATION ASPECTS OF PROTECTING THE MARITIME TRANSPORT NETWORK FROM CYBERTHREATS Electronic Means for the Clearance of Ships

• Supporting documents
Scope of this document

The objective of **STM’s Activity 2** is to validate and operationalise STM services and stimulate system manufacturers to develop STM functionality in prototype systems. STM services in the test beds encompasses single reporting area with enhanced information sharing between Shore Centres, route exchange, route validation and route optimisation for just-in-time arrival and enhanced environmental performance, enhanced monitoring and shore based Deep Sea Assistance as well as e-Certificates.

The demonstration of STM services carried out in the Action is of a much larger scale i.e. testing on 300 vessels.

In such context, **Sub-Activity 2.6** is specifically addressing e certificates and this document, which coincides with STM’s milestone M13.
Part 1 - Executive summary

This document describes the work of the Correspondence Group on Electronic Access to Certificates and Documents, reports on the progress of the review of the Compendium on Facilitation and Electronic Business by the WCO. A new format for the Compendium is presented to the Committee for its consideration.

ISO has looked at how fully signed and electronic certificates can be implemented through a cooperation between IMO and the standards organizations. We believe this is a relatively simple task, cost-effective for the Member States as well as future oriented. ISO is ready to participate in such cooperation if the committee decides to go forward on this.
PART 2 - REQUIREMENTS FOR ACCESS TO, OR ELECTRONIC VERSIONS OF, CERTIFICATES AND DOCUMENTS, INCLUDING RECORD BOOKS REQUIRED TO BE CARRIED ON SHIPS:

Report of the Correspondence Group
Report of the Correspondence Group

The Committee established the Correspondence Group on Electronic Access to Certificates and Documents under the direction of Mr. Roger K. Butturini (United States) in October 2014. The terms of reference established in FAL 39/16, paragraph 5.38, guided the work of the correspondence group.

Terms of reference: The terms of reference for the Correspondence Group on Electronic Access to Certificates and Documents are:

• continue to gather experience of the implementation and use of electronic certificates and propose revisions to the guidelines, as needed;
• develop a model framework for implementing electronic certificates;
• consider alternatives to the need for using traditional signatures, stamps and seals to issue and approve electronic certificates;
• advise the Committee on possibilities for industry standards to support use of electronic certificates; and
• submit a report to FAL 40.
Findings of the correspondence group

1. Electronic certificates could be issued in four different formats that would meet the recommendations in FAL.5/Circ.39/Rev.1, *Guidelines for the use of electronic certificates*. Table 1 shows some important characteristics of these different formats.

<table>
<thead>
<tr>
<th>Electronic Certificate type</th>
<th>Setup cost</th>
<th>Personnel cost</th>
<th>Data analysis</th>
<th>Security</th>
<th>Storage requirement</th>
</tr>
</thead>
</table>
**Findings of the correspondence group**

<table>
<thead>
<tr>
<th>Electronic Certificate type</th>
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<th>Personnel cost</th>
<th>Data analysis</th>
<th>Security</th>
<th>Storage requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fully digital</td>
<td>High: website required; software development; could be mitigated by common PKI approach.</td>
<td>Medium: Training in template access, format, and field entries.</td>
<td>High: Full data distinction.</td>
<td>High: Relies on website access control; embedded secure signature possible</td>
<td>Low: Digital certificate data.</td>
</tr>
</tbody>
</table>
Findings of the correspondence group

2. In some cases, due to workforce implications, expected investment in hardware and software, and the scope, simplicity, and predictability of commerce, paper remains the preferred means of issuing certificates.

3. The correspondence group members expect industry to realize cost savings primarily in terms of a lower administrative burden for ships' crews and a drastically reduced incidence of costly detentions due to new or revised paper certificates not received.

4. The application and documentation of periodic endorsements remains a concern for the many stakeholders of electronic certificates.

5. The process of verifying an electronic certificate is likely quicker than for a traditional paper certificate and the use of electronic certificate does not diminish the ultimate authority of the port State control official.

6. In the correspondence group discussions, the group identified several methods to achieve the authenticity, originality, integrity, and reliability of the electronic certificates used in the process of printing and verifying the electronic certificates.

7. The feature information for image recognition is extracted, searched, and recognized in different ways and with different algorithms.
Conclusions of the correspondence group

1. The Committee should recognize that a spectrum of electronic capabilities will exist among Administrations for the near future and that the decision to use electronic certificates could be a complicated one.

2. To help prevent confusion about the validity of these certificates, electronic certificates should contain an embedded and visible symbol of authentication, such as a digital signature, stamp, seal, or watermark, as evidence that the required examinations, inspections, and testing have been performed.

3. The use and acceptance of electronic certificates is a policy issue, not a technological one, to be made primarily by the Administration and partly by the RO or other issuer.

4. An administration, RO, or a vessel owner and crew who choose to rely strictly on electronic certificates must consider the potential PSCO response and strive to minimize any confusion.

5. A crucial stakeholder for using electronic certificates is the port State, whose PSCOs and other officials must be as confident with the validity and accuracy of electronic certificates as they are with the traditional paper certificates.
Conclusions of the correspondence group

6. The members of the correspondence group remain divided about whether to incorporate guidelines or references for electronic log records into FAL.5/Circ.39/Rev.1. Some members expressed opinions that combining all IMO work to support a paperless environment (certificates, log books, e-navigation) into one reference is an efficient approach.

7. The Interim Guidelines should be updated to reflect the work of the correspondence group and the lessons learned about using electronic certificates. The updates should include additional features to authenticate electronic certificates.
Part 3 - REQUIREMENTS FOR ACCESS TO, OR ELECTRONIC VERSIONS OF, CERTIFICATES AND DOCUMENTS, INCLUDING RECORD BOOKS REQUIRED TO BE CARRIED ON SHIPS:

Review of the IMO Compendium on Facilitation and Electronic Business
Review of the IMO Compendium on Facilitation and Electronic Business

Background

The DMPT has established a focus group in charge of the maintenance of the FAL Compendium. The DMPT Meetings are open. All interested experts may join a meeting either in session or during the inter-session via an online platform. The DMTP started work during its March 2015 Meeting by undertaking an initial review of the FAL Compendium. The following are the recommendations and findings resulting from the initial work of the DMPT. An alignment has been made to the latest version of the UN / EDIFACT.

A new format has been established to present information in the Compendium using the semantic model.

During the review of FAL Form 1, the DMPT identified some questions and remarks that go beyond the technical scope and call for further guidance on the business requirements and the principles of the information requirements. The list is provided in annex 3.

It was decided to use the information modeling tools which will slightly change the appearance of the standards in the Compendium, in particular the presentation of the Guide to the implementation of messages of message standards. This change is the impact of using a standard model to automatically generate the contents of the Compendium.

Being aware of this change the WCO, in consultation with the IMO Secretariat, has decided to present to FAL 40 only one FAL Form, namely FAL Form 1 – General declaration, as an example of the new appearance of the information. Should the Committee approve the new appearance, the WCO will present all the FAL Forms in the new format to FAL 41, including the amendments adopted by FAL 40 for the FAL Forms. The information to be presented to FAL 41 would include in a separate annex the list of changes introduced to all the FAL Forms.
Action requested of the Committee

The Committee is invited to:

• consider the use of the semantic model as the underlying concept of the FAL Compendium, and accordingly approve the use of the new format of the Compendium proposed by the DMPT (paragraphs 13 to 16, and annex 2);

• consider the list of questions and remarks (paragraph 11, and annex 3) and advise accordingly; and

• approve the creation of a correspondence group to discuss similar findings to the ones identified in annex 3 in the other FAL Forms (paragraph 12).
Part 4 - REQUIREMENTS FOR ACCESS TO, OR ELECTRONIC VERSIONS OF, CERTIFICATES AND DOCUMENTS, INCLUDING RECORD BOOKS REQUIRED TO BE CARRIED ON SHIPS:

Future Proof and Cost-Effective Standardization of Electronic Ship Certificates
Future Proof and Cost-Effective Standardization of Electronic Ship Certificates

ISO has looked at how fully signed and electronic certificates can be implemented through a cooperation between IMO and the standards organizations.

ISO TC8 has participated in the Correspondence Group on Electronic Access to Certificates and Documents. This group has considered four different ways to issue electronic certificates. This document provides more technical details on the fully digital and signed version of electronic certificates and how it can be implemented.
Future Proof and Cost-Effective Standardization of Electronic Ship Certificates

• How can fully electronic signed certificates be implemented and an overview of the required technical components?

The table lists the required components and indicates who may contribute to the development of each.

<table>
<thead>
<tr>
<th>Component</th>
<th>Who</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certificate specifications</td>
<td>IMO</td>
<td>As today: The content and general form of each certificate must be defined by IMO. One may want to make this more formal by adding references to the common information model. This may reduce ambiguity in definition of data fields.</td>
</tr>
<tr>
<td>Performance standards for electronic certificates and signatures</td>
<td>IMO</td>
<td>IMO should specify general objectives and performance requirements. This does not have to be very complex, e.g. fully electronic format with security at least equivalent to paper, stamp and written signature. These requirements may also cover the Public Key Infrastructure (see last row).</td>
</tr>
<tr>
<td>Common information model</td>
<td>Standardization Organizations (STD)</td>
<td>It should be harmonized with ISO 28005, Common Maritime Data Structure, UN/CEFACT and the WCO² data model as far as applicable.</td>
</tr>
<tr>
<td>Template files for electronic certificates</td>
<td>STD</td>
<td>Based on the common information model and certificate specifications.</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-----</td>
<td>---------------------------------------------------------------------</td>
</tr>
<tr>
<td>Print templates</td>
<td>Member State (MS)</td>
<td>This is one possible technical method for translation between certificate file formats and certificate specifications. This should be provided by the users.</td>
</tr>
<tr>
<td>Signature mechanism</td>
<td>STD/IMO</td>
<td>The actual mechanisms can be specified by STD based on IMO requirements and industry agreement.</td>
</tr>
<tr>
<td>Printed signature specification</td>
<td>STD</td>
<td>The actual mechanisms can be specified by STD based on IMO requirements and industry agreement.</td>
</tr>
<tr>
<td>Encoding and validation software (general)</td>
<td>MS</td>
<td>The software should be provided by the users and may have to be adjusted by individual Member States or organizations. Prototypes will be demonstrated by the e-compliance project.</td>
</tr>
<tr>
<td>Public Key Infrastructure (PKI)</td>
<td>IMO</td>
<td>IMO is already operating a PKI for the LRIT system (see MSC 86/6) and this can be reused for ship’s certificates. It may need a slight modification if the signature mechanism for certificates (Elliptic Curve Cryptography is probably preferred) is different than for LRIT.</td>
</tr>
</tbody>
</table>
Future Proof and Cost-Effective Standardization of Electronic Ship Certificates

The Committee is invited to

- note the information contained in this document and its annex.
- consider if the development of fully electronic signed ship certificates should be initiated. If so decided, and if assistance from ISO is desired, ISO will initiate the development of the necessary technical standards at the earliest convenience.
Part 5 - REQUIREMENTS FOR ACCESS TO, OR ELECTRONIC VERSIONS OF, CERTIFICATES AND DOCUMENTS, INCLUDING RECORD BOOKS REQUIRED TO BE CARRIED ON SHIPS: GUIDELINES ON THE FACILITATION ASPECTS OF PROTECTING THE MARITIME TRANSPORT NETWORK FROM CYBERTHREATS

Electronic Means for the Clearance of Ships
Electronic Means for the Clearance of Ships

The Working Group on Electronic Means for the Clearance of Ships (the group) met from 5 to 7 April 2016, under the chairmanship of Mr. R. Butturini (United States).

Agenda:

1. APPLICATION OF SINGLE-WINDOW CONCEPT

2. REQUIREMENTS FOR ACCESS TO, OR ELECTRONIC VERSIONS OF, CERTIFICATES AND DOCUMENTS, INCLUDING RECORD BOOKS REQUIRED TO BE CARRIED ON SHIPS

3. GUIDELINES ON THE FACILITATION ASPECTS OF PROTECTING THE MARITIME TRANSPORT NETWORK FROM CYBERTHREATS
1. APPLICATION OF SINGLE-WINDOW CONCEPT

In this context, the group was of the view that user needs were very important to define the scope of a MSW prototype system and recommended that:

1 Member States requiring assistance for the implementation of MSWs should contact the Secretariat (falsec@imo.org) as soon as possible in order to discuss their specific needs and explore possible solutions;

2 Member States and organizations willing to assist with the implementation of MSWs or the development of a prototype MSW should be invited to contact the Secretariat or submit information to FAL 41;

3 the Secretariat should report back to FAL 41 with an analysis of the needs, a summary of commonalities and any additional information.
2. REQUIREMENTS FOR ACCESS TO, OR ELECTRONIC VERSIONS OF, CERTIFICATES AND DOCUMENTS, INCLUDING RECORD BOOKS REQUIRED TO BE CARRIED ON SHIPS

In considering issues related to the harmonization and standardization of data reporting formats between different existing MSW platforms, to among other things reduce the administrative burden on board ships, the group was of the view that there were both technical and policy issues that needed to be addressed. Moreover, the group noted that many of the technical issues related to harmonization and standardization would be addressed as part of the revision of the IMO Compendium, the cooperation work to be conducted between different stakeholders, in particular, UNECE, WCO and ISO, the implementation of MSWs, and the continuous work of the Committee in promoting interoperability and facilitation aspects.
3. GUIDELINES ON THE FACILITATION ASPECTS OF PROTECTING THE MARITIME TRANSPORT NETWORK FROM CYBERTHREATS

The group held a lengthy discussion of facilitation aspects related to cyberthreats, and was of the view that the Committee should convey to the Maritime Safety Committee that:

• The FAL Committee has a role in the Organization's response to the growing cyberthreats;
• The FAL Committee has important responsibilities related to the management of risks associated with cyberthreats in respect to facilitation, such as MSWs, processes for electronic certificates and data exchange between ships and shore, pre-arrival information based on the Convention and processes involving ship-port interface;
• Should the MSC decide to develop guidelines, this should be done as a joint FAL/MSC guidelines, to avoid duplication, and whose principles could be applied to all stakeholders, including both the ship and the shoreside.
Supporting documents

- App03_02 FAL 40-6 - Report of the Correspondence Group.pdf
- App03_03 FAL 40-6-1 - Review of the IMO Compendium.pdf
- App03_04 FAL 40-6-2 - Standardization of Electronic Ship Certificates (ISO).pdf
- App03_05 FAL 40-WP.3 Single Window
- App_10 attrib_navigazione consolari.pdf
- FAL 40-6-3 - Comments to the Review of the IMO Compendium on Facilitation and Electronic Business (ISO).pdf
- FAL 40-6-4 - Comments to the review of the IMO Compendium on Facilitation and Electronic Business (UNECE).pdf
- FAL 40-6-5 - Comments on document FAL 4061 (Japan).pdf
- FAL 40-9 - Measures to address cyber-related risks on ships (Canada and United States).pdf
- FAL 40-9-1 - Comments on document FAL 409 (ICS, CIRM, BIMCO, IACS, I...).pdf
- FAL 40-12 - Activities relevant to the FAL Convention (Secretariat).pdf
- FAL 40-17-1 - Analysis of recommendations to reduce administrative burdens in facilitation-related IMO i... (Secretariat).pdf
- FAL 40-INF.3 - Information concerning the development of uniform definitions of ship port operations in s... (BIMCO, ICHCA.pdf
- FAL 40-INF.5 - Information on Cyber Risk Management Best Practices (Canada and the United Sta...).pdf
- FAL 40-INF.7 - A Study of Cyber Raw Means on Vessels and Integration with Port Information System for Ef... (Republic%2.pdf
- FAL 40-INF.8 - Single Window system based on the open platform for seamless maritime information exchange (Republic of K.pdf
### S-G remarks
Belgian permanent delegate Dhr Van Steen was killed in the Brussels attacks. Condolences. Shipping is indispensable. Doing our best to amplify this message.

### Election of Chairman and Vice Chair – (Russian Federation, Yury Melenas and Sweden, Marina Angsell)

Housekeeping arrangements.

| Agenda item 1 | Addition of new item 18 “unsafe mixed migration by sea”  
UK comments re agenda item 6 – some items currently under 6 may be better under item 5 supported by Sweden, Germany and Marshall Islands |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Agenda adopted as amended</td>
<td></td>
</tr>
<tr>
<td>Provisional timetable agreed</td>
<td>Turkey has ratified the FAL convention and has other IMO documents before parliament for ratification.</td>
</tr>
</tbody>
</table>
| Working groups | WG 1 Electronic means for clearance of ships  
WG 2 review of minimum guidelines for minimum training of crew  
DG1 amendments to Annex of the FAL convention |
| Groups agreed. |                                                                                                                                                        |
| Agenda item 5 | Documents noted |
| Application of single window concept | I?? – XML has no standardisation  
Netherlands  
ICS  
Japan – revised IMO compendium is already in place. Other industries should join to revise compendium. IMO is not a standards development organisation.  
Norway – single window cost effective and efficient. Member states must have necessary system in place. Challenge for some countries to implement. Go for option 1  
Korea – no clear preference but must consider option at WG.  
Belgium – focus on need for standardisation before other technical developments. |
<p>| 1 gathering information from ports |                                                                                                                                                        |
| 2 gathering information from operators |                                                                                                                                                        |
| 3 trial a maritime single window prototype |                                                                                                                                                        |
| A number of delegations have already volunteered to assist. |                                                                                                                                                        |</p>
<table>
<thead>
<tr>
<th>Agenda item 5 – views on options</th>
<th>Option 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panama; Singapore; Cyprus; Spain; Italy; Greece; Sweden; Malaysia; Chile; Guatemala; Malta; Indonesia; Ireland; Finland</td>
<td>Peru – agree with paragraph 11. We use international trade window and would support option 3</td>
</tr>
<tr>
<td><strong>Option 2</strong></td>
<td>Panama – Option 1 gives best opportunity for harmonised approach.</td>
</tr>
<tr>
<td><strong>Option 3</strong></td>
<td>Denmark – in favour of reducing workload.</td>
</tr>
<tr>
<td>Brazil; Peru; Denmark; France; Columbia; Argentina; China; Nigeria; Japan</td>
<td>Prefer option 3 but could also support option 1. (Perhaps an EU lobby on this one)</td>
</tr>
<tr>
<td>Summary – no-one seems to support option 2. We will continue the deliberation of this issue in WG</td>
<td>Sweden support 1 but could also support 3</td>
</tr>
<tr>
<td>Other delegations also go for both with one preference</td>
<td>UK note that options 1 and 3 are not necessarily exclusive (so conclude support both)</td>
</tr>
<tr>
<td><strong>Agenda item 5 – comments on the summary</strong></td>
<td>WSC – European system is not as good as some of the delegates seem to think. Denmark pointed out it was the technical solution supported rather than the implementation.</td>
</tr>
<tr>
<td><strong>Agenda item 5</strong> FAL40/INF.6; INF.8; INF.9</td>
<td>Honduras not present to introduce INF.9</td>
</tr>
<tr>
<td><strong>Agenda item 6 transferred to item 5</strong></td>
<td><strong>FAL40/6/1 presentation by WCO on review of the IMO Compendium. Cross border trade &amp; transport, etc. Feedback on progress made.</strong></td>
</tr>
<tr>
<td><strong>Agenda item</strong> FAL40/6/3 and /6/4</td>
<td><strong>Introduced by ISO and UNECE respectively.</strong></td>
</tr>
<tr>
<td><strong>Agenda item</strong> FAL40/6/5</td>
<td><strong>Introduced by Japan, response to /6/1</strong></td>
</tr>
<tr>
<td><strong>Agenda item 5 WG terms of reference</strong></td>
<td><strong>UK – points 1 and 2 we are not sure that the documents we have to send to the group have enough information to define functional requirements. For compendium group should be looking at policy aspects of compendium. IMO should advise acceptability of approach and WCO then do the technical work.</strong></td>
</tr>
<tr>
<td>.2 Consider the alternatives presented in para 9.1 and 9.3 of FAL40/5 recommend the way forward for the maritime SW prototype. The high level system functional requirements and opportunities</td>
<td><strong>USA – concern over the detail of the understanding of WCO</strong></td>
</tr>
<tr>
<td>.3 Consider proposal in 40/6/1 taking into account 40/6/3, 4,5 and advise on the reformatting of FAL 5 ?? compendium</td>
<td><strong>Panama – a bit premature to talk about the working of systems</strong></td>
</tr>
</tbody>
</table>
Agenda item 6
Report from CG on electronic certificates

Terms of reference:

Denmark – commend FAL and IMO on steps taken and approval by A.29 that members should accept electronic certificates. Before the end of this year ships flying the Danish flag will be using electronic certificates. Formal announcement will be made to the Secretary General in due course.

UK – Endorse Denmark’s comments – IMO have made policy decision that electronic certificates are acceptable and they must now be implemented.

France – agree to the use of e-certificates.

Finland happy with the work being done.

Liberia – also support electronic certificates.

Denmark support amendments as do UK who suggest the amendments be adopted in Plenary without forwarding to WG.

Panama support proposals under 3 and agree with chair it can be sent to WG for fine tuning. Also must go to MSC / ?? / III committees.

UK will not support adding items to the task as it would become unmanageable.

Sweden also prefer not to expand the work.

ISO submission presented but questions asked by US CG chairman as to what is meant by ‘fully electronic’ certificates.

UK - if the committee wishes ISO to start the work, this can be decided without reference to the WG and the information is not mature enough to be of benefit to the WG.

US advise that ISO have their own work initiation processes and they aren’t driven by IMO.
**Agenda item 9**

- **Canada** – strongly support the preparation of guidelines by the WG for trade related information.
- **ICS** - trade related information is only one aspect of information to be protected. Separate treatment of facilitation aspects may be difficult to arrange. Coordinated work with MSC is considered beneficial.
- UK agree with ICS and is better to wait for MSC output before FAL look at this. Hold over consideration to FAL41
- **Greece** – associate ourselves with UK WSC support ICS comments so UK position
  - France agree one singe guideline which avoids duplication etc. However we need to look beyond the vessel to port systems, trade information, etc. In the end we will just be providing contribution to MSC
  - Argentina issues are the same whether trade information or ship safety so one set of guidelines coordinated by MSC
  - Liberia support joint FAL MSC working together
  - Panama = what we don’t want to do is duplicate work and so we don’t want any discussion at FAL (note Panama delegate also MEPC Chairman)

**Agenda item 9 continued day 2**

- **WG** will not be tasked to work on the guidelines themselves but to identify the facilitation aspects.
- **Panama** agree with development of guidelines but ask for clarity about how work is to develop
  - Belgium agrees with chairman’s proposal
  - USA believe that FAL can develop comments for forwarding to MSC
  - France – MSC will be very busy so do our share
  - **Canada** – one set of guidelines which will hopefully be MSC/FAL circular

- **WG** will discuss facilitation aspects and report back. The

- **Belgium** – consider desirable for WG to consider 40/6/; 40/6/5, 40/INF.4 convey thoughts to MSC
- **Brazil** – aligns with UK, Greece wait for MSC outcome
- **IPCSA** - worthwhile to highlight some of the issues some of our ports have. Massive flow of data and cyber risk needs to be addressed.
- **Colombia** – operational and administration issues not just facilitation issue. If MSC take it on they need to look at all aspects. Support MSC doing this work.
  - **Norway** consider it important that this committee consider the facilitation aspects.
  - Important that FAL takes the opportunity to have a preliminary discussion so don’t support UK
  - **Sweden** support UK position but feel it is helpful to have a general discussion at this meeting. Netherlands can support view by Belgium and France and are in favour of one set of guidelines
  - **Mexico** – supports France Norway Sweden Belgium
  - **Germany** want the facilitation aspect discussed at this meeting
### Agenda item 3 and item 4

Amendments already circulated and no document commenting submitted to this meeting. Only proposal is to discuss remaining issues such as dangerous goods manifest prior to Drafting group.

Conclusion we retain the word freight but make no other changes. NL and USA support the changes being in the text rather than in the forms.

DG moved out 10.50

### Agenda item 10

Minimum training for mooring personnel

Need to include a definition of ‘mooring personnel’.

Documents 40/10 & 40/10/1 introduced

Majority who spoke wanted 40/10 as basis but majority also want consideration of text in 40/10/1 in order to improve guidelines. ToR as proposed.

Brazil – need to ensure guidelines align with needs of personnel.

Singapore – 40/10 maintains distinction between shore side and those on mooring boats. This distinction is lost on 40/10/1. Could split the guidance into two parts. Must remain mindful of local needs.

ITF welcome both submissions.

Philippines – we have existing training objectives for shore and ship based. We support Singapore viewpoint. We believe there is a way to merge documents. (Details advised)

Hong Kong – support 40/10 as base document

Bahamas – important information but privatisation is not considered appropriate for IMO

Argentina FAL40 10/1 is considered most appropriate as it harmonises requirements.

Korea – if we harmonise then some persons may have to gain experience/knowledge they don’t need.

Peru – personnel do need a basic level of training

Panama – agree with Brazil

Brazil and need to differentiate persons as stated by Singapore

France – shore based personnel must also be able to operate at sea.

Marshall Islands – agree with Brazil etc.

China – on board training not needed for shoreside

Belize support 40/10

Turkey – should take into account administrative burden

Sweden; Republic of Iran – both docs sent to WG

Liberia – both documents useful, 40/10 basis

Chile – local labour authorities may have own regulations

Colombia base doc 40/10

Naut Inst, everyone has said everything

Ghana – both have merit but 40/10 basis

Intermanager – support views of Singapore
<table>
<thead>
<tr>
<th>Agenda item 7</th>
<th>No documents received under this item Committee invited to note the information from NCSR3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Matters on NCSR 3 agenda NCSR3/18 ICS provided information on large scale rescue. Agreed to invite MSC and no further action needed by subcommittee NCSR3/18 paras 7-10 Need for greater effort by coastal states to prevent the departure of dangerous craft</td>
</tr>
<tr>
<td>Draft regional agreement for Mediterranean Committee invited to note progress.</td>
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<tr>
<td>No significant progress on regional agreement</td>
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</tbody>
</table>

| Agenda item 17 | Introduced by Secretariat LEG committee made comment on purpose of work – issue of mixed migration a global problem and S&R facilities not designed for resulting numbers of people drifting at sea Situation in Mediterranean desperate. MSC 95 decisions – agree to place on agenda item of unsafe mixed migration, submissions invited. Planned output 5.1.2.2 placed on biennium agenda. Instructed NCSR 3 to discuss and report back to MSC. |
| No comments from the floor so the committee noted the output of the high level meeting. |

| Agenda item 40/17/2 | Introduced by Secretariat Panama commented we need to keep to non-mandatory language within the text. Minor textual changes suggested. Canada support Panama comments Singapore comments regarding reporting form in the appendix UK suggested we leave it as a solely MSC circular and don’t have it a joint FAL/MSC circular. |

<table>
<thead>
<tr>
<th>Agenda item 7</th>
<th>No papers submitted</th>
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</table>

| Agenda item 8 Stowaways | No papers submitted Reports from secretariat Committee agree to discontinue quarterly report of stowaway statistics |
| Reports of submissions received detailed by the Secretariat. Despite the introduction of GISIS, the number of reports is reducing which indicates submitted information is not complete. P+I statement read by Secretariat |

| Agenda item 8 Persons rescued at sea | No comments |
|-------------------------------------|

| Agenda item 11 | ISO standard for signage To be put on the biennial agenda so not considered at FAL41 |
| ICAO also doing work on safety signs and they will not be finished until summer 2017 so UK propose this is put on post biennial agenda to come back on to FAL agenda for FAL42 Netherlands – confused as understood a document with reviewed signs would be available. Presented with notice of work but what is the way forward? UK – ISO document has only four signs relevant to maritime industry. |

<p>| Agenda item 12 | Information noted. |
| Cameroon gave some advice regarding technical cooperation. |</p>
<table>
<thead>
<tr>
<th>Agenda item 13</th>
<th>Note the decisions and welcome consultative status for IPSCA</th>
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</thead>
<tbody>
<tr>
<td>Agenda item 14</td>
<td>UK some textual amendments to the guidelines to provide clarity. Germany also intervened with a question regarding use of mandatory language. France – guidelines should not use mandatory language. Sweden support change proposed by UK. NL small editorial comment.</td>
</tr>
<tr>
<td>Proposed changes identified one by one and agreed.</td>
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</tr>
<tr>
<td>Document will be updated and working paper will be reviewed on Friday.</td>
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<tr>
<td>Agenda item 17 AOB 40/17 &amp; 17/1</td>
<td>Netherlands supports all the actions proposed in the documents. US supportive of use of GISIS but have some concerns on proposals – we can’t support joint working group. Discussion of these items should take place in the individual committees and not in JWG. Sweden unsure whether JWG is feasible so don’t support JWG. Panama does not see need for tripartite group. Perhaps secretariat can give us more information in future on how we input details through GISIS. Don’t see that looking at items one by one will not be of benefit at this stage – submit proposals to FAL41.</td>
</tr>
<tr>
<td>No support for JWG. Canada reminded US proposal to review at this session. Suggestion to work on this on Wednesday but not supported. Bahamas – if we are to instruct the secretariat to do something we need to advise them what. Feasibility, benefit, costs and likelihood of being used. Cyprus – agree with Bahamas but items not considered burdens were similar to items for MSC which were considered burdens.</td>
<td></td>
</tr>
<tr>
<td>Agenda item 17/3 and 17/4</td>
<td>Support from CLIA and UK for the declaration.</td>
</tr>
<tr>
<td>Chairman urged members to bring the declaration to the attention of their governments.</td>
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<tr>
<td>Agenda item 17, paper FAL40/INF.3 Introduced by BIMCO</td>
<td>Noted by committee, comments to be submitted to next session.</td>
</tr>
<tr>
<td>Secretariat introduced comments on Resolution 22/16 pursuant to verification and inspection of goods entering and leaving Yemen. UNVIM is the agency involved. Encourage member states to share the information with national agencies.</td>
<td>AOB completed so agenda finished until Friday.</td>
</tr>
<tr>
<td>Closing day of Plenary</td>
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<tr>
<td>Election of Chairman for next year</td>
<td>Yury Melenas</td>
</tr>
<tr>
<td>Election of Vice Chairman for next year</td>
<td>Marina Angsell</td>
</tr>
<tr>
<td>Mexico and ?? commented that they had been omitted from the delegations taking part. Panama - note the establishment of a CG in para 6 but this committee does not have an agreed output in this respect.</td>
<td>US – the committee has a need to provide guidance on facilitation.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Chair</strong> – proposal we should note the information to be done and invite interested member governments for proposals to include the output in the next session.</th>
<th><strong>UK</strong> - there is a substantial piece of work needed but we perhaps need to invite somebody to make a proposal for an output to the next session.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Panama</strong> – consider para 23 not appropriate as we should just wait the outcome of the deliberations at MSC rather than trying to influence. Need to have concrete proposals from MSC so we can consider the facilitation aspects.</td>
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<td><strong>US (R Butturini)</strong> suggested that an online collaboration site would assist in the work of the members.</td>
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<tr>
<td><strong>UNEC</strong> – Understand there will be no CG. What about the MSW etc.? <strong>Chair</strong> – No CG but there will be inter-sessional work done.</td>
<td><strong>France</strong> – in WCO document they were asking for views of FAL in setting up CG&gt; Could we at least have a paragraph inviting the WCO to set up a CG at their own initiative as WCO need the support. <strong>UK</strong> – point about collaboration tool support and secretariat should investigate. Affects other committees. <strong>US</strong> – note comments on need to work with Compendium. We have partnerships an.d one of the high level goals is highly dependent on transmission of data.</td>
</tr>
<tr>
<td><strong>NL</strong> – Support idea of France <strong>Marshall Islands</strong> - support France.</td>
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<tr>
<td><strong>Liberia</strong> – agree with US that there is a responsibility to ensure that there is consistency including within the compendium.</td>
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<tr>
<td><strong>Panama</strong> – is perfectly acceptable that we set up an informal CG to work with partners.</td>
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<tr>
<td><strong>Chair</strong> – we will invite WCO and partners to work inter-sessionally. Invite members to propose additional output to be considered at FAL 41 for further work of our committee. <strong>US</strong> - could we also indicate that US is willing to be focal point for coordination.</td>
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<tr>
<td><strong>Report of WG2 (WP.4)</strong> Introduced by Norway (Haakon Storhaug)</td>
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<tr>
<td><strong>Philippines</strong> – para 4.1 - what are the additional standards of training? Should it have added “as stated in paragraph 4.2” <strong>Norway</strong> – we can add further information as Philippines suggest but no benefit seen. <strong>Singapore</strong> – support addition of wording proposed by Philippines</td>
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<tr>
<td><strong>Bahamas</strong> – mention was made of accident to line handlers. We would propose to draw out lessons learned from this. Text proposed to amend 4.2.</td>
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<tr>
<td><strong>Norway</strong> – Chair of WG – the proposal does not seem to change the intent of the guidelines but rather is seen to enhance the content. <strong>Spain</strong> – amendment proposed by Bahamas is supported.</td>
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<tr>
<td>Title</td>
<td>Description</td>
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<tr>
<td>Report approved in general and proposed amendments approved</td>
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<tr>
<td><strong>Report of DG1 (WP.5)</strong></td>
<td>Director of Maritime Safety Division advised that everything is in order to be able to adopt the amendments.</td>
</tr>
<tr>
<td>Report presented by France (Fabien Joret). Only changes in form made and no substantive amendments. Changes made to font and vocabulary.</td>
<td>Adopted. Is adoption item FAL ?? ?? Date of entry into force 1 July 2018 Approve report of drafting group in general</td>
</tr>
<tr>
<td><strong>Changes to the guidelines (WP.6)</strong></td>
<td>Approved without comments</td>
</tr>
<tr>
<td>Review of the committee work program</td>
<td>Provisional agenda for FAL41</td>
</tr>
<tr>
<td>Review of draft report of FAL40</td>
<td>No significant amendments to draft report.</td>
</tr>
</tbody>
</table>
**Presentation on cyber security – IPCSA**

Port community system is an open electronic platform for exchange of information
Deal with 4bn tonnes of cargo
Exchange tens of millions of messages
Cyber risk is any risk to data so attack, personnel or even hardware.
“circle of risk” – assets are compromised by threats. Attacks utilise vulnerabilities
Threats – try to steal the cargo or try to facilitate the transfer of illegal cargo
Manipulation of passenger and crew information

<table>
<thead>
<tr>
<th>Vulnerabilities</th>
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<tbody>
<tr>
<td>Large number of stakeholders</td>
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<tr>
<td>Different ways of dealing with IT security</td>
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<tr>
<td>Cybersecurity mostly treated as an IT matter or extra safety officer task rather than business matter</td>
</tr>
<tr>
<td>Focus on availability rather than integrity and confidentiality</td>
</tr>
<tr>
<td>SCADA often outdated software; low security awareness</td>
</tr>
</tbody>
</table>

Cyber security awareness is priority

- Known guidelines – use them
- Start with awareness and training
- Create a trusted network
- We should exchange information about cyber security.

Cyber security awareness is priority

- In Spain have to report to two national security agencies
- Do not try to be a cyber-security expert – rely on those who are the experts
- Last year more than a million incidents
- 300 real attacks, five were severe. Biggest problem was the internal attacks

**Vulnerabilities**

- Large number of stakeholders
- Different ways of dealing with IT security
- Cybersecurity mostly treated as an IT matter or extra safety officer task rather than business matter
- Focus on availability rather than integrity and confidentiality
- SCADA often outdated software; low security awareness

**Valencia working with tools provided by Spanish government.**

I hope you are scared enough to think about implementing cyber-security controls

**Richard Morton; Linda van Moorst; Jose Garcia de la Guia**

**Risks**

- Highest: not doing anything
- Second – not telling our users how to behave

**WG1**

**Single Window (MSW)**

Japan of the opinion we don’t need to discuss

Germany – ensure that whatever system we have it is modular (to allow some port states to add more information requirements) and cover various options

Chairman – benefit to one global platform so departure information at one port becomes arrival information at next port. Should committee be discussing minimising differences between ports

**France** – we should be discussing opportunity offered by maritime single window

**EC** – some ports have highly equipped systems doing miracles and some have nothing. You can
| **Share data is systems are harmonised but must look at whether we are allowed to share info.** |
| **IPCSA – need to be clear about basic semantics; is the same and then we get onto message format.** |
| **Italy – we found it extremely useful to maintain the compendium to facilitate information exchange between ship and shore** |
| **Norway – there is more than one standard already there and people need to talk to each other** |
| **Chair – what can we do in the working group to report to the committee and what can the committee do to meet the needs in this area** |
| **Noway – we have compendium, ISO etc. I am not sure what committee should do but we could ask them to be more proactive.** |
| **ISO we have already agreed on harmonisation** |
| **EC – agree with ISO we had a good discussion on this yesterday.** |
| **ICS – is it useful for committee to encourage those single windows in operation continue to look for opportunities to minimise reporting formalities and reduce administrative burden? Policy would then be supporting the technical harmonisation.** |
| **Chair – responsibility of committee to promote interoperability and coordinate facilitation tasks to work towards a solution.** |
| **UNEC - Other elements to harmonise; syntax, semantics, etc.** |
| **All have notions of harmonisation but many players so it is a major task.** |
| **eElectronic versions of certificates** |
| **Germany – our final goal will be totally electronic but for the present we need to have the means to print it out with visible identification.** |
| **Chair – would you change this wording?** |
| **Italy – electronic signature has legal meaning which differs around the world** |
| **ISO there are some issues of wording of para 3 but we can discuss this.** |
| **Estonia – fully support the wording and use of “authentication”** |
| **NL fully agree with Estonia** |
| **UNECE guide in model law of electronic signature** |
| **Electronic means used should be as appropriate to the legal status of the document.** |
| **Antigua – support the idea that the main aim is to be sure that the documents are enough for the person who is looking at it. It must convince the Port State control officer and support the wording chosen.** |
| **Canada – support comments of Estonia. Both in SOLAS and STCW we use the word ‘stamp’.** |
| Demark – I hope I can add comments to what will soon be real life. Presentation on certificates was not flag state solution but was DNV-GL solution. Our solution is pdf with embedded facsimile signature. |
| ISO – perhaps calling it “printed electronic signature”. |
| Ukraine – don’t understand why we need the digital signature as every member has access to GISIS. |
| Chair, we are going in that direction but we are not there yet. PSC official is encouraged to limit inspection to paperwork but review of paperwork directs further inspection. |
| Germany – reminder of where we came from. Started with printed versions of electronic certificates but to look to the future to fully electronic certificates. For the time being we need something in between. |
| Ukraine – we agree with Germany but without ability to verify printed certificate we can have anything printed on it. Need means to verify |
| Chair – look through other changes |
| Denmark – what we have is good and what we need now is a flag state that is brave enough or stupid enough to run with it. |
| ISO – we will start a project in ISO TC8 |
| Chair – by and large this is not a technological issue but is a policy issue of IMO, flags etc. Policy decision to start using them but also policy decision to start accepting them. |
| Propose conditional agreement to establish task for correspondence group |
| Panama did not agree and suggested that it should not be added to work of CG. No other comments so agreement that it would not be added to CG ToR |
| Japan had comments about re-testing WCO solution (WCO use their own software). |
| Back to revision of wording for authentication of printed copies. |

**Cyber risks**

<p>| USCG presentation |
| BIMCO – our guidelines look at cyber security from a ship perspective. Identifies risks, vulnerabilities, criticalities, etc. So far guidelines have been received well by industry. |
| Panama – how do we see the guidelines developed by IMO? One set of guidelines or two sets, one for FAL and one for MSC |
| US – one set of guidelines but would expect FAL to identify applicability to facilitation systems and MSC identify applicability to safety issues. |</p>
<table>
<thead>
<tr>
<th><strong>Intertanko</strong> – see the BIMCO guidelines as being beta tested on ships. Would prefer to see BIMCO document being used as there are some areas that have been specifically tailored to ship operations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ICS</strong> – both USCG and BIMCO are aimed at ships but FAL responsibility is too narrow. If we focus only on one aspect then it doesn’t assist resilience. Could be beneficial to reach an outcome that the principles are applicable.</td>
</tr>
<tr>
<td><strong>BIMCO</strong> see facilitation information as any other information that can be stored on the ship. NIST guidelines categorises the systems into low, medium and high. In our guidelines low medium and high categorises the information into the impact its exploitation would have – eg crew and passenger lists would be high</td>
</tr>
<tr>
<td><strong>Canada</strong> the impact crosses the remit of various IMO committees. There may be difference in requirements from FAL and MSC. FAL may look at data security and MSC may look at processes. NIST looks at the management framework. The US Canada guidelines only make a reference to the NIST framework</td>
</tr>
<tr>
<td><strong>Panama</strong> – We can agree with US that one set of guidelines would be beneficial. Frequency of meetings means it is better for MSC to take this than FAL. Our task is to identify the risks specific to FAL. Need to be careful not to duplicate and confuse our final users.</td>
</tr>
<tr>
<td><strong>ICS</strong> – important to recognise the industry guidelines are not put forward as an alternative to US/CAN. When we look at facilitation aspects we need to identify specific systems.</td>
</tr>
</tbody>
</table>
| **Chair – FAL mandate**  
Our role is to focus on the security, integrity etc of the information asked for by the ports. |
| **IPSCA** – concur with those thoughts. Overarching way of managing cyber threats is the same |
| **Intertanko** – FAL has a role to play. Work should be coordinated by MSC but other committees and subcommittees have a role. Need to identify areas where there is a gap. |
| **Canada** – there are various IMO instruments requiring information flow |
| **Brazil** – main role will be MSC |
| **Chair – start brainstorming – what is the role of FAL.**  
One role falls on the administration protecting the date in the FAL forms |
<p>| <strong>Germany</strong> – as ICS said one of the roles is that when talking about threats we must remember it is a long chain of players and not only on ship side but also ashore. Need to integrate players. |
| <strong>US</strong> – need to identify systems and processes that are at risk |
| <strong>Chair – there are some matters that FAL owns</strong> |
| <strong>Estonia</strong> - autonomous ships and remote access |</p>
<table>
<thead>
<tr>
<th>Country</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>ICS</td>
<td>can we come to an agreement that the principles of cyber risk management such as confidentiality, integrity, etc should be agreed as common and the principles should be developed by MSC and will be applied to FAL systems</td>
</tr>
<tr>
<td>Germany</td>
<td>it must be a common MSC/FAL initiative</td>
</tr>
<tr>
<td>BIMCO</td>
<td>autonomous ships and remote access. Autonomous ships are not currently covered by iMo and remote access is purely commercial</td>
</tr>
<tr>
<td>ITF</td>
<td>would be very uncomfortable discussing vessels that are unmanned</td>
</tr>
<tr>
<td>Canada</td>
<td>information is provided to ports across several regulations and this is where FAL should have a role. Guidelines from industry do not cover all the systems.</td>
</tr>
<tr>
<td>Panama</td>
<td>MSC should do the work but FAL has a role</td>
</tr>
<tr>
<td>Denmark</td>
<td>agree that MSC will work on the submissions and we want to be part of it.</td>
</tr>
<tr>
<td>NL</td>
<td>agree we have a role and should cooperate with MSC rather than just leave it to them.</td>
</tr>
<tr>
<td>US</td>
<td>would recommend a joint MSC FAL circular and can't provide a complete list but would consider those mentioned in FAL convention as starting point</td>
</tr>
<tr>
<td>Belgium</td>
<td>a good starting point is what has been discussed yesterday and today but also for drafting for the future. A full list of what is on the ships could be useful</td>
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<tr>
<td>USCG presentation</td>
<td>See cyber as not just a criminal activity as risk across the whole spectrum. Hope to suggest what is meant by guidelines</td>
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<tr>
<td></td>
<td>Old vessels were simple and did not have electronics at risk. Ships today have electronics throughout, propulsion, electrical power, ventilation systems, navigation. Cargo operations and port activities also very dependent on cyber activity nowadays. Need to go forward with eyes wide open</td>
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<td></td>
<td>Mariners do risk assessments every time they</td>
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<thead>
<tr>
<th>Loss of ECDIS – mate plugged iphone into ECDIS usb to charge it while listening to music. There was malware on the phone and all the charts were wiped (Company had no cyber policy)</th>
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<tbody>
<tr>
<td><strong>Real world impacts</strong></td>
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<tr>
<td>Smuggling</td>
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<td>Ransomware</td>
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<td>Money laundering</td>
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<tr>
<td>Loss of ECDIS</td>
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<td>Denial of Service</td>
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<tr>
<td>Industrial control systems</td>
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<tr>
<td><strong>Trade facilitation</strong></td>
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<tr>
<td>Electronic certificates</td>
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<tr>
<td>Dangerous cargo manifest</td>
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<td>Crew and passenger lists</td>
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<tr>
<td>Ship to shore interface and business</td>
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<tr>
<td>Confidentiality, integrity and availability</td>
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<tr>
<td><strong>What makes the maritime industry vulnerable?</strong></td>
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<tr>
<td>Inherent mobility</td>
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<tr>
<td>Increasing dependence on cyber systems</td>
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<tr>
<td>Need to connect to many customers, suppliers, agencies and contractors</td>
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<tr>
<td>Money</td>
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<tr>
<td><strong>Crew connectivity survey</strong></td>
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<tr>
<td>Futurenautics.com +3000 respondents</td>
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<tr>
<td>12% had ANY cyber training</td>
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<tr>
<td>43% were aware of any policies</td>
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<tr>
<td>43% reported sailing on a vessel with malware of some type</td>
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<tr>
<td><strong>How do we manage? NIST framework</strong></td>
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<tr>
<td>Identify (which assets)</td>
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<tr>
<td>Protect (what safeguards are available)</td>
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<tr>
<td>Detect</td>
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<tr>
<td>Respond</td>
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<tr>
<td>Recover</td>
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<tr>
<td><strong>Inventory of cyber systems</strong></td>
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<tr>
<td>Map connections between systems &amp; networks</td>
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<td>Determine potential consequence</td>
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<tr>
<td>Evaluate risks</td>
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<tr>
<td><strong>Updating anti-virus</strong></td>
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<td>Changing passwords</td>
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<tr>
<td>Separation of business and production systems</td>
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<tr>
<td>Study the threat landscape</td>
</tr>
<tr>
<td><strong>Not always high tech solutions</strong></td>
</tr>
<tr>
<td>Manual/mechanical safeguards</td>
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<tr>
<td>Educate workforce</td>
</tr>
<tr>
<td><strong>Respond – what techniques can contain impacts of incidents (e.g. manual operation)</strong></td>
</tr>
<tr>
<td><strong>Recover – what techniques can restore capabilities – have a plan</strong></td>
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<tr>
<td>Cyber risk management is not just a job for the IT department</td>
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<tr>
<td>-------------------------------------------------------------</td>
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<tr>
<td>Train employees to understand the risks and be aware</td>
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<tr>
<td>Scrutinise acquisitions</td>
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<td>Have exercises</td>
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<table>
<thead>
<tr>
<th>What can IMO do</th>
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<tbody>
<tr>
<td>Establish guidelines to help vessel operators</td>
</tr>
<tr>
<td>Process will support ISM and ISPS requirements</td>
</tr>
<tr>
<td>Identify critical systems and processes</td>
</tr>
<tr>
<td>Identify basic training topics and sources</td>
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<tr>
<td>May refer to existing technical standards</td>
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</tbody>
</table>
SUMMARY

Executive summary: This document describes the work of the Correspondence Group on Electronic Access to Certificates and Documents. Annex 1 shows the model framework for implementing electronic certificates. Annex 2 shows the draft updated Guidelines for use of electronic certificates. Annex 3 shows proposed amendments to Procedures for port State control, 2011 (resolution A.1052(27)).

Strategic direction: 8.0
High-level action: 8.0.3
Output: 8.0.3.1
Action to be taken: Paragraph 8
Related documents: FAL 39/16; FAL.5/Circ.39/Rev.1 and MEPC 68/9

1 The Committee established the Correspondence Group on Electronic Access to Certificates and Documents under the direction of Mr. Roger K. Butturini (United States) in October 2014. The terms of reference established in FAL 39/16, paragraph 5.38, guided the work of the correspondence group.

2 The following Member Governments participated in the work of the correspondence group:

BELGIUM	DOMINICA
BRAZIL	FINLAND
BULGARIA	FRANCE
CANADA	GERMANY
CHINA	GREECE
CYPRUS	ISRAEL
DENMARK	ITALY
and representative from the following Associate Member of the IMO:

HONG KONG, CHINA

and an observer from the following intergovernmental organization:

EUROPEAN COMMISSION (EC)

and observers from the following non-governmental organizations in consultative status:

INTERNATIONAL CHAMBER OF SHIPPING (ICS)
INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

3 The coordinator would like to thank all those who participated and contributed to this important work.

Terms of reference

4 The terms of reference for the Correspondence Group on Electronic Access to Certificates and Documents are:

.1 continue to gather experience of the implementation and use of electronic certificates and propose revisions to the guidelines, as needed;

.2 develop a model framework for implementing electronic certificates;

.3 consider alternatives to the need for using traditional signatures, stamps and seals to issue and approve electronic certificates;

.4 advise the Committee on possibilities for industry standards to support use of electronic certificates; and

.5 submit a report to FAL 40.

Work done by the correspondence group

5 The members of the correspondence group completed the following tasks:

.1 the correspondance group conducted an informal poll of classification societies to gage their experiences and their plans to use electronic certificates when performing recognized organizations (ROs) duties.

.2 the correspondence group gathered information about potential cost benefits of transitioning to a paperless environment.
the correspondence group constructed the model framework for implementing electronic certificates and present it in annex 1.

the correspondence group discussed alternatives to signatures, stamps, and seals from several perspectives – whether they are needed, the different ways to apply them, and whether they should be standardized:

first, the correspondence group discussed whether a signature, seal, or stamp is needed on a certificate that is viewed on a secure website. That is, could the existence of the certificate on the site be taken as evidence that the issuer followed the proper processes and procedures and the certificate is valid?

second, the correspondence group discussed the differences between using the image of a signature, stamp, and seal and applying "embedded" versions to certificates. The group also discussed the different types of electronic certificates that might be created and issued and the different advantages and disadvantages of each type.

the correspondence group noted the work done by MEPC on electronic record books under MARPOL and the industry standards identified in MEPC 68/9 to support validation and security of electronic logbooks.

the members of the correspondence group considered revisions to FAL.5/Circ.39/Rev.1 and the possibility of updates to Procedures for port State control, 2011 (resolution A.1052(27)) to urge acceptance of electronic certificates that meet the guidelines.

Findings of the correspondence group

In general, the group agreed on the following findings:

Electronic certificates could be issued in four different formats that would meet the recommendations in FAL.5/Circ.39/Rev.1, Guidelines for the use of electronic certificates. Table 1 shows some important characteristics of these different formats.

<table>
<thead>
<tr>
<th>Electronic Certificate type</th>
<th>Setup cost</th>
<th>Personnel cost</th>
<th>Data analysis</th>
<th>Security</th>
<th>Storage requirement</th>
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<tbody>
<tr>
<td>Fully digital</td>
<td>High: website required; software development; could be mitigated by common PKI approach.</td>
<td>Medium: Training in template access, format, and field entries.</td>
<td>High: Full data distinction.</td>
<td>High: Relies on website access control; embedded secure signature possible</td>
<td>Low: Digital certificate data.</td>
</tr>
</tbody>
</table>

### 2

Some progress has been made in various locations to implement a system to issue certificates electronically. Administrations continue to evaluate the efficiencies and outcomes of using electronic certificates. Several pilot projects are underway, initially to experiment with use of electronic certificates in domestic trade. Some Administrations report a hesitation to use electronic certificates because of the uncertainty of their acceptance during port State control examinations. In some cases, due to workforce implications, expected investment in hardware and software, and the scope, simplicity, and predictability of commerce, paper remains the preferred means of issuing certificates. Annex 1 shows a framework for implementation of electronic certificates.

### 3

No cost/benefit figures are yet available for implementation of a system to create, issue, and maintain electronic certificates compared to traditional paper. One correspondence group member reported spending the equivalent of $33,000 a year on courier costs in dispatching certificates. The correspondence group members reported expecting to see cost savings in terms of reduced processing time, international phone communications, and postage. Similarly, the correspondence group members expect industry to realize cost savings primarily in terms of a lower administrative burden for ships' crews and a drastically reduced incidence of costly detentions due to new or revised paper certificates not received. An informal poll of ROs confirmed that most do not yet have firm plans to develop and use electronic certificates.

### 4

The application and documentation of periodic endorsements remains a concern for the many stakeholders of electronic certificates, including:

- Administration officials from various departments with interests and jurisdiction over the arrival, stay, and departure of ships, the persons aboard, security, and the cargo;
- Port State control officers (PSCO);
- Vessel master and crew;
vessel owner and operator;

ROs;

vessel agents; and

port, harbour, and terminal authorities.

One approach being considered is reissuance of a certificate with an entry for the endorsement. Processing this transaction quickly could be an advantage of electronic certificates. Alternatively, a surveyor/inspector could digitally sign an electronic certificate, for example, on the vessel computer or a tablet PC, using readily available technology common to other types of business transactions. This approach could save the embedded secure signature data and would necessitate attention to version control and document management.

The need to have printed versions of certificates available for port State control examinations will likely continue for the near future. Consequently, the appearance of validity created by a certificate to a port State control official remains important to encourage acceptance on face value. That is, a certificate with visible features to indicate it has been properly issued, transmitted, and maintained is more likely to be accepted. The instructions for verifying an electronic certificate should be on board the vessel for a port State control official who questions the validity of a certificate in order to verify it. The process of verifying an electronic certificate is likely quicker than for a traditional paper certificate and the use of electronic certificate does not diminish the ultimate authority of the port State control official. In addition, a certificate should contain features that connect it to the specific person who approved it and identify the date and conditions under which it is issued in case it is invoked in legal proceedings. Therefore, the correspondence group considers an indication that an electronic certificate has been properly processed and issued according to the procedures of the Administration, such as with an electronic signature, stamp, or seal, to be an important feature of certificates that should be retained, even if a certificate can be viewed on a securely maintained website. In any case, the system an Administration or RO uses to provide this type of authentication should be clear, simple to use, and should not rely on the port State control official carrying a smart phone, tablet PC, or other readers, at least in the near future.

In the correspondence group discussions, the group identified several methods to achieve the authenticity, originality, integrity, and reliability of the electronic certificates used in the process of printing and verifying the electronic certificates:

Data Validation and Certification Server (DVCS) is a Trusted Third Party (TTP) that provides data validation service for verification of specific data (including certificates) at a specific time. In addition, it clarifies the validation of documents with digital signatures and public key certificates and provides the validation and authenticator for the data ownership;
.2 a digital signature is a technology that allows the signatures, seals, and stamps of the paper documents to take effect in the electronic certificates and it includes the Public Key Infrastructure (PKI) using an asymmetric encryption algorithm. The secret keys and the public keys are used to sign a document and this includes the verification of these processes;

.3 TimeStamp is a time stamping technology that can verify the e-documents at some specific time and it ensures no changes have been made after their creation. TimeStamp provides the verification of the originality of the e-documents by confirming the creation time from the Time Stamp Authority (TSA);

.4 Digital Rights Management (DRM) helps prevent circulation and illegal copies for digital contents, thereby protecting and managing the intellectual property rights. DRM offers:

.1 expression identification of contents;

.2 definition of application rule for contents;

.3 protective actions such as the encryption for the use of the contents;

.4 license issue of the contents;

.5 monitoring of the contents;

.6 management and reporting of transactional information; and

.7 tracking illegal copies;

.5 digital watermarking inserts specific codes or symbols to indicate the ownership, such as the copyrights, and help prevent illegal and unauthorized distribution and copy of the multimedia contents such as the texts, images, voices, etc.;

.6 a two-dimensional barcode, such as a Quick Response code, is a barcode that contains Braille or mosaic codes and can store up to 3,400 alphabetical characters or 8,000 numbers; significantly greater storage than is possible with the unidimensional barcode. In the case of information damage, it is possible to restore most of the information. Moreover, data encryption is possible and no database is required to express and realize the various forms of information such as the characters, numbers, graphics, pictures, voices, fingerprints, and signatures;

.7 An image key point technology searches and recognizes images through the extraction of the unique and specific information about the images from the different attribute data such as colour information, pixel information, pixel location information, and edge information of the digital images. In general, it stores the extracted information in a certain pattern so that it can be compared to the
original. The feature information for image recognition is extracted, searched, and recognized in different ways and with different algorithms.

Online access to electronic certificates by the master, agent, and other authorized stakeholders remains another important consideration and many methods are available to manage access control. For example, the current LRIT system relies on Public Key Infrastructure (PKI) technology. There are numerous global standards to make websites for access or verification of electronic certificates secure and manageable. These standards are generally well-known to the kind of information technology experts who would typically create and maintain the means to access electronic certificates and should be used for system integrity. In addition to the existing industry standards identified below, development of a standard for a unique tracking number would benefit further progress on use and acceptance of electronic certificates:


.2 ISO 13028, Information and documentation – Implementation guidelines for digitization of records;

.3 ISO 14533-1:2012, Processes, data elements and documents in commerce, industry and administration – Long term signature profiles – Part 1: Long term signature profiles for CMS Advanced Electronic Signatures (CAAdES);


.5 ISO 14721, Space data and information transfer systems – Open archival information system (OAIS) – Reference model;

.6 ISO 15489, Parts 1 and 2, Information and documentation – Records management;

.7 ISO/IEC 27000 – Information security management systems – Overview and vocabulary;

.8 ISO/IEC 27001 – Information security management systems – Requirements;

.9 ISO/IEC 27002 – Code of practice for information security management;

.10 ISO/IEC 27003 – Information security management system implementation guidance;

.11 ISO/IEC 27004 – Information security management – Measurement;
ISO/IEC 27005 – Information security risk management;

ISO/IEC 27006 – Requirements for bodies providing audit and certification of information security management systems;


ISO/IEC 27011 – Information security management guidelines for telecommunications organizations based on ISO/IEC 27002;

ISO/IEC 27031 – Guidelines for information and communications technology readiness for business continuity;

ISO/IEC 27033-1 – Network security overview and concepts;

ISO/IEC 27035 – Security incident management;

ANSI/AIIM/ARMA TR48-2006 Revised Framework for the Integration of Electronic Document Management Systems and Electronic Records Management Systems. The Association for Information and Image Management (AIIM) is a United States electronic document management association created by a team of industry experts, in compliance with the ANSI/AIMM regulations and procedures on the development of standards and guidelines. This standard provides, 1) the detailed information on the technologies regarding the Electronic Document Management System (EDMS), 2) detailed information on the currently applicable industry standards and technical reports, 3) analysis and selection of the EDMS technology and the detailed information on the industry standards related to the all customary project phases regarding the implementation;

Model Requirements for the Management of Electronic Records (MoReq2) is a functional requirement for the EDMS published by the European Commission in 2008 as working-level and industry standard. MoReq2 provides not only the specific functional requirements for exemplary electronic document management system but also the non-functional requirements and 13 optional modules, the metadata model defining the 345 metadata elements for functional support, test documents for compliance tests, XML schema of metadata model, and the framework to the basic guidance when developing the new electronic record management system; and

Administration specifications for protection, integrity, access control, and maintenance of websites.
Conclusions of the correspondence group

7 In general, the group concluded:

.1 The Committee should recognize that a spectrum of electronic capabilities will exist among Administrations for the near future and that the decision to use electronic certificates could be a complicated one. Therefore, the Committee's responsibilities for the use and acceptance of electronic certificates should be:

   .1 promoting the use of electronic certificates as a means of facilitation;

   .2 developing the functional framework and appropriate standards for ensuring that confidence in electronic certificates is compatible with traditional paper certificates; and

   .3 attaining a balance between providing performance concepts to advance use and acceptance of electronic certificates and developing prescriptive requirements to standardize the most important aspects of using and accepting electronic certificates.

.2 The spectrum of electronic capabilities means that, in many cases, a printed version of an electronic certificate might continue to be preferred in some cases. To help prevent confusion about the validity of these certificates, electronic certificates should contain an embedded and visible symbol of authentication, such as a digital signature, stamp, seal, or watermark, as evidence that the required examinations, inspections, and testing have been performed, that the vessel is determined to be in compliance with the applicable requirements, and that the certificated has been issued according to the Administration's policies. Annex 2 shows the proposed revisions FAL.5/Circ.39/Rev.1, Guidelines on use of electronic certificates, to include a symbol of authentication as a feature of an electronic certificate.

.3 The use and acceptance of electronic certificates is a policy issue, not a technological one, to be made primarily by the Administration and partly by the RO or other issuer. The means exist for issuing, maintaining, and validating electronic certificates in a way that is at least equivalent to tradition paper certificates. From the standpoint of information integrity, endorsements, and verification there are no differences between printed copies of electronic certificates and those viewed on a screen. An Administration's preference depends on not only the Administration's capabilities but on those capabilities of its fleet, ROs, PSCOs, and the other stakeholders.

.4 Compared to traditional paper, electronic certificates are susceptible to external risks that could render certificates inaccessible when needed, such as website outages, cyber vulnerabilities, and computer failures. In addition, expansion in the use of electronic certificates could create a gap between those Administrations that are ready to use electronic certificates and those who are not. Therefore, an administration, RO, or a vessel owner and crew who choose to rely strictly on electronic certificates must consider the potential PSCO response and strive to minimize any confusion.
A crucial stakeholder for using electronic certificates is the port State, whose PSCOs and other officials must be as confident with the validity and accuracy of electronic certificates as they are with the traditional paper certificates - at least until electronic capabilities progress and the stakeholders become more familiar with the procedures for using electronic certificates. The Committee should always keep this fundamental principle in mind when developing policies, guidelines, or requirements for the use and acceptance of electronic certificates. For their part, port States should seek to train PSCOs in the use and acceptance of electronic certificates and the steps to verify the certificates when the PSCO has reason to question them. To this end, the correspondence group recommends revisions to resolution A.1057(27), Procedures for port State control, 2011 and these are shown in annex 3.

The members of the correspondence group remain divided about whether to incorporate guidelines or references for electronic log records into FAL.5/Circ.39/Rev.1. Some members expressed opinions that combining all IMO work to support a paperless environment (certificates, log books, e-navigation) into one reference is an efficient approach. For example, various guidelines on electronic certificates and documents could eventually be incorporated into the IMO Compendium on Facilitation and Electronic Business as the "one-stop-shop." Other members emphasize the difference between the purposes of certificates and records and recommend that the Committee not expand its work to electronic documents as these are best considered by the other IMO committees. In general, members of the correspondence group agree that this issue should be discussed further to clarify the Committee's role with respect to electronic records, particularly given the timing of MEPC 69.

The Interim Guidelines should be updated to reflect the work of the correspondence group and the lessons learned about using electronic certificates. The updates should include additional features to authenticate electronic certificates.

**Action requested of the Committee**

8 The Committee is invited to:

.1 take note of the work of the correspondence group above;

.2 decide on proposed revisions to FAL.5/Circ.39/Rev.1, Guidelines on use of electronic certificates (see paragraph 8.2 and annex 2);

.3 decide on proposed revisions to resolution A.1052(27), Procedures for port State control, 2011 (see paragraph 8.5 and annex 3); and

.4 decide on the future work on this agenda item.

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ANNEX 1

FRAMEWORK FOR USING ELECTRONIC CERTIFICATES

Conduct survey/inspection/review

Record results

Decide on conformity?

Yes

Administration or RO requirements and process

Create certificate

No

Administration or RO requirements and process

Scan from paper
See page 2

Form template
See page 3

Online form
See page 4

EDI
See page 5

See page 2

See page 3

See page 4

See page 5
ELECTRONIC CERTIFICATE CREATED FROM SCANNED PAPER VERSION

From page 1

Create certificate

Original paper

Handwritten signature, Original stamp, Original seal

Apply Authentication

Scan

Paper files

PSC verification process

Options

Store certificate for verification

Upload

Database of images

Electronic files of images

Cyber security management

Transmit certificate to owner or representative

Cyber security management

Transmit to vessel

ISM/SPS Code
ANNEX 2

Note the following indicators are described below:

- **Underline** indicates proposed added text
- **[Brackets]** indicates text to be considered by the Committee
- **Strikethrough** indicates recommended text deletions

**DRAFT GUIDELINES FOR THE USE OF ELECTRONIC CERTIFICATES**

1 Introduction

1.1 The Organization aims to reduce the administrative burden on Administrations, port State control officials, ships' crews and other stakeholders caused, amongst other reasons, by reliance on traditional paper certificates.

1.2 Signed paper certificates issued by Governments and recognized organizations authorized to act on their behalf have been the traditional means of documenting compliance with IMO requirements.

1.3 Contracting Governments using electronic certificates, including printed versions of electronic certificates, have experienced instances of port State control officers or other stakeholders denying the validity of these certificates, resulting in a burden to the master and crew, shipowner or operator, port State control officers, Administration and other stakeholders.

1.4 In addition, ships have experienced instances of port State control actions because a traditional paper certificate has been issued but has not arrived on the ship or the traditional paper certificate has been damaged or lost.

1.5 Establishing a recognized set of features for using electronic certificates should help alleviate problems inherent in reliance on paper.

2 Purpose

The purpose of these guidelines is to facilitate the use and acceptance of electronic certificates.

3 Definitions

For the purpose of these guidelines:

1. **Certificate** means a document issued by an Administration or its representatives that is used to show compliance with IMO requirements and used to describe operating conditions, crewing requirements, and ship equipment carriage requirements. The term "certificate" does not include publications, manuals, instructions or ships' logs used to record ongoing operations;
.2 *Electronic certificate* means a certificate issued in an electronic format;

.3 *Electronic signature authentication* means data in electronic [or digital] form, such as a signature, stamp, or seal, which is attached to or logically associated with other electronic data to serve as a method of authentication of the issuer and contents of the electronic data;

.4 *Printed version of electronic certificate* means a paper printout produced from the electronic certificate;

.5 *Unique tracking number* means a string of numbers, letters or symbols used as an identifier to distinguish an electronic certificate issued by an Administration or its representative from any other electronic certificate issued by the same Administration or its representative; and

.6 *Verifying* means a reliable, secure and continuously available process to confirm the authenticity and validity of an electronic certificate using the unique tracking number and other data contained on or embedded in the electronic certificate.

### 4 Features [of electronic certificates]

4.1 Administrations that use electronic certificates should ensure that these certificates have the following features:

.1 validity and consistency with the format and content required by the relevant international convention or instrument, as applicable;

.2 protected from edits, modifications or revisions other than those authorized by the issuer or the Administration; and

.3 a unique tracking number used for verification as defined in paragraphs 3.5 and 3.6.; and

.4 a printable and visible symbol of authentication.

4.2 Administrations that use websites for online viewing or verifying electronic certificates should ensure that these sites are constructed and managed in accordance with established information security standards for access control, fraud prevention, resistance to cyberattacks and resilience to man-made and natural disasters.\(^1\)

4.3 Ship owners, operators and crews on ships that carry and use electronic certificates should ensure that these certificates are controlled through the safety management system, as described in section 11 of the International Safety Management Code.

Electronic signatures, stamps, or seals applied to electronic certificates as electronic authentication should meet authentication security standards, as adopted by the Administration.

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\(^1\) Such as the International Organization for Standardization/International Electrotechnical Commission 27000 series standards and similar guidelines, including requirements of the Administration.
5 Verification

Instructions for verifying (see paragraph 3.6) the information contained in the electronic certificate, including confirmation of periodic endorsements, when necessary, should be available on board the ship.

6 Notifications

Administrations deciding to issue or authorize issuance of electronic certificates are invited to inform the Committee on their experience. All Administrations are urged to communicate to the Organization through the relevant module in the Global Integrated Shipping Information System (GISIS), when available, the list of certificates categories identified in FAL.2/Circ.127-MEPC.1/Circ.817-MSC.1/Circ.1462 which will be issued by the Administration or its representative as electronic certificates.

7 Acceptance

All stakeholders should accept electronic certificates containing the features identified in section 4. These electronic certificates should be verified, when necessary, following the instructions available on board the ship (see paragraph 3.4). Furthermore, port State control officers, in accepting electronic certificates, should follow the Procedures for port State control, 2011 (resolution A.1052(27)).

8 Implementation

Administrations should put in place the necessary procedures in order to ensure that all related stakeholders' needs, capacities, and expectations are taken into consideration before and during the implementation of electronic certificates.
ANNEX 3

PROPOSED AMENDMENTS TO PROCEDURES FOR PORT STATE CONTROL, 2011
(RESOLUTION A.1052(27))

Note underlined text indicates the proposed revisions

1. Include new text in paragraph 1.7.11:

1.7.11 **Valid certificates:** A certificate that has been issued electronically or on paper directly by a Party to a relevant convention or on its behalf by a recognized organization and contains accurate and effective dates meets the provisions of the relevant convention and to which the particulars of the ship, its crew and its equipment correspond.

2. Include new text in paragraph 2.2.4:

2.2.4 If the certificates are valid and the PSCO’s general impression and visual observations on board confirm a good standard of maintenance, the PSCO should generally confine the inspection to reported or observed deficiencies, if any. The validity of electronic certificates should be verified, if necessary, by using the procedures retained on board for this purpose.
SUMMARY

Executive summary: This document reports on the progress of the review of the Compendium on Facilitation and Electronic Business by the WCO. A new format for the Compendium is presented to the Committee for its consideration. Further guidance is requested from the Committee on the findings resulting from the analysis of the current version of the Compendium.

Strategic direction: 8

High-level action: 8.0.3

Output: No related provisions

Action to be taken: Paragraph 17

Related document: FAL.5/Circ.40, FAL 39/5/1 and FAL 39/16

Background

1. The IMO Compendium on Facilitation and Electronic Business was approved by FAL 28 and was then circulated to IMO Member States as Fal.5/Circ.15. The Compendium was kept under review and FAL 38 approved the Revised IMO Compendium on Facilitation and Electronic Business and circulated it as FAL.5/Circ.40. By means of this revised compendium, the FAL Committee encourages the use of modern information and communication technology, in particular electronic exchange of information, including Electronic Data Interchange (EDI), to transmit information related to maritime transport.

2. As the technical maintenance of the Compendium requires specific IT knowledge and expertise on EDI and the standard codes in the directories of the United Nations/Electronic Data Interchange for Administrations, Commerce and Transport (UN/EDIFACT) that are available outside the Organization, FAL 39 approved a mechanism of cooperation proposed by the IMO and WCO Secretariats, wherein WCO works purely on the technical maintenance.
of the message standard of the FAL forms and the FAL Committee remains the competent body for policy making, such as the development of new FAL forms or amendments to existing ones.

3 According to the mechanism approved by FAL 39, the technical maintenance of the Compendium is carried out by the Data Model Project Team (DMPT) and the Information Management Sub-Committee (IMSC), which report to the Permanent Technical Committee (PTC) of the WCO. Under these working bodies, the WCO has long experience in developing and maintaining its WCO Data Model, which serves as the standard for harmonized regulatory information requirements for import, export and transit procedures. According to the arrangement, any amendments developed by the WCO will be presented to the FAL Committee for approval and dissemination by means of a FAL circular, and subsequently for distribution in a joint IMO-WCO publication.

Progress of the work since FAL 39

4 The IMO Secretariat has been working with the WCO, and attending IMSC and DMPT Meetings at the WCO Headquarters in Brussels, Belgium during 2015 and giving support to the maintenance process of the Compendium in the WCO bodies. A partnership agreement for collaboration in the production, publication/distribution and maintenance of a final English language edition of the Compendium was signed by IMO and the WCO in December 2015.

5 The DMPT has established a focus group in charge of the maintenance of the FAL Compendium. The DMPT Meetings are open. All interested experts may join a meeting either in session or during the inter-session via an online platform. The DMPT started work during its March 2015 Meeting by undertaking an initial review of the FAL Compendium. The following are the recommendations and findings resulting from the initial work of the DMPT.

Alignment to the latest version of the UN/EDIFACT

6 The FAL Forms and security declarations in the FAL Compendium were not created from scratch; instead, they are based on existing international standards, the UN/EDIFACT message standards. The FAL forms created were based on the six UN/EDIFACT functional messages, namely CUSREP, CUSCAR, INVRPT, PAXLST, IFTDGN and BERMAN. The DMPT learned that the FAL form standards are currently based on version D10A of the UN/EDIFACT, which was published in 2010.

7 The UNECE as the governing body of the UN/EDIFACT message standards publishes biannual releases of the UN/EDIFACT standards. The latest version of released standards is version D15A. Taking into account this development, the DMPT recommends the FAL Committee to use the updated version of the UN/EDIFACT as the basis for maintenance of the FAL Compendium to reflect the latest requirement of the standards.

New format for presenting the information in the Compendium using the Semantic Model

8 The message standards in the Compendium were defined at syntax level using EDIFACT functional message standards. Therefore all the requirements of the information during the development or maintenance process are considered, based on a technical point of view instead of business requirements. The DMPT saw benefits in applying a semantic definition as the underlying model of the message standards.
9 Semantics is the study of meaning, which in the information exchange context is defined as the meaning of the information being exchanged that has to be identical and unambiguously understood by the sender as well as by the recipient of the messages, regardless of the syntax being used in the exchange. An Information Model is a representation of the information and the relationship between pieces of information.

10 Being defined below syntax level, a semantic model addresses many challenges in managing information requirements in the FAL Compendium. First of all, it helps manage information from the business requirement point of view instead of the technical. Secondly, it also addresses the alignment between differing implementation of the syntaxes of the various functional message standards that are used in the Compendium, for instance, alignment of the use of CUSCAR and INVRPT functional message standards of FAL Form 3, the Ship's store declaration. Lastly, a semantic model also opens the future possibility to implement FAL Form message standards using various syntaxes, e.g. UN/EDIFACT, XML, JSON and other recognized syntaxes.

Findings on issues and challenges during review of the compendium

11 During the review of FAL Form 1, the DMPT identified some questions and remarks that go beyond the technical scope and call for further guidance on the business requirements and the principles of the information requirements. The list is provided in annex 3. The WCO would appreciate guidance and clarification from the FAL Committee on these questions, in order to proceed with the technical maintenance as appropriate.

12 Taking into account that other findings will emerge when the DMPT focus group completes the revision of the remaining FAL Forms, the Committee is invited to create a correspondence group to advise the DMPT focus group as necessary.

The use of information modelling tools

13 The DMPT learned that the current version of the Compendium was prepared manually using standard text editor. Therefore the consistency of the content was difficult to guarantee. The DMPT has long experience in managing the WCO data model using an information modelling tool. The tool helps the WCO information modeller to model the WCO data model with its automated feature. The tool not only assists the maintenance of the information model, but also contributes to a better level of quality assurance. By using the tool, many errors and inconsistencies could be avoided so as to ensure a higher level of quality in the final document.

14 The use of the tool will slightly change the appearance of the standards in the Compendium, specifically the presentation of the Message Implementation Guide of the message standards. This change is the impact of the use of a standard template to auto-generate the content of the Compendium.

15 Being aware of this change the WCO, in consultation with the IMO Secretariat, has decided to present to FAL 40 only one FAL Form, namely FAL Form 1 – General declaration, as an example of the new appearance of the information. Should the Committee approve the new appearance, the WCO will present all the FAL Forms in the new format to FAL 41, including the amendments adopted by FAL 40 for the FAL Forms. The information to be presented to FAL 41 would include in a separate annex the list of changes introduced to all the FAL Forms.
16 To facilitate consideration by the Committee, the current version of FAL Form 1 of the Compendium is in annex 1, and the proposed new format for FAL Form 1 using the semantic model is in annex 2.

**Action requested of the Committee**

17 The Committee is invited to:

1. consider the use of the semantic model as the underlying concept of the FAL Compendium, and accordingly approve the use of the new format of the Compendium proposed by the DMPT (paragraphs 13 to 16, and annex 2);

2. consider the list of questions and remarks (paragraph 11, and annex 3) and advise accordingly; and

3. approve the creation of a correspondence group to discuss similar findings to the ones identified in annex 3 in the other FAL Forms (paragraph 12).

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ANNEX 1

CURRENT VERSION OF THE COMPENDIUM APPROVED BY FAL.5/Circ.40

1. IMO General Declaration

FAL Form 1 to be included in appendix 1 to the Annex of the Convention following the entry into force of the 2009 amendments to the Annex of the Convention.

1.1 FAL Form 1 – IMO General Declaration

The recommended EDI format of the General declaration is the UN/EDIFACT Customs Conveyance Report Message (CUSREP). This message permits the transfer of information relating to the ship on the arrival and departure from the party responsible for the declaration to the public authorities in the country of arrival and departure. The CUSREP can be used as:

- Arrival Declaration
- Departure Declaration
- Combined Declaration for arrival and departure

Recommended Practice 2.2.2 – In the General Declaration, the public authorities should not require more than the following data:

Note: The following list is numbered to be consistent with the corresponding box in the General Declaration.

1. Name and type of ship
2. IMO number
3. Call Sign
4. Voyage Number
5. Port of arrival or departure (Port of arrival/departure on the form)
6. Date and time of arrival, or date of departure (Date and Time of arrival/departure on the form)
7. Flag State of ship
8. Name of master
9. Last port of call/Next port of call
10. Particulars regarding registry (Certificate of Registry (Port, Date, Number) on the form)
11. Name and contact details of ship’s agent
12. Particulars regarding tonnage (Gross tonnage on the form)
13. Particulars regarding tonnage (Net tonnage on the form)
14. Position of the ship in port (berth or station).
15. Brief particulars of voyage ("previous and subsequent ports of call; underline where remaining cargo will be discharged" added on the form)
16. Brief description of cargo
17. Number of crew (including master)
18. Number of passengers
19. Remarks
20. The ship's requirements in terms of waste and residue reception facilities.
21. not required for EDI message)
22-24 not required for EDI message)
1.2 IMO General Declaration (annotated with cross-references to UN/EDIFACT data codes)

**IMO GENERAL DECLARATION (Annotated)**

<table>
<thead>
<tr>
<th>Field</th>
<th>Code/Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Name and type of ship</td>
<td>SG9-TDT: 8051=20, C222: 8212, 8179</td>
</tr>
<tr>
<td>1.2 IMO number</td>
<td>SG9-TDT: C222: 8213</td>
</tr>
<tr>
<td>1.3 Call sign</td>
<td>SG7-COM: 3148. 3155=AW</td>
</tr>
<tr>
<td>1.4 Voyage number</td>
<td>SG9-TDT: 8028</td>
</tr>
<tr>
<td>2. Port of arrival/departure</td>
<td>SG3-LOC: 3227=60 or 5, C517: 3225, 3224</td>
</tr>
<tr>
<td>3. Date – time of arrival/departure</td>
<td>SG3-DTM: C507: 2005=132 (ETA) or 178 (TA) or 133 (ETD) or 186 (TD), 2380 ((CCYYMMDDHHMM), 2379=203</td>
</tr>
<tr>
<td>5. Name of master</td>
<td>SG6-NAD: 3035= CPE, C080: 3036</td>
</tr>
<tr>
<td>6. Last port of call/Next port of call</td>
<td>SG3-LOC: 3227=125, C517: 3225, 3224</td>
</tr>
<tr>
<td>11. Position of the ship in the port (berth or station)</td>
<td>SSG3-LOC: 3227=164, C519: 3223, 3224</td>
</tr>
<tr>
<td>12. Brief particulars of voyage (previous and subsequent ports of call; underline where remaining cargo will be discharged)</td>
<td>G10-LOC: 3227=94 &amp; 61, C517: 3225, 3224, QTY: C186: 6063=118 or 117, 6060, 6411, POC: C525: 8025=16</td>
</tr>
<tr>
<td>13. Brief description of the cargo</td>
<td>G2-GDS: C703: 7085=x9 (Containerized) or 12 (GC), FTX:4451=AAA: 4453=1, C108:4440=(Free text)</td>
</tr>
<tr>
<td>14. Number of crew (incl. master)</td>
<td>HS-QTY: C186: 6063=115, 6060</td>
</tr>
<tr>
<td>15. Number of passengers</td>
<td>HS-QTY: C186: 6063=114. 6060</td>
</tr>
<tr>
<td>16. Remarks</td>
<td>HS-FTX: 4451=AAl. 4453=1, C108: 4440=(an.=512 x 5)</td>
</tr>
<tr>
<td>17. Declaration</td>
<td>Attached documents (indicate number of copies)</td>
</tr>
<tr>
<td>18. Ship’s Stores Declaration</td>
<td>S - FTX:4451=BLU: 4453=1, C108:4440=(Free text)</td>
</tr>
<tr>
<td>19. Crews’ Effects Declaration*</td>
<td>21. The ship’s requirements in terms of waste and residue reception facilities</td>
</tr>
<tr>
<td>20. Maritime Declaration of Health*</td>
<td><strong>Not needed for electronic transmission</strong></td>
</tr>
<tr>
<td>24. Date and signature by master, authorized agent or officer</td>
<td><strong>Only on arrival.</strong></td>
</tr>
</tbody>
</table>

For official use

*On arrival.
1.3 Message Implementation Guideline for CUSREP

The following information should be used to complete the CUSREP when transmitting General Declaration data in EDI format.

Note: In this paragraph following abbreviations are used: HS for Header Section, SG for Segment Group, DE for Data Element, and Cxxx means Composite Data Element.

0. To designate the document name is going to be submitted, the BGM segment under HS, C002 (Document/message name), DE 1001 (Document name code) is used:
   185 for Conveyance Declaration (arrival) – equivalent to IMO/FAL1
   186 for Conveyance Declaration (departure) – equivalent to IMO/FAL1

1.1 Name and type of ship: the TDT segment (SG9) can be used indicating the qualifier 8051=20 (Main-carriage transport) and the name in DE 8212 under C222 (Transport identification) and the type of the vessel coded in accordance with "Codes for Type of Means of Transport (UNECE/Rec.28)" in DE 8179 under C001 (Transport means).

1.2 IMO number: the TDT segment (SG9) can be used indicating the IMO number in DE 8213 under C222 (Transport identification).

1.3 Call sign: can be entered in the COM segments (SG7), C076: DE 3148 indicating Communication means type code of "Call sign" in DE 3155=AW (Radio Communication Call Sign) under the NAD segment (SG6) specifying item #5 "Name of Master" as the qualifier 3035=CPE (vessel master). (See item #5).

1.4 Voyage number: the TDT segment (SG9) can be used indicating the "Voyage Number" in DE 8028 (Means of transport journey Id.).

2. Port of arrival or departure: use LOC segment (SG3) as Qualifier 3227=5 (place of departure) or 60 (place of arrival) and the location code in DE 3225 by using UN/LOCODE (UNECE/Rec.16).

3. Date and time of arrival or date of departure: the DTM segment (SG3) can be used indicating a qualifier 2005 =
   132 (arrival date time estimated, ETA), or
   178 (arrival date time actual, TA), or
   133 (departure date time estimated, ETD), or
   186 (departure date time actual, TD).
   The appropriate format codes should be used in data element 2379 by designating code 102 (CCYYMMDD) or code 203 (CCYYMMDDHHMM).

4. Flag State of the ship: can be placed in C222: DE 8453 by using Country code (UNECE/RecUNEC/Rec.3) in the TDT segment (SG9).

5. Name of master: to be placed in the NAD segment (SG6) by indicating Qualifier 3035=CPE (vessel master) and C080: DE 3036 (party name).

6. Last port of call/Next port of call: On arrival declaration, the LOC segment (SG3) to be used as a qualifier 3227=61 (Next port of call) or 125 (Last port of call) and in DE 3225 (Location code) in 2-alpha country code (based on UNECE/Rec.3) + 3 alpha-numeric location code (based on UNECE/Rec.16), if necessary, DE 3224 can be used for inputting location name in text.
7. **Certificate of registry:** to be placed in the Segment Group 4 (SG4 DOC-RFF-DTM-LOC) as DOC: C002: 1001=798 (Certificate of registry), 1000 (document name) and C503: 1004 (document id.), DTM: C507: 2005=259 (Conveyance registration date), 2380 (in CCYYMMDD) and 2379=102 and LOC: 3227=89 (place of registration) and 3225 (UN/LOCODE), 3224 (port name in text, if necessary).

7.1 **Number:** DOC segment – C200: DE 1001=798 (Certificate of registry), C002: DE 1000 (document name) and C503: DE 1004 (document id.).

7.2 **Date:** DTM segment – C507: DE 2005=259 (Conveyance registration date), DE 2380 (in CCYYMMDD) and DE 2379=102.

7.3 **Port:** LOC segment – LOC segment – 3227=89 (place of registration) and DE 3225 giving the UN/LOCODE of the port.

8. **Name and contact details of ship’s agent:** in the NAD segment (SG6). Qualifier 3035=CG (Carrier’s agent) and C058: DE 3124 (Name and address) and CTA-COM segments (SG7) for contact details, CTA: DE 3139=BQ (Agent of ship at the intended port of arrival), COM: C076: DE 3148 (Com. Address Id.) and DE 3155=TE (Telephone) for example.

9. **Gross tonnage:** to be given in the MEA segment (Header Section), Qualifier 6311=AAN (Weight of conveyance), C502: 6313=AAM (Transport means gross tonnage), C174: DE 6411 (measurement unit code, use UNECE/Rec.20) and DE 6314 (measure).

10. **Net tonnage:** to be given in the MEA segment (Header Section), Qualifier 6311=AAN (Weight of conveyance), C502: DE 6313=AAN (Net tonnage of the vessel), C174: DE 6411 (measurement unit code, use UNECE/Rec.20) and DE 6314 (measure).

11. **Position of the ship in the port (berth or station):** use qualifier 3227=164 (Berth), C519 (Related location one id.): DE 3223 (First related location id.) &/or DE 3222 (location name) in the LOC segment (SG10).

12. **Brief particulars of voyage:** the LOC segment (SG10) to be used. Qualifier 3227=61 (Next port of call), 94 (Previous port of call) and in DE 3225, (UN/LOCODE: UNECE/Rec.16). For the next ports of call, "where remaining cargo will be discharged" can be entered in QTY & POC (SG10), QTY: C186: Qualifier 6063=118 (Quantity manifested, in case of 3227=61) or 117 (Quantity landed in case of 3227=94), DE 6060 (Quantity), 6411 (Measurement unit code by UNECE/Rec.20) and POC: C525: DE 8025=16 (Unloading cargo).

13. **Brief description of cargo:** FTX segment (SG2) to be used giving the "cargo type classification code" in the GDS segment, C703: 7085=9 (containerized) or 12 (General Cargo) for example and in the FTX segment, the text subject code qualifier 4451=AAA (Goods item description) and 4453=1 (text for subsequent use) and then use C108: DE 4440 (free text) x 5 for describing "Brief description of Cargo".

14. **Number of crew:** can be specified in the QTY segment (Header Section). C186: Qualifier 6063=115 (number of crew) and C186: DE 6060 (quantity).

15. **Number of passengers:** to be specified in QTY segment (Header Section). C186: Qualifier 6063=114 (number of passengers) and C186: DE 6060 (quantity).

16. **Remarks:** Use the FTX segment in the Header Section, in case of "Cargo remarks", 4451=AEA (cargo remarks) or AAI (general information) for other remarks to be used, then C108: DE 4440 x 5.
17-20. **Attached documents (indicate number of copies):** Not needed for electronic transmission.

21. The ship's requirements in terms of waste and residue reception facilities: Use FTX segment (Header Section). Qualifier 4451=BLU (Waste information) may be able to use, then the requirements to be entered in to C108: DE 4440 in free text.

22-23. **Attached documents (indicate number of copies):** Not needed for electronic transmission.

24. **Date and signature by master, authorized agent or officer:** The date of Signature can be entered in the DTM segment (in Header Section) by using C507: DE 2005 = 564 (Signature date), DE 2380 (date in CCYYMMDD format) and DE 2379 (Date/time format code) = 102 (CCYYMMDD). Signature is not necessary for electronic transmission.

### 1.4 FAL Form 1 CUSREP Mapping Table

Note: The following list is numbered to be consistent with the responding box in the General Declaration and the above EDI format codes. Further, the order of SG, Segment and DE in this table is redesigned based on the message structure included in the UN/EDIFACT directory.

<table>
<thead>
<tr>
<th>Information</th>
<th>Segment Group</th>
<th>Segment</th>
<th>Qualifier</th>
<th>Data Element 1</th>
<th>Data Element 2</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0. Document name</td>
<td>Header Section</td>
<td>BGM</td>
<td></td>
<td>C002:1001 (Document name code)=185 (arrival) or 186 (departure)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. Date and Signature by master</td>
<td>DTM</td>
<td>C507:2005=564 (Signature date)</td>
<td>C507: 2380 in CCYYMMDD format</td>
<td>2379 = 102 (CCYYMMDD)</td>
<td>Signature not needed for electronic transmission.</td>
<td></td>
</tr>
<tr>
<td>14. Number of crew</td>
<td>QTY</td>
<td>C186:6063=115 (Nos. of Crew)</td>
<td>C186: 6060 (quantity)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Number of passengers</td>
<td>QTY</td>
<td>C186:6063=114 (Nos. of passenger)</td>
<td>C186: 6060 (quantity)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Remarks</td>
<td>FTX</td>
<td>4451=AII or AEA</td>
<td>4453=1</td>
<td>C108: 4440</td>
<td>AAI (General Info), AEA (Cargo remarks)</td>
<td></td>
</tr>
<tr>
<td>21. The ship's requirements in terms of waste and residue reception facilities.</td>
<td>FTX</td>
<td>4451 = BLU (waste information)</td>
<td>4453=1</td>
<td>C108: 4440</td>
<td>Only on arrival.</td>
<td></td>
</tr>
<tr>
<td>9 Gross tonnage</td>
<td>MEA</td>
<td>6311=AAN (Weight of conveyance)</td>
<td>C502: 6313 = AAM (Transport means gross weight)</td>
<td>C174:6411 (measurement unit code): 6314 (measure)</td>
<td>UNECE/Rec.20 to be used.</td>
<td></td>
</tr>
<tr>
<td>10. Net tonnage</td>
<td>MEA</td>
<td>6311=AAN (Weight of conveyance)</td>
<td>C502: 6313 = AAN (Net tonnage of the vessel)</td>
<td>C174:6411 (measurement unit code): 6314 (measure)</td>
<td>UNECE/Rec.20 e.g. TNE=metric ton</td>
<td></td>
</tr>
<tr>
<td>13. Brief description of cargo</td>
<td>SG2</td>
<td>GDS</td>
<td>C703: 7085=9 or 12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>FTX</td>
<td>4451=AII (Goods item description)</td>
<td>4453=1 (text for subsequent use)</td>
<td>C108: 4440 (text literal – Brief description of cargo)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information</td>
<td>Segment Group</td>
<td>Segment</td>
<td>Qualifier</td>
<td>Data Element 1</td>
<td>Data Element 2</td>
<td>Remarks</td>
</tr>
<tr>
<td>-------------</td>
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<td>-----------</td>
<td>----------------</td>
<td>----------------</td>
<td>---------</td>
</tr>
<tr>
<td>2 Port of Arrival/ Departure</td>
<td>SG3</td>
<td>LOC</td>
<td>3227=60 (POA) or 5 (POD)</td>
<td>C517: 3225 (UN/LOCODE)</td>
<td>3224 (location name)</td>
<td>UNECE/Rec.16</td>
</tr>
<tr>
<td>11. Position in port (berth or station)</td>
<td></td>
<td>LOC</td>
<td>3227=164 (Berth)</td>
<td>C517:3225 (UN/LOCODE)</td>
<td>C519 (Related location one id.); 3223 &amp;/or 3222 (location name)</td>
<td>3223 (First related location id.) may be Local code.</td>
</tr>
<tr>
<td>6. Last port of call/Next port of call</td>
<td></td>
<td>LOC</td>
<td>3227= 125 (last port of call), 94= Previous port of call, 61=next port</td>
<td>C517: 3225 (UN/LOCODE)</td>
<td>3224 (location name)</td>
<td>UNECE/Rec 16 For Arrival declaration, 3227= 125 or 94.</td>
</tr>
<tr>
<td>3 Date and time of arrival/ departure</td>
<td>DTM</td>
<td>C507: 2005= 132 (ETA) 133 (ETD)</td>
<td>C507:2380 in CCYYMMDDHHMM format</td>
<td>2379 = 203 (CCYYMMDDHM)</td>
<td>2005=136 (TD), 178 (TA)</td>
<td></td>
</tr>
<tr>
<td>7.3 Certificate of Registry: number</td>
<td>SG4</td>
<td>DOC</td>
<td>C002:1001= 798 (Certificate of Registry)</td>
<td>C002:1000 (document name) C003:1004 (document id.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.2 Certificate of Registry: date</td>
<td>DTM</td>
<td>C507: 2005= 259 (Conveyance reg. date)</td>
<td>C507:2380 in CCYYMMDD format</td>
<td>2379 = 102 (CCYYMMDD)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.1 Certificate of Registry: port</td>
<td>LOC</td>
<td>3227= 89 (Place of registration)</td>
<td>C517: 3225 (UN/LOCODE)</td>
<td>3224 (location name)</td>
<td>UNECE/Rec. 16</td>
<td></td>
</tr>
<tr>
<td>5. Name of master</td>
<td>SG6</td>
<td>NAD</td>
<td>3035=CPE (Vessel master name)</td>
<td>C080: 3036 (name)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3 Call sign</td>
<td>SG7</td>
<td>COM</td>
<td>C076: 3148 (Call sign)</td>
<td>C076:3155= AW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.1 Name of ship's agent</td>
<td>SG6</td>
<td>NAD</td>
<td>3035=CG (Carrier’s Agent)</td>
<td>C058:3124 (Name and address)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.2 Contact details of ship's agent</td>
<td>SG7</td>
<td>CTA-COM</td>
<td>3139=BQ</td>
<td>C076:3148</td>
<td>3155=AL or EM or TE or FX</td>
<td>AL=Mobile, EM = e-mail, TE = phone, FX=fax</td>
</tr>
<tr>
<td>Detail of Transport means</td>
<td>SG9</td>
<td>TDT</td>
<td>8051=20 (main-carriage transport)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.4 Voyage number</td>
<td></td>
<td></td>
<td>8028 (Means of transport journey ID)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1 Type of ship</td>
<td></td>
<td></td>
<td>C001:8179 (Transport means description code = Type of ship)</td>
<td></td>
<td>UNECE/Rec.28 e.g. 8179=1511 (Full container ship/ cellular vessel)</td>
<td></td>
</tr>
<tr>
<td>1.2 IMO number</td>
<td></td>
<td></td>
<td>C222:8213 (Transport means Identification name identifier)</td>
<td></td>
<td>UNECE/Rec.10</td>
<td></td>
</tr>
<tr>
<td>1.1 Name of ship</td>
<td></td>
<td></td>
<td>C222:8212 (Transport means identification name)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Flag State of ship</td>
<td></td>
<td></td>
<td>C222: 8453 (Transport means nationality code)</td>
<td></td>
<td>UNECE/Rec. 3 (IS 3166 Country code) to be used.</td>
<td></td>
</tr>
</tbody>
</table>
### Information

<table>
<thead>
<tr>
<th>Segment Group</th>
<th>Segment</th>
<th>Qualifier</th>
<th>Data Element 1</th>
<th>Data Element 2</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>12. Brief particulars of voyage (Last/Next ports of call; underline where remaining cargo will be discharged)</td>
<td>LOC</td>
<td>3227=61 (Next POC), 94 (Previous port of call). 125 (Last POC)</td>
<td>C517: 3225 (UN/LOCODE)</td>
<td>3224 (location name)</td>
<td>UNECE/Rec 16 3227=152 (Next port of discharge) 248 (Place of discharge and loading)</td>
</tr>
<tr>
<td>17. Number of attached cargo declaration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Not required for EDI</td>
</tr>
<tr>
<td>18. Number of attached Ship's stores declaration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Not needed for electronic transmission</td>
</tr>
<tr>
<td>19. Number of attached Crew List</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Not required for EDI</td>
</tr>
<tr>
<td>20. Number of attached Passenger List</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Not required for EDI</td>
</tr>
<tr>
<td>22. Number of attached Crew's Effects Declaration (only on arrival)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Not required for EDI</td>
</tr>
<tr>
<td>23. Number of attached Maritime Declaration of Health (only on arrival)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Not required for EDI</td>
</tr>
</tbody>
</table>

**Usage notes:** The General declaration is quite often used as the first message to open a so-called file or dossier. With the GD number all shipments are linked to this file and thus to the ship. Quite often the general declaration is sent together with the manifest or the cargo declaration.

In some ports other information is used to identify the vessel – e.g. the BERMAN information sent to the port authorities is in a lot of cases sufficient for the Customs to open the file and to attach a number (GD-number) to the call of the ship to that port. The message will quite often be sent by the agents or office of the carrier upon the notification of the ETA of the vessel.

*1) Note: Currently, there is no CTA-COM segment in Segment Group 9. Segment Group 7 – CTA-COM under Segment Group 6 can be used until CTA-COM segments is added in SG9 (Message structure change needed).***
ANNEX 2

NEW VERSION OF THE COMPENDIUM PROPOSED BY WCO

1. IMO General Declaration

FAL Form 1 to be included in appendix 1 to the Annex of the Convention following the entry into force of the 2009 amendments to the Annex of the Convention.

1.1 IMO General Declaration – FAL Form 1

The recommended EDI format of the General declaration is the UN/EDIFACT Customs Conveyance Report Message (CUSREP). This message permits the transfer of information relating to the ship on the arrival and departure from the party responsible for the declaration to the public authorities in the country of arrival and departure. The CUSREP can be used as:

- Arrival Declaration
- Departure Declaration
- Combined Declaration for arrival and departure

**Recommended Practice 2.2.2** – In the General Declaration, the public authorities should not require more than the following data:

Note: The following list is numbered to be consistent with the corresponding box in the General Declaration.

0  Arrival or departure code
1.1  Name of ship
1.1  Type of ship
1.2  IMO number
1.3  Call sign
1.4  Voyage number
2  Port of arrival
2  Port of departure
3  Date of arrival
3  Date of departure
4  Flag state of ship
5  Name of the master
6  Last port of call, coded
6  Last port of call
6  Next port of call, coded
6  Next port of call
7.1  Certificate of registry name
7.1  Certificate of registry number
7.2  Certificate of registry issuing date
7.3  Certificate of registry port name
7.3  Certificate of registry port name, coded
<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.1</td>
<td>Name and address of ship's agent</td>
</tr>
<tr>
<td>8.2</td>
<td>Communication details of ship's agent</td>
</tr>
<tr>
<td>9</td>
<td>Gross tonnage</td>
</tr>
<tr>
<td>10</td>
<td>Net tonnage</td>
</tr>
<tr>
<td>11</td>
<td>Position in port, coded (berth or station)</td>
</tr>
<tr>
<td>11</td>
<td>Position in port name (berth or station)</td>
</tr>
<tr>
<td>12</td>
<td>Next port of call, coded</td>
</tr>
<tr>
<td>12</td>
<td>Remaining quantity</td>
</tr>
<tr>
<td>12</td>
<td>Purpose description code</td>
</tr>
<tr>
<td>12</td>
<td>Previous port of call, coded</td>
</tr>
<tr>
<td>12</td>
<td>Remaining quantity</td>
</tr>
<tr>
<td>12</td>
<td>Purpose description code</td>
</tr>
<tr>
<td>13</td>
<td>Cargo type classification code</td>
</tr>
<tr>
<td>13</td>
<td>Brief description of cargo</td>
</tr>
<tr>
<td>14</td>
<td>Number of crew</td>
</tr>
<tr>
<td>15</td>
<td>Number of passengers</td>
</tr>
<tr>
<td>16</td>
<td>Remarks</td>
</tr>
<tr>
<td>21</td>
<td>Ship's requirements</td>
</tr>
<tr>
<td>24</td>
<td>Date and signature by master, authorized agent or officer</td>
</tr>
</tbody>
</table>
1.2 IMO General Declaration Form Layout

**IMO GENERAL DECLARATION**

<table>
<thead>
<tr>
<th></th>
<th>Arrival</th>
<th>Departure</th>
<th>3. Date - time of arrival/departure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Name and type of ship</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.2</td>
<td>IMO number</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3</td>
<td>Call sign</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.4</td>
<td>Voyage number</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Flag State of ship</td>
<td>5.</td>
<td>Name of master</td>
</tr>
<tr>
<td>6.</td>
<td>Last port of call/Next port of call</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Certificate of registry (Port; date; number)</td>
<td>8.</td>
<td>Name and contact details of ship’s agent</td>
</tr>
<tr>
<td>11.</td>
<td>Position of the ship in the port (berth or station)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Brief particulars of voyage (previous and subsequent ports of call; underline where remaining cargo will be discharged)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Brief description of the cargo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Number of crew (incl. master)</td>
<td>15.</td>
<td>Number of passengers</td>
</tr>
<tr>
<td>16.</td>
<td>Remarks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attached documents (indicate number of copies)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>Cargo Declaration</td>
<td>18.</td>
<td>Ship’s Stores Declaration</td>
</tr>
<tr>
<td>22.</td>
<td>Crew’s Effects Declaration*</td>
<td>23.</td>
<td>Maritime Declaration of Health*</td>
</tr>
<tr>
<td>24.</td>
<td>Date and signature by master, authorized agent or officer</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For official use

IMO FAL
Form 1
### 1.3 IMO General Declaration Semantic Model

#### 1.3.1 Cross Reference between the IMO General Declaration Information Model and the CUSREP message

<table>
<thead>
<tr>
<th>WCO Id</th>
<th>WCO Name &amp; Path</th>
<th>WCO Description</th>
<th>WCO Format</th>
<th>IMO Box number</th>
<th>IMO Name</th>
<th>EDIFACT mapping to CUSREP D14B</th>
</tr>
</thead>
<tbody>
<tr>
<td>42A</td>
<td>Declaration</td>
<td>Any statement or action, in any form prescribed or accepted by the Governmental Agency, giving information or particulars required by the Governmental Agency</td>
<td>an..35</td>
<td>24</td>
<td>Date and signature by master, authorized agent or officer</td>
<td>CUSREP.DTM.C507.2380[0030:010:02]</td>
</tr>
<tr>
<td>D011</td>
<td>Document issuing date</td>
<td>Date at which a document was issued and when appropriate, signed or otherwise authenticated</td>
<td>an..35</td>
<td>0</td>
<td>Arrival or departure code</td>
<td>CUSREP.BGM.C002.1001[0020:010:01]</td>
</tr>
<tr>
<td>D013</td>
<td>Document name, coded</td>
<td>Code specifying the name of a document</td>
<td>an..3</td>
<td>7.1</td>
<td>Certificate of registry number</td>
<td>CUSREP.SG4.DOC.C503.1004[0210:020:01]</td>
</tr>
<tr>
<td>02A</td>
<td>Declaration/AdditionalDocument</td>
<td>Details related to additional documents supplied as part of a declaration or sought as part of a response</td>
<td>an..35</td>
<td>7.2</td>
<td>Certificate of registry issuing date</td>
<td>CUSREP.SG4.DTM.C507.2380[0230:010:01]</td>
</tr>
<tr>
<td>005</td>
<td>Additional document reference number</td>
<td>Identifier of a document providing additional information</td>
<td>an..35</td>
<td>7.3</td>
<td>Certificate of registry port name, coded</td>
<td>CUSREP.SG4.LOC.C517.3225[0240:020:01]</td>
</tr>
<tr>
<td>002</td>
<td>Additional document issuing date</td>
<td>Date at which an additional document was issued and when appropriate, signed or otherwise authenticated</td>
<td>an..35</td>
<td>7.3</td>
<td>Certificate of registry port name</td>
<td>CUSREP.SG4.LOC.C517.3224[0240:020:04]</td>
</tr>
<tr>
<td>004</td>
<td>Additional document issuing place, coded</td>
<td>Place at which an additional document was issued and when appropriate, signed or otherwise authenticated</td>
<td>an..35</td>
<td>7.3</td>
<td>Certificate of registry port name</td>
<td>CUSREP.SG4.LOC.C517.3224[0240:020:04]</td>
</tr>
<tr>
<td>003</td>
<td>Additional document issue place</td>
<td>Name of a location where a document was issued</td>
<td>an..256</td>
<td>7.3</td>
<td>Certificate of registry port name</td>
<td>CUSREP.SG4.DOC.C503.1000[0210:010:04]</td>
</tr>
<tr>
<td>028</td>
<td>Additional document name</td>
<td>Free text name of an additional document</td>
<td>an..35</td>
<td>7.3</td>
<td>Certificate of registry name</td>
<td>CUSREP.SG4.DOC.C503.1000[0210:010:04]</td>
</tr>
<tr>
<td>03A</td>
<td>Declaration/AdditionalInformation</td>
<td>Special request to government from declarant to take or not to take action</td>
<td>an..512</td>
<td>16</td>
<td>Remarks</td>
<td>CUSREP.FTX[D_4451=&quot;AEA&quot; ] OR D_4451=&quot;AAI&quot;];108.4440[0060:040:01];108.4440[0060:040:01]</td>
</tr>
<tr>
<td>225</td>
<td>Additional statement text</td>
<td>Description of an additional statement</td>
<td>an..512</td>
<td>21</td>
<td>The ship's requirements in terms of waste and residue reception facilities</td>
<td>CUSREP.SG6[D_3035=&quot;CG&quot; ];NAD.C058.3124[0340:030:01]</td>
</tr>
<tr>
<td>05A</td>
<td>Declaration/Agent</td>
<td>Person authorised to act on behalf of another party</td>
<td>an..70</td>
<td>8.1</td>
<td>Name and contact details of ship's agent</td>
<td>CUSREP.SG6[D_3035=&quot;CG&quot; ];NAD.C058.3124[0340:030:01]</td>
</tr>
<tr>
<td>R003</td>
<td>Agent – name</td>
<td>Name of a party authorised to act on behalf of another party</td>
<td>an..70</td>
<td>8.1</td>
<td>Name and contact details of ship's agent</td>
<td>CUSREP.SG6[D_3035=&quot;CG&quot; ];NAD.C058.3124[0340:030:01]</td>
</tr>
<tr>
<td>25A</td>
<td>Declaration/Agent/Communication</td>
<td>Details of communication including number and number type</td>
<td>an..70</td>
<td>8.2</td>
<td>Communication details of ship's agent</td>
<td>CUSREP.SG6[D_3035=&quot;CG&quot; ];SG7.COM.C076.3148[0370:010:01]</td>
</tr>
<tr>
<td>240</td>
<td>Communication number</td>
<td>To identify a communication address</td>
<td>an..50</td>
<td>8.2</td>
<td>Communication details of ship's agent</td>
<td>CUSREP.SG6[D_3035=&quot;CG&quot; ];SG7.COM.C076.3148[0370:010:01]</td>
</tr>
<tr>
<td>253</td>
<td>Communication number type</td>
<td>To identify the type of communication address</td>
<td>an..3</td>
<td>8.2</td>
<td>Communication number type</td>
<td>CUSREP.SG6[D_3035=&quot;CG&quot; ];SG7.COM.C076.3155[0370:010:02]</td>
</tr>
<tr>
<td>15A</td>
<td>Declaration/BorderTransportMeans</td>
<td>Details of the means of transport crossing the border of the Customs territory</td>
<td>an..512</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WCO ID</td>
<td>WCO Name &amp; Path</td>
<td>WCO Description</td>
<td>WCO Format</td>
<td>IMO Box number</td>
<td>IMO Name</td>
<td>EDIFACT mapping to CUSREP D14B</td>
</tr>
<tr>
<td>--------</td>
<td>----------------</td>
<td>-----------------</td>
<td>------------</td>
<td>----------------</td>
<td>----------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>T005</td>
<td>Identification of means of transport crossing the border</td>
<td>Name to identify the means of transport used in crossing the border</td>
<td>an..35</td>
<td>1.1</td>
<td>Name of ship</td>
<td>CUSREP.SG9.TDT.C222.8212(0420:080:04)</td>
</tr>
<tr>
<td>T006</td>
<td>Identification of means of transport crossing the border, coded</td>
<td>Identifier to identify the means of transport used in crossing the border</td>
<td>an..25</td>
<td>1.2</td>
<td>IMO number</td>
<td>CUSREP.SG9.TDT.C222.8213(0420:080:01)</td>
</tr>
<tr>
<td>T010</td>
<td>Type of means of transport crossing the border, coded</td>
<td>Means of transport used for crossing the border, coded</td>
<td>an..4</td>
<td>1.1</td>
<td>Type of ship</td>
<td>CUSREP.SG9.TDT.C001.8179(0420:040:01)</td>
</tr>
<tr>
<td>T014</td>
<td>Nationality of means of transport crossing the border, coded</td>
<td>Nationality of the active means of transport used in crossing the border, coded</td>
<td>a2</td>
<td>4</td>
<td>Flag State of ship</td>
<td>CUSREP.SG9.TDT.C222.8453(0420:080:05)</td>
</tr>
<tr>
<td>172</td>
<td>Date and time of arrival at first port of arrival in Customs territory</td>
<td>Date and time / scheduled date and time of arrival of means of transport at (for air) first airport, (land) arrival at first border post and (sea) arrival at first port, coded</td>
<td>an..35</td>
<td>3</td>
<td>Date - time of arrival</td>
<td>CUSREP.SG3[D_3227=“60”].DTM.C507.2380(0190:010:02)</td>
</tr>
<tr>
<td>119</td>
<td>Number of Crew</td>
<td>Total number of the members of the crew, including the captain/master, of a means of a transport</td>
<td>n..4</td>
<td>14</td>
<td>Number of crew (incl. master)</td>
<td>CUSREP.QTY[D_6063=“115”].C186.6060(0040:010:02)</td>
</tr>
<tr>
<td>156</td>
<td>Departure date and time</td>
<td>Date and time of departure of the means of transport</td>
<td>an..35</td>
<td>3</td>
<td>Date - time of departure</td>
<td>CUSREP.SG9.D3_3227=“5”].DTM.C507.2380(0190:010:02)</td>
</tr>
<tr>
<td>132</td>
<td>Gross Tonnage</td>
<td>The measure of the overall size of a ship determined in accordance with the provisions of the International Convention on Tonnage Measurement of Ships, 1969</td>
<td>n..14,3</td>
<td>9</td>
<td>Gross tonnage</td>
<td>CUSREP.MEA[D_6311=“AAN”].C174.6314(0070:030:02)</td>
</tr>
<tr>
<td>149</td>
<td>Conveyance reference number</td>
<td>To identify a journey of a means of transport, for example voyage number, flight number, trip number</td>
<td>an..17</td>
<td>1.4</td>
<td>Voyage number</td>
<td>CUSREP.SG9.TDT.8028(0420:020)</td>
</tr>
<tr>
<td>133</td>
<td>Net tonnage</td>
<td>The measure of the useful capacity of a ship determined in accordance with the provisions of International Convention on Tonnage Measurements of Ships, 1969</td>
<td>n..14,3</td>
<td>10</td>
<td>Net tonnage</td>
<td>CUSREP.MEA[D_6311=“AAN”].C174.6314(0070:030:02)</td>
</tr>
<tr>
<td>140</td>
<td>Number of Passengers</td>
<td>Total number of the passengers on board, embarking, or disembarking a means of transport</td>
<td>n..4</td>
<td>15</td>
<td>Number of passengers</td>
<td>CUSREP.QTY[D_6063=“114”].C186.6060(0040:010:02)</td>
</tr>
<tr>
<td>138</td>
<td>Brief cargo description</td>
<td>Plain language description of the cargo of a means of transport, in general terms only</td>
<td>an..256</td>
<td>13</td>
<td>Brief description of the cargo</td>
<td>CUSREP.SG2.FTX.C108.4440(0160:040:01)</td>
</tr>
<tr>
<td>09A</td>
<td>Declaration/BorderTransportMeans/ArrivalConveyanceFacility</td>
<td>Details about the conveyance facilities at the arrival location</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L107</td>
<td>Conveyance Facility Location name at Arrival</td>
<td>Name of a terminal, warehouse or yard where a means of transport arrives</td>
<td>an..256</td>
<td>11</td>
<td>Position in port name (berth or station)</td>
<td>CUSREP.SG9.SG10[D_3227=“164”].LOC.C519.3222(0460:030:04)</td>
</tr>
<tr>
<td>L054</td>
<td>Conveyance Facility Location at Arrival</td>
<td>Identification of a terminal, warehouse or yard where a means of transport arrives</td>
<td>an..17</td>
<td>11</td>
<td>Position in port, coded (berth or station)</td>
<td>CUSREP.SG9.SG10[D_3227=“164”].LOC.C519.3223(0460:030:01)</td>
</tr>
<tr>
<td>L115</td>
<td>Declaration/BorderTransportMeans/ArrivalLocation</td>
<td>Details to identify the first arrival location</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L109</td>
<td>Port of arrival, coded</td>
<td>To identify the arrival location. This would be a port for sea, airport for air and border post for land crossing</td>
<td>an..17</td>
<td>2</td>
<td>Port of arrival</td>
<td>CUSREP.SG9.D3_3227=“60”].LOC.C517.3225(0180:020:01)</td>
</tr>
<tr>
<td>45A</td>
<td>Declaration/BorderTransportMeans/DepartureConveyanceFacility</td>
<td>Details about the conveyance facilities at the departure location</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WCO Id</td>
<td>WCO Name &amp; Path</td>
<td>WCO Description</td>
<td>WCO Format</td>
<td>IMO Box number</td>
<td>IMO Name</td>
<td>EDIFACT mapping to CUSREP D14B</td>
</tr>
<tr>
<td>--------</td>
<td>----------------</td>
<td>----------------</td>
<td>------------</td>
<td>----------------</td>
<td>----------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>L053</td>
<td>Conveyance Facility Location at Departure</td>
<td>Identification of a terminal, warehouse or yard where a means of transport departs</td>
<td>an..17</td>
<td>2</td>
<td>Port of departure</td>
<td>CUSREP.SG3[D_3227=&quot;5&quot;];LOC.C517.3225(0180:020:01)</td>
</tr>
<tr>
<td>81A</td>
<td>Declaration/BorderTransportMeans/Itinerary</td>
<td>Details of the itinerary of the means of transport</td>
<td>an..256</td>
<td>6</td>
<td>Last port of call/Next port of call</td>
<td>CUSREP.SG3[D_3227=&quot;61&quot;];LOC.C517.3224(0180:020:04)</td>
</tr>
<tr>
<td>L005</td>
<td>Itinerary name</td>
<td>Name of a single port of call or other location of the itinerary of a means of transport</td>
<td>an..256</td>
<td>12</td>
<td>Brief particulars of voyage (previous and subsequent ports of call; underline where remaining cargo will be discharged)</td>
<td>CUSREP.SG3[D_3227=&quot;125&quot;];LOC.C517.3224(0180:020:04)</td>
</tr>
<tr>
<td>L006</td>
<td>Itinerary, code</td>
<td>Identification of a single port of call or other location of the itinerary of a means of transport, coded</td>
<td>an..17</td>
<td>6</td>
<td>Last port of call/Next port of call, coded</td>
<td>CUSREP.SG3[D_3227=&quot;61&quot;];LOC.C517.3225(0180:020:01)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12</td>
<td>Brief particulars of voyage (previous and subsequent ports of call; underline where remaining cargo will be discharged)</td>
<td>CUSREP.SG9.SG10[D_3227=&quot;61&quot;];LOC.C517.3225(0460:020:01)</td>
</tr>
<tr>
<td>03A</td>
<td>Declaration/BorderTransportMeans/Itinerary/AdditionalInformation</td>
<td>Special request to government from declarant to take or not to take action</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>226</td>
<td>Additional statement code</td>
<td>Coded form of an additional statement</td>
<td>an..17</td>
<td>12</td>
<td>Remaining quantity</td>
<td>CUSREP.SG9.SG10[D_3227=&quot;61&quot;];QTY.C186.6060(0490:010:02)</td>
</tr>
<tr>
<td>87A</td>
<td>Declaration/BorderTransportMeans/Master</td>
<td>Master (of Vessel), or operator of other mode of transport e.g., pilot or driver</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R016</td>
<td>Master/operator - name</td>
<td>Name of the Master of a means of transport such as a vessel</td>
<td>an..70</td>
<td>5</td>
<td>Name of master</td>
<td>CUSREP.SG6[D_3035=&quot;CPE&quot;];NAD.C080.3036(0340:040:01)</td>
</tr>
<tr>
<td>25A</td>
<td>Declaration/BorderTransportMeans/Master/Communication</td>
<td>Details of communication including number and number type</td>
<td>an..50</td>
<td>1.3</td>
<td>Call sign</td>
<td>CUSREP.SG6[D_3035=&quot;CPE&quot;];SG7.COM.C076.3148(0370:010:01)</td>
</tr>
<tr>
<td>240</td>
<td>Communication number</td>
<td>To identify a communication address</td>
<td>an..3</td>
<td>1.3</td>
<td>Communication number type</td>
<td>CUSREP.SG6[D_3035=&quot;CPE&quot;];SG7.COM.C076.3155(0370:010:02)</td>
</tr>
<tr>
<td>253</td>
<td>Communication number type</td>
<td>To identify the type of communication address</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1.3.2 IMO General Declaration UML diagram
1.4 IMO General Declaration Mapping to EDIFACT

1.4.1 IMO General Declaration Branching diagram
### 1.4.2 IMO General Declaration EDIFACT Segment descriptions

Note: The following list is numbered to be consistent with the responding box in the General Declaration and the above EDI format codes. Further, the order of Segment Group, Segment and Data Element in this table is redesigned based on the message structure included in the UN/EDIFACT directory.

#### CUSREP

<table>
<thead>
<tr>
<th>UNB</th>
<th>Interchange header</th>
<th>Functional Mapping</th>
</tr>
</thead>
<tbody>
<tr>
<td>S001</td>
<td>Syntax identifier</td>
<td>M</td>
</tr>
<tr>
<td>0001</td>
<td>Syntax identifier</td>
<td>M a4</td>
</tr>
<tr>
<td>0002</td>
<td>Syntax version number</td>
<td>M n1</td>
</tr>
<tr>
<td>S002</td>
<td>Interchange sender</td>
<td>M</td>
</tr>
<tr>
<td>0004</td>
<td>Sender identification</td>
<td>M an..35</td>
</tr>
<tr>
<td>0007</td>
<td>Partner identification code qualifier</td>
<td>C an..4</td>
</tr>
<tr>
<td>0008</td>
<td>Address for reverse routing</td>
<td>C an..14</td>
</tr>
<tr>
<td>S003</td>
<td>Interchange recipient</td>
<td>M</td>
</tr>
<tr>
<td>0010</td>
<td>Recipient identification</td>
<td>M an..35</td>
</tr>
<tr>
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<td>Partner identification code qualifier</td>
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- **cusrep**: Customs conveyance report message
- **d**: Draft version/UN/EDIFACT Directory
- **14B**: Release 2014 - B
- **UN**: UN/CEFACT
### EDIFACT C002
- **Document/message name**: C
- **Code**: 0

### EDIFACT C106
- **Document/message identification**: C
- **Document name**: C

### EDIFACT C186
- **Quantity details**: M
  - **Quantity type code qualifier**: M
  - **Quantity**: M
  - **Measurement unit code**: C

### EDIFACT C107
- **Text reference**: C
- **Code**: AAI

### EDIFACT C108
- **Text literal**: C
- **Free text**: M

### EDIFACT C3453
- **Language name code**: C

### EDIFACT C507
- **Date/time/period**: M
  - **Date or time or period function code qualifier**: Code value: 564, Signature date
  - **Code value**: 24, Date and signature by master, authorized agent or officer
  - **Code value**: 102, CCYYMMDD

### EDIFACT C606
- **Quantity type code qualifier**: M
- **Quantity**: M
- **Measurement unit code**: C

### EDIFACT C6411
- **Quantity type code qualifier**: M
- **Quantity**: M
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### EDIFACT C4451
- **Text subject code qualifier**: M
- **Free text function code**: C

### EDIFACT C4447
- **Free text format code**: C

### Functional Mapping
- **IMO Box**: 0
- **Code value**: 185, Conveyance declaration (arrival)
- **Code value**: 186, Conveyance declaration (departure)
- **IMO Box**: 14
- **Code value**: 114, Number of passengers
- ** IMO Box**: 16
- **Remarks**: to be continued - an..512 -
  - to be continued - an..512 -
  - to be continued - an..512 -
  - to be continued - an..512 -

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**EDIFACT**

**Functional Mapping**

C703 Nature of cargo | C

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**EDIFACT**

**Functional Mapping**

4451 Text subject code qualifier | M an..3

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**EDIFACT**

**Functional Mapping**

3227 Location function code | M an..3

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**EDIFACT**

**Functional Mapping**

3227 Location function code | M an..3

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| Code value: | Transport means departure date/time, estimated |
| Code value: | Transport means departure date/time, actual |
| IMO Box: | Date - time of departure |

| Code value: | CCYYMMDD |
| Code value: | CCYYMMDDHHMM |

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| IMO Box: | Port of arrival |
| Code list: | UN/LOCODE (UNECE/Rec.16) |

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| Code value: | Transport means arrival date time, estimated |
| Code value: | Transport means arrival date time, actual |
| IMO Box: | Date - time of arrival |
| Code value: | CCYYMMDD |
| Code value: | CCYYMMDDHHMM |
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**Functional Mapping**

- Code value: **CPE** Transport means master name
- IMO Box: **5** Name of master
- NOT MAPPED IN IMO COMPRENDIUM

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**Functional Mapping**

- Code value: **IC** Information contact

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**Functional Mapping**

- IMO Box: **1.3** Call sign
- Code value: **AW** Radio communication call sign
- IMO Box: **1.3** Communication number type
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- **Code value:** CG Carrier’s agent
- **IMO Box:** 8.1 Name and contact details of ship’s agent
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**Code value:** 16 Unloading cargo

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<td><strong>Quantity</strong></td>
<td><strong>C</strong></td>
</tr>
<tr>
<td>C186</td>
<td>Quantity details</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>6063</td>
<td>Quantity type code qualifier</td>
<td>M an..3</td>
<td></td>
</tr>
<tr>
<td>6060</td>
<td>Quantity</td>
<td>M an..35</td>
<td></td>
</tr>
<tr>
<td>6411</td>
<td>Measurement unit code</td>
<td>C an..8</td>
<td></td>
</tr>
</tbody>
</table>

**Code value:** 117 Quantity landed

**Code list:** UNECE/Rec.20

**Code value:** 12 Remaining quantity
<table>
<thead>
<tr>
<th>EDIFACT</th>
<th>SG10</th>
<th>LOC-GPO-DTM-QTY-NAD-MEA-POC-STS-FTX</th>
<th>Functional Mapping</th>
</tr>
</thead>
<tbody>
<tr>
<td>C525</td>
<td>SG10</td>
<td>Purpose of conveyance call</td>
<td>DL</td>
</tr>
<tr>
<td>8025</td>
<td>LOC-GPO-DTM-QTY-NAD-MEA-POC-STS-FTX</td>
<td>Purpose of conveyance call</td>
<td>C</td>
</tr>
<tr>
<td>1131</td>
<td>LOC-GPO-DTM-QTY-NAD-MEA-POC-STS-FTX</td>
<td>Code list identification code</td>
<td>C</td>
</tr>
<tr>
<td>3055</td>
<td>LOC-GPO-DTM-QTY-NAD-MEA-POC-STS-FTX</td>
<td>Code list responsible agency code</td>
<td>C</td>
</tr>
<tr>
<td>8024</td>
<td>LOC-GPO-DTM-QTY-NAD-MEA-POC-STS-FTX</td>
<td>Conveyance call purpose description</td>
<td>C</td>
</tr>
</tbody>
</table>

Usage notes: The General declaration is quite often used as the first message to open a so-called file or dossier. With the GD number all shipments are linked to this file and thus to the ship. Quite often the general declaration is sent together with the manifest or the cargo declaration.

In some ports other information is used to identify the vessel – e.g. the BERMAN information sent to the port authorities is in a lot of cases sufficient for the Customs to open the file and to attach a number (GD-number) to the call of the ship to that port. The message will quite often be sent by the agents or office of the carrier upon the notification of the ETA of the vessel.

*1) Note: Currently, there is no CTA-COM segment in Segment Group 9. Segment Group 7 – CTA-COM under Segment Group 6 can be used until CTA-COM segments is added in SG9 (Message structure change needed).

***
## ANNEX 3

### LIST OF FINDINGS IN IMO GENERAL DECLARATION

<table>
<thead>
<tr>
<th>FAL1 box No</th>
<th>Remark/Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.3</td>
<td>Call sign is mapped to the COM segment in Segment Group (SG) 7. The CTA-segment is not used according the IMO Compendium. This segment is mandatory because this is the first segment within SG7. The first segment of a SG is always mandatory. The recommendation is to add a fixed value to Data element (DE) 3139</td>
</tr>
<tr>
<td>2</td>
<td>In compendium chapter 1.3 (Message Implementation Guide) only the Port of Arrival/Departure codes are mapped. In chapter 1.4 (Mapping table) also the name of the ports are mapped. Clarification is needed.</td>
</tr>
<tr>
<td>3</td>
<td>Inconsistency in the Actual departure date and time. In chapter 1.3 code 186 is used. In chapter 1.4 136 is used. The recommendation is to use code 186 (departure date time actual)</td>
</tr>
<tr>
<td>6</td>
<td>In chapter 1.4 in the Qualifier column the qualifiers 125 (Last PoC), 94 (Previous PoC) and 61 (Next PoC) are mentioned. In the Remarks column only the qualifiers 125 and 94 are mentioned. In chapter 1.3 only the qualifiers 61 and 125 Clarification is needed.</td>
</tr>
<tr>
<td>7</td>
<td>In chapter 1.3 the mapping to the DOC-segment is described in paragraph 7.1. In chapter 1.4 this mapping is described in paragraph 7.3 Clarification is needed</td>
</tr>
<tr>
<td>7</td>
<td>In the DOC-segment the Certificate of registry number (identification) is mapped to C503.1004 and the name to C002.1000. What does the name mean? The qualifier (798) already indicates that this is the certificate of registry Clarification is needed.</td>
</tr>
<tr>
<td>7</td>
<td>In chapter 1.3 the mapping to the LOC-segment is described in paragraph 7.3. In chapter 1.4 this mapping is described in paragraph 7.1 Clarification is needed.</td>
</tr>
<tr>
<td>7</td>
<td>In chapter 1.3 only the Place of registration code is mapped. In chapter 1.4 also the place of registration name is mapped. What is correct? Clarification is needed.</td>
</tr>
<tr>
<td>11</td>
<td>According chapter 1.3 the Position of the ship in port should be mapped to the LOC-segment in SG10. According chapter 1.4 this attribute should be mapped to SG3 Clarification is needed.</td>
</tr>
<tr>
<td>12</td>
<td>In chapter 1.3 only the Next PoC and Previous PoC are described. However in chapter 1.4, in the column Remarks, also the Next port of discharge (qualifier 152) and Place of discharge and loading (qualifier 248) are mentioned. In column Qualifier there is also a Last PoC (qualifier 125) Clarification is needed.</td>
</tr>
<tr>
<td>12</td>
<td>Question regarding the use of &quot;where the remaining cargo will be discharged&quot; and &quot;Quantity manifested&quot; and &quot;Quantity landed&quot;; It is assumed that these attributes are only applicable for the Next ports of call. Clarification is needed.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>16</td>
<td>According chapter 1.4 data element FTX.4453 must be filled with fixed value &quot;1&quot;. This is not the case according chapter 1.3. Clarification is needed.</td>
</tr>
<tr>
<td>21</td>
<td>The format of the Remarks is an..512 x 5. This seems not to be the case for the ships requirements. Clarification is needed.</td>
</tr>
<tr>
<td>21</td>
<td>According chapter 1.4 data element FTX.4453 must be filled with fixed value &quot;1&quot;. This is not the case according chapter 1.3. Clarification is needed.</td>
</tr>
</tbody>
</table>
REQUIREMENTS FOR ACCESS TO, OR ELECTRONIC VERSIONS OF, CERTIFICATES AND DOCUMENTS, INCLUDING RECORD BOOKS REQUIRED TO BE CARRIED ON SHIPS

Future Proof and Cost-Effective Standardization of Electronic Ship Certificates

Submitted by ISO

SUMMARY

Executive summary: ISO has looked at how fully signed and electronic certificates can be implemented through a cooperation between IMO and the standards organizations. We believe this is a relatively simple task, cost-effective for the Member States as well as future oriented. ISO is ready to participate in such cooperation if the committee decides to go forward on this.

Strategic direction: 8

High-level action: 8.0.3

Output: 8.0.3.1

Action to be taken: Paragraph 8

Related documents: FAL 39/5, FAL 39/5/2 and FAL 40/6

1 ISO TC8 has participated in the Correspondence Group on Electronic Access to Certificates and Documents. This group has considered four different ways to issue electronic certificates. This document provides more technical details on the fully digital and signed version of electronic certificates and how it can be implemented.

2 ISO TC8 members have also participated in the EU e-compliance project1, one of the goal which is to facilitate shipping by introducing modern information technology in complying with rules and regulations. This paper quotes results from this project that will also be the basis for any new technical standards.

3 The Republic of Korea has proposed a project, Ship e-Document Access Project (SeDAP), at the 25th United Nations Centre for Trade Facilitation and E-business (UN/CEFACT) Forum in Geneva, 20-24 April 2015, that has similar aims to e-compliance and

---

1 http://www.e-compliance-project.eu/
which provides a possibility for cooperation between ISO and the United Nations Economic Commission for Europe (UNECE). ISO has contacted the team responsible for the SeDAP project and a tentative agreement has been established to cooperate on the development of the necessary specifications. This cooperation was also welcomed at the 35th meeting of the management group for the MoU on electronic business between IEC, ISO, ITU, and UN/ECE.

4 ISO believes that the fully electronic signed ship certificate type is the one that gives the most benefits to the shipowners, the master of the ship and the flag States (FS) as well as their recognized organizations (ROs). This type of certificate will enable fully automated management of all ship's certificates and relieve the different organizations and crew of most manual work needed to keep track of certificate status, expiry dates and location of originals. It will also greatly simplify the distribution of certificates between all parties in the shipping business.

5 The annex to this document describes how fully electronic signed certificates can be implemented and gives an overview of the required technical components.

6 The table lists the required components and indicates who may contribute to the development of each.

<table>
<thead>
<tr>
<th>Component</th>
<th>Who</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certificate specifications</td>
<td>IMO</td>
<td>As today: The content and general form of each certificate must be defined by IMO. One may want to make this more formal by adding references to the common information model. This may reduce ambiguity in definition of data fields.</td>
</tr>
<tr>
<td>Performance standards for electronic certificates and signatures</td>
<td>IMO</td>
<td>IMO should specify general objectives and performance requirements. This does not have to be very complex, e.g. fully electronic format with security at least equivalent to paper, stamp and written signature. These requirements may also cover the Public Key Infrastructure (see last row).</td>
</tr>
<tr>
<td>Common information model</td>
<td>Standardization Organizations (STD)</td>
<td>It should be harmonized with ISO 28005, Common Maritime Data Structure, UN/CEFACT and the WCO² data model as far as applicable.</td>
</tr>
<tr>
<td>Template files for electronic certificates</td>
<td>STD</td>
<td>Based on the common information model and certificate specifications.</td>
</tr>
<tr>
<td>Print templates</td>
<td>Member State (MS)</td>
<td>This is one possible technical method for translation between certificate file formats and certificate specifications. This should be provided by the users.</td>
</tr>
<tr>
<td>Signature mechanism</td>
<td>STD/IMO</td>
<td>The actual mechanisms can be specified by STD based on IMO requirements and industry agreement.</td>
</tr>
<tr>
<td>Printed signature specification</td>
<td>STD</td>
<td>The actual mechanisms can be specified by STD based on IMO requirements and industry agreement.</td>
</tr>
<tr>
<td>Encoding and validation software (general)</td>
<td>MS</td>
<td>The software should be provided by the users and may have to be adjusted by individual Member States or organizations. Prototypes will be demonstrated by the e-compliance project.</td>
</tr>
</tbody>
</table>

² World Customs Organization (WCO) is currently maintaining the FAL Compendium
 IMO is already operating a PKI for the LRIT system (see MSC 86/6) and this can be reused for ship's certificates. It may need a slight modification if the signature mechanism for certificates (Elliptic Curve Cryptography is probably preferred) is different than for LRIT.

1 The baseline for all specifications, software and services should be certificate specifications and performance standards from IMO. The performance standards may also refer to specific technical standards, but generally, technical standards are derived from the performance standards (IMO).

2 An important part of the framework presented in the annex is the international technical standards. The standardization organizations (STD) can contribute with the definition of technical specifications that are internationally accepted. Technical experts from any MS can participate in an open and internationally recognized process to develop these specifications.

3 In addition, there are also a number of components needed that for various reasons cannot be developed by the standards organizations. These are general components that may need minor national adaption (normally only support for national languages). It may be useful if one or more MS could contribute to the development of open and modifiable software for the benefit of all MS. The work allocated to MS is not insignificant, but in no way unsurmountable. A rough estimate may be that work needed is about a half to one person-year to get good working software, supporting English language users. Additional languages should be relatively easy to add.

4 The general responsibility of IMO will not be increased significantly, except that the operation of the PKI will have to be extended to also cover FS and possibly their recognized organizations.

5 Standards organizations are ready to start work on the items that they are responsible for. They need expert participation, but will do the work at no cost to the organization. It is estimated that the development of international standards will need two years to complete, but that draft or intermediate specifications may be ready after one year.

7 The Committee should also note that the technical components discussed in the annex also can be used in other data exchanges between ships and between ship and shore. This is discussed in section 5 of the annex.

8 The Committee is invited to

1 note the information contained in this document and its annex.

2 consider if the development of fully electronic signed ship certificates should be initiated. If so decided, and if assistance from ISO is desired, ISO will initiate the development of the necessary technical standards at the earliest convenience.
ANNEX

OVERVIEW OF A FULLY ELECTRONIC SIGNED CERTIFICATE IMPLEMENTATION

Summary

This annex gives an overview of how a fully electronic signed certificate can be implemented and how it can be used. The technology proposed is open and commonly used in Internet applications. References to open software and specifications are included. Section 1 gives an overview of the rationale for investigating these issues, while sections 2 to 4 give an overview of usage scenarios and technology details.

The implementation of fully electronic signed certificates will require new technical specifications, some new software and some infrastructure. Most of this is common to all MS and a common initiative to develop these components would greatly reduce the total cost of implementation.

The signature technology and other parts of the specifications are relevant for other types of electronic data that is exchanged between ship and shore. Section 5 will briefly discuss the applicability of the technology on other documents carried on the ship, including log-books and single window reports to shore. It is not in the scope of the FAL Committee to specify these mechanisms, but it is important to coordinate work in the different areas so that one avoids that different technology and different infrastructures are developed.
Table of Contents

Summary.................................................................................................................................................. 1
Abbreviations and definitions.................................................................................................................. 3
1 Objectives ............................................................................................................................................... 4
2 Overview of the usage scenario ........................................................................................................... 5
3 The proposed workflow ....................................................................................................................... 6
  3.1 Signature key management ............................................................................................................... 6
  3.2 Issuance and endorsement ............................................................................................................... 7
  3.3 Management of ship certificates .................................................................................................... 8
  3.4 Printing the certificate ..................................................................................................................... 8
  3.5 Validation of certificate ................................................................................................................... 8
    3.5.1 Electronic certificate ................................................................................................................. 8
    3.5.2 Integration with single window ............................................................................................... 9
    3.5.3 Printed certificates .................................................................................................................. 9
  3.6 Endorsement ................................................................................................................................... 9
    3.6.1 Electronic certificate ................................................................................................................. 9
    3.6.2 Printed certificates .................................................................................................................. 9
4 Electronic certificate technology ......................................................................................................... 10
  4.1 Information model .......................................................................................................................... 10
    4.1.1 XML Mapping ......................................................................................................................... 10
    4.1.2 UN/EDIFACT mapping .......................................................................................................... 10
  4.2 Electronic certificate format ........................................................................................................... 11
  4.3 Printable certificates ....................................................................................................................... 11
  4.4 Public-key cryptography signatures ............................................................................................... 12
  4.5 Public Key Infrastructure – PKI ..................................................................................................... 12
  4.6 Generating a valid certificate .......................................................................................................... 14
  4.7 Visual signature on printed documents .......................................................................................... 14
  4.8 Validation of certificates ............................................................................................................... 15
5 Use in other ship related data exchanges and e-navigation ............................................................... 15
  5.1 Public key infrastructure (PKI) ...................................................................................................... 15
  5.2 Information model ........................................................................................................................ 16
  5.3 Possibility for issuing keys to ships and other parties ................................................................. 16
References ............................................................................................................................................... 17
Abbreviations and definitions

Certificate In this document the term certificate means a ship certificate (load line, registry, passenger safety, etc.) used to demonstrate conformity to certain rules or standards. The certificate can be in paper format or electronic.

Derived key A derived key can be generated by any holder of a private key. The signature generated by the derived key use the original public key to validate the derived signature. This can be repeated ad infinitum, but each derived signature will have a larger size than the previous.

Electronic certificate: The term "electronic certificate" means a digital data file, message or and other type of data carrier containing computer readable representations of all information, including the signature, for a specific certificate.


Key Unless qualified, this document uses the term key to mean an electronic code that is used to generate a trusted signature (private key) or to validate the signature (public key).

PKI Public Key Infrastructure: System for distribution of the open public keys. All keys in the PKI can be trusted as primary keys. The PKI will normally sign each key by a top level Certificate Authority (CA) key to make it possible to check the validity of each of the keys. Alternatively, the PKI may in itself represent a CA.

Primary key: Any key that is made available in the PKI as a trusted key.

Public-key cryptography: A system by which pairs of cryptographic keys can be generated so that one public key can be used to decode information encoded by a private key. Electronic signatures can be based on this system.

QR Quick Response (Code): Two dimensional printable and optically readable data encoding.

RO Recognized Organization.

Signature In this document the term signature means a stand-alone proof of validity, typically of a certificate. On original paper certificates this will normally be a stamp and written signature. On electronic certificate this will be a code that can be used to verify the issuer and the validity of the data.

Validation This is a method for checking validity of a certificate and its contents. For a paper certificate, this would be to inspect the original document and verify that it has not been tampered with and that the signature and stamp is in place.

XSLT Extensible Stylesheet Language Transformations is a language for transforming XML documents into other XML documents, or other formats such as HTML for web pages or plain text (from Wikipedia – see also http://www.w3.org/standards/xml/transformation).
1 Objectives

Electronic certificates can exist in many forms, e.g. scanned files with or without an electronic signature. However, a fully digital representation in XML or UN/EDIFACT can provide a significant simplification of maritime administrative procedures that cannot be achieved by PDF or similar formats:

- **Flag States (FG) and recognized organizations (RO)** can much more easily issue, endorse and revoke certificates. The certificates can be fully and automatically managed in a database.

- **Ship management and ship masters** can easily store certificates in a database and automatically keep track of due dates and inspections. If a port State (PS) or others require access to a certificate, it can safely be sent as an email from the ship, from the office or any other party that has a copy.

- **PS inspections and others** can handle processing of certificates on their office computer and can also automate the process in the single window if so desired.

However, as a fully digital and unprotected certificate is easy to produce or manipulate, one will need to include an electronic signature mechanism authenticating the content and the issuer of the certificate.

The purpose of this document is to outline a method for implementation of electronic certificates that will address the following high level design objectives:

- **Electronic transmission**: The certificate can be safely transferred by open electronic means, e.g. via the Internet or email, without loss of content or validity information.

- **Computer readable**: The certificate can be read and validated by a computer. This also implies that the content of the certificate can be read and processed automatically, simplifying management and use of certificates. This may be a fully automated process that could be part of a port clearance process.

- **Tamper proof**: It should be difficult to falsify a certificate or its contents. It should at least be as good as the paper certificates, but security measures should not be excessive.

- **Stand-alone certificate and signature**: It should be possible to validate the electronic certificate based on the electronic representation alone and without online access to Internet. This will also remove the concept of "original" as all copies of the certificate are equally valid.

- **Paper version**: It should be possible to render the certificate contents on paper without losing significant parts of the design objectives.

- **Simple to use**: The method should use commonly available and preferably open technology. It should be implementable in on the order of weeks by a competent programmer.
2 Overview of the usage scenario

The figure on the next page shows the most important components of the method and their interrelationships. The following paragraphs will describe each of the components in general terms.

The common information model is a standardized list of information items that appear in certificates and an accurate definition of the meaning of each of them. This is basically an Excel sheet or a plain text list that provides a general definition of all data items. If a new certificate is needed, it should use existing information elements as far as possible and add new elements to the common information model if required.

The information model can be used to create certificate templates in XML, UN/EDIFACT or any other representation one may want. The common information model will make it easier to use different formats that are also compatible. Each certificate needs one template for each of the formats.

The certificate template will be used to create the individual electronic certificates by populating the template with data values according to the definitions in the information model. The issuer’s private key will be used to add an electronic signature to the file so that it can be validated by third parties.

In XML we have the additional possibility to use a mapping language (e.g. XSLT) to define how the XML file can be rendered in a web browser and then printed, i.e. a print template. This makes it straightforward to make a printed representation of the electronic certificate. The printed version can be supplied from the flag State (FS) as a PDF, but the mapping mechanism makes it possible to make a printed version at any time and at any location.

The method also needs to include a signature definition which specifies what mechanisms to use to generate keys and signatures as well as how signatures are applied to the digital data. It is assumed that the signature definition will rely on the public-key cryptography system where signing is done with a secret and protected private key while validation is done by an openly published matching key.

One needs to define a system for the private key distribution. This could be done by FS individually, but it may also be useful to see if IMO and possibly GISIS should play a role here. This could simplify the issue for smaller FS Administration and also give some technical benefits.

It is also necessary to establish a public key infrastructure. This should make it easy for all receivers of electronic certificates to assess validity, also without access to Internet. In practical terms, the PKI also includes private key distribution.
Validation must be done with the help of a computer, a tablet or a smart phone. It could also be implemented as a central web service, but this would only be useful as long as one has access to Internet. A small piece of dedicated software is needed to do validation.

3 The proposed workflow

This section will give an overview of the main work processes related to the use of electronic certificates. The intention is to give an idea of the relatively low complexity of the processes. Section 4 will give more details on the technical implementation and some links to public resources that can be used to implement the system.

3.1 Signature key management

The public-key cryptography system is very flexible. Any holder of a valid private key can easily generate its own derived private keys which may contain information about who is authorized to use the new key, including an expiry date for the key. This can, e.g. be used to provide individual surveyors with a time limited private key for signing certificates on board the ship. This can be repeated on as many level one wants. Anyone who wants to validate a certificate signed by a derived certificate only need to know the public key of the primary private key and this will be available in the PKI.

However, this flexibility comes at a cost as the derived certificate signatures need to embed more information about how the signature and derived key was generated to allow proper validation from the primary public key. An alternative is to make the public derived key available in the PKI. In this case, the new derived key will become a primary key.

One can have as few or as many primary keys as one wants. In principle, each FS Administration could easily generate its own key or get its key from a commercial service provider. As IMO already is operating a PKI for LRIT, it would make sense to use this as basis for electronic certificates also. Thus, it may be most cost-effective to let IMO provide keys according to the figure to the right. Private keys are generated automatically for all FS. FS can request primary keys for all its ROs and other entities that are involved with certificate issuing. The public key system would be maintained by IMO down to the level of RO or equivalent. Note that all these keys are primary and do not need to be verified by another higher key as long as IMO acts as common certificate authority. However, this requires that the key issuing process is sufficiently secure. The arrows in the figure shows relationships inherent in the identity of the key: It can easily be checked that RO31 only sign certificates from FS 3. Each RO needs multiple keys if they work for multiple FS.
A central public key repository will also make it easy to implement key revocation mechanisms that will further strengthen the security of the system at no or very marginal overhead for the users.

If such a system is implemented it would centralize most of the key management functions at a reasonable cost to the organizations. The FS and ROs would still have to observe a good security regime around its private primary and derived keys, but if these keys easily can be revoked and in addition have limited time validity, security breaches would have much less severe consequences. The central service is more critical, but as it serves all MS, the necessary investments would be reasonable and are mostly already taken through the implementation of the LRIT PKI in IMO.

A certain risk in this set-up is that a private key is compromised. In this case, non-authorized persons can create certificates that appear to be valid. This is in general not a big risk in itself and it is easy to handle by using time limited derived keys for personnel that is working outside the office. Inside the office it is easier to protect the primary keys. Any compromised keys can in any case be revoked through the PKI and keys may also be given a limited time of validity. A revoked or timed out key would invalidate all certificates issued after a specific date, optionally with specific certificates being exempt from the revocation.

This should give a sufficiently secure system while being pragmatic on the possibilities of abusing the system.

3.2 Issuance and endorsement

Issuance of certificates is very straight forward. It can be done from the RO or FS offices with a simple computer program that populates a certificate template and generates the necessary signatures from the certificate data and the private keys. It can then be sent in open email to owners, company and ship or anyone else that needs a copy of the certificate.

If necessary, it can similarly be generated when the surveyor is on board. A small problem here is that the private key may be more exposed to hostile parties outside the office. This may or may not be considered a problem and can, if desired, be handled by a time limited derived private key issued to the surveyor for that particular survey.

Endorsements are handled as issuance. One can either issue an updated electronic certificate from the office or it can be issued on board as described above. One can also combine this by having a temporary electronic certificate on board after the survey, but issue a new certificate from the office once the surveyor is back and has registered his or her amendments to the original certificate.
Endorsements could even be stamped and written on the paper certificate as a preliminary version until a new fully electronic could be issues from the FS or RO office.

3.3 Management of ship certificates

Keeping track of certificates and maintaining copies on board and on shore is straight forward as any copy of a certificate is a stand-alone "original". Shore and ship copies are equally valid. Certificates can be copied and sent by email without any risk for it being invalidated or losing its status as a valid original.

Each certificate is a small data file where important data such as type and validity dates automatically can be extracted and saved in a database or a maintenance system. It will save significant time and effort for mariners as well as for ship management teams.

3.4 Printing the certificate

If XSLT technology is used, a certificate file can directly be displayed on any web browser just by opening the file. It will be formatted according to IMO specifications and can be printed out from the browser.

This requires that the XSLT files and other components, such as FS emblems in printable format, are available, either from the Internet or locally. It is probably most convenient that this is installed as part of the certificate management software.

For a PS inspector or FS surveyor, the same applies: The computer used to inspect certificates need to have access to the relevant template files.

The print-out can include an encoded and visually readable version of the most important parameters of the certificate together with a corresponding signature. This can, e.g. be encoded as a QR-code and be embedded in the data file for easy print-out. This would allow a PS inspector to validate the main parts of the certificate by a smart phone or tablet app without having access to the digital version.

This is not a necessary feature, but may be useful as an intermediate step before port States accept the fully digital version of the certificate.

3.5 Validation of certificate

Validation can be done on board or on land. On board one may use the printed or the electronic version of the certificate. One can also validate the certificate by using the web browser image on a ship computer screen when it includes a QR-code. This is equivalent to validation of the printed version. On land, typically in port State control’s offices, it only makes sense to use the fully electronic version.

3.5.1 Electronic certificate

Validating the electronic certificate is a very simple verification that the signature matches the appropriate public key and the content of the certificate. The computational process is quite complex, but it is performed by standard software libraries that are easy to use.

One needs access to the PKI database content to do the validation, but not necessarily on line at all times. Uploading the PKI database to the inspector’s PC or tablet could be done once a day or even more rarely. Any changes in the PKI database will not impact day to day operations for several days or weeks due to the time it takes for ships to sail from one port to another. If,
against reasonable probability, a certificate turns up to be signed with a newer key than what is in the PC or tablet, this can be brought to the user’s attention as a too new key rather than illegal content.

3.5.2 Integration with single window

There is a strong drive in many parts of the world towards making ships’ port clearance electronic and more efficient through the use of Single Window solutions. Integrating ship certificates in the Single Window is a logical extension, but this can only be done if the certificate is available in an electronic, machine readable form, e.g. XML or UN/EDIFACT.

Much of the information in the certificates can also be copied into the FAL Forms that are the current basis for clearance. Thus it makes sense to look at compatible electronic formats like e.g. the ISO 28005 series of standards to simplify overall management of the clearance process on board and on shore.

3.5.3 Printed certificates

Validating the printed version would require a special app to read the encoded data and signature and validate it against the PKI-provided public keys.

This can use the printed paper format as basis, but it can also be done using the web browser rendering of the certificate. This could simplify the process as the inspector does not need to upload the electronic certificates to his or hers computer.

3.6 Endorsement

3.6.1 Electronic certificate

Endorsing the electronic certificate is easiest done by adding the endorsement to the data set in the certificate and generating a new signature. This requires that the person doing the endorsement has access to a valid private key as well as the signature software. Bringing the key on board the ship is in principle a security risk as the key can be stolen or otherwise compromised. This can be solved by using a short validity, derived key for the surveyor. If the key is compromised, it can only be used in the short period to generate signatures and it is also possible to invalidate this particular key by revoking it.

Endorsement will require the same software as for issuing. This is not a problem as the software is not particularly demanding on computers or tablets hardware.

3.6.2 Printed certificates

It is also possible to endorse a paper certificate by using a signature and stamp as is done traditionally. This can be used as a back-up method in the rare case where it is not possible to get access to or update the electronic signature.

The issuing organization should in this case issue a new electronic certificate as soon as possible and immediately send it to the ship and management company so that the intermediate printed and signed version can be disposed of.
4 Electronic certificate technology

This section will discuss some technical details and give some examples of possible technology to be used. External documents are referenced with Author (Year) and the sources are listed in the references section.

4.1 Information model

The first step of creating an electronic certificate implementation is to define the information elements that are used in the certificates and harmonize these so that each element is unambiguously defined and do not overlap in meaning with other elements. This will typically be done by listing elements and definitions in a table as shown below. This is an example and does not represent any actual information model in use.

<table>
<thead>
<tr>
<th>Element</th>
<th>Representation</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ShipName</td>
<td>Text string [35]</td>
<td>Name of ship</td>
</tr>
<tr>
<td>IMONumber</td>
<td>Text string [7]</td>
<td>The ship's IMO number (no &quot;IMO&quot; prefix)</td>
</tr>
<tr>
<td>RegistrationPort</td>
<td>Text string [5]</td>
<td>LOCODE (with leading country code)</td>
</tr>
</tbody>
</table>

Once this work is done, it is relatively easy to map this to XML or UN/EDIFACT message components. This may require some iterations over the definition as one will aim to reuse as many definitions as possible from information elements that has already been defined in the respective messaging systems.

4.1.1 XML Mapping

In XML, the above definitions can be converted to an XML schema (W3C 2012), defining how to represent the data in XML. Below is a part of a schema file defining the format of these elements.

```xml
<xs:element type="xs:string" name="ShipName" />
<xs:element type="xs:string" name="IMONumber" />
<xs:element type="xs:string" name="RegistrationPort" />
```

The ISO 28005-2 standard (2011) contains a data model for the single window that can be extended to also cover certificates.

4.1.2 UN/EDIFACT mapping

The EDIFACT mapping is more complex, but the data elements will be elements of the Trade Data Elements Dictionary: TDED (ISO 2005). The relevant codes that are commonly used in the FAL convention are tabulated below.

<table>
<thead>
<tr>
<th>Data dictionary</th>
<th>TDED Code</th>
<th>TDED Name</th>
<th>TDED representation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ShipName</td>
<td>8212</td>
<td>Transport</td>
<td>an..17</td>
</tr>
<tr>
<td>IMONumber</td>
<td>8213</td>
<td>Vessel, coded</td>
<td>an..9</td>
</tr>
<tr>
<td>RegistrationPort</td>
<td>3227=89, 3225</td>
<td>Position func/identification</td>
<td>an..3, an..25</td>
</tr>
</tbody>
</table>

This is not a complete description of the message, but only parts pertaining to the encoding. Some actual UN/EDIFACT definitions can be found in the FAL compendium.
4.2 Electronic certificate format

The electronic certificate should have a structure that allows easy processing by the different entities using the certificate. A possible example is illustrated below. It shows a header with the most general information included and a body with all the details of the ship and certificate. The header may also have a reference to a small selection of body elements that are critical to the certificate validity. This may, e.g. be the maximum allowed passengers for a passenger safety certificate or the main dimensions for the certificate of registry. The signature section should contain two parts, one for a small printable version (see section 0) and one for the whole certificate. For XML, one may also include a graphic representation of the QR-code. Although not necessary, this will simplify printing out the certificate.

For each of the certificates one needs to develop a template file that specifies what information elements are required as well as the structure of the file. In XML it is the XML schema that is commonly used to define data file templates (W3C 2012). EDIFACT has equivalent methods for file format specifications.

Developing these templates is not a complex task once the information model is defined, but it is somewhat tedious as there are a fairly high number of different certificates to cover.

One will also need message implementation guidelines. These are written specifications giving additional information on how the certificate file shall be populated with data.

4.3 Printable certificates

In XML, one possible mechanism for printing out the content is XSLT (W3C 2007). Normally one would make an XSLT specification that converts the XML file into a HTML file that can be shown in any web browser. XSLT works as a flexible programming language that can do any number of programmatic transforms of the file content such as selecting national authority emblems and similar.

The simplest way to implement this is that each entity that wants to print out a certificate downloads the appropriate set of files and that a specific location for the files are agreed in a technical specification. If certificate management software is installed, this should handle the coordination and file placements.

For UN/EDIFACT, there is a similar mechanism called UN Layout Keys from UN/ECE (2002). This will require special software for the transformation to printed format, but is otherwise somewhat similar in functionality.
4.4 Public-key cryptography signatures

The electronic signature must identify the issuing authority (FS or RO) as well as guarantee that all relevant data in the certificate is correct. It must also be impossible or at least very difficult to tamper with the data or to forge a signature.

Systems used today are often based on public-key cryptography which relies on asymmetric encryption. This is based on different mathematical formulas which can transform data sets in ways that makes it extremely difficult to reverse the transformation without the correct key. When the specific method is selected, a number of pairs of cryptographic keys, one private (secret) key and one corresponding public key, can be generated. Files encrypted or signed with the private key can only be decrypted or validated with the corresponding public key.

An electronic signature can be created by first calculating a "checksum" over the content of the data file. This checksum is complicated enough to make it virtually impossible to change one or more components of the content and still get the same checksum. Then the checksum is encrypted with the private key and stored in the certificate file as the signature. Validation is done by calculating the same checksum and then comparing that to the decoded content of the signature field. One could also encrypt the whole file, but this would render the contents unreadable without the public key. Also, just encoding the checksum makes the signature field much smaller in size. This is important if one wants to use a QR-code or if limiting the size of certificates is an issue.

The integrity of digital information can be verified by signing a document with the private key and using the corresponding public key to check whether the file was altered since it was signed. As such, fraudulent modification of the document contents after issuance (e.g. extending validity periods) is prevented. Furthermore, the signatory cannot deny having initially authenticated the document since their identity is tied to the document contents via their private key (so called non-repudiation).

The signature and validation processes rely on exactly the same data file being used by both functions. This means that the data file needs to be in a "canonical" format, i.e. it must be ensured that the content is not changed by being transmitted through email or other data transport systems. For text files, such as XML, this means that the rules for creating the canonical format need to be known or embedded in the file.

4.5 Public Key Infrastructure – PKI

The security and dependability of the public-key cryptography relies on three important components:

1. One must have at least one public key that can be unconditionally relied on. If this is the case, one can publish any number of new public keys and sign each of them with the top level key.
There must be a defined way to get hold of all relevant public keys. This can be done by embedding them in the document (as long as they are signed by a trusted key), but this will increase the size of the document, which for certificates is not desirable.

The private keys must be kept safe. If a private key is compromised any number of signatures can be generated that will all appear valid.

A PKI can be used to implement these three components. There are many ways to organize the PKI, but we would suggest that IMO is used as certificate authority, in charge of generating and distributing private keys to the FS. GISIS can be used to distribute the corresponding public keys. By signing all public keys by one secure top level IMO key one can get a fairly lightweight and secure system for all users. This will also help MS as they do not need to implement own web servers or PKI. Only the IMO PKI is needed to implement the electronic certificate for all MS. FSs with special or more advanced requirements may also implement their own PKI and only publish a top level key, e.g. through GISIS.

In general a PKI maintains a hierarchy of keys, the root of which is an authority called the Certificate Authority (CA). This root key acts as a trust anchor: Other subordinate keys obtain their validity by being signed by the root key, subject to compliance with the security requirements of the CA. Depending on the exact privileges granted to the subordinate key (including the ability to themselves sign keys), the CA requires proof of the identity of the person or organization who wants to use the key and a proof that their private key is securely stored. Since it is possible for holders of keys issued by the CA to themselves sign derived keys, arbitrarily long chains of authority can be established.

Using the signature mechanism described above requires that the receiver of a message have access to the public key from a source that is trusted. There are two levels to this:

1. The public key is available from an open source and is signed by the CA (or any known derived) key so that the authenticity is certain. Then the public key can be used safely to validate the document and signature. In this case, this could be GISIS.

2. The public key is not openly available and need to be included with the document. The same security mechanism applies, but the transmission is much larger as the public key and its signature, possibly in several layers, must be included with the document. This is a problem, e.g. for the QR-codes that have limited storage capacity.

Thus, for commonly used public keys, it may be desirable to have all of them publicly available from one source, e.g. GISIS. The public keys can also include validity and user restrictions that can further improve the flexibility and security of the scheme.

Global integration of PKIs has previously been established by the International Civil Aviation Organization (ICAO) for machine readable passports, and maritime certificates present no additional complication in principle. It should be noted that established, open-source frameworks exist for the management of PKI in its entirety, and the relevant expertise to deploy such systems is widely available and supported by consultancies worldwide. Further, the cryptographic standards and protocols involved are already embedded in the fabric of the World Wide Web.
4.6 Generating a valid certificate

The generation of a valid certificate is technically a somewhat complex procedure. The following steps have to be undertaken:

1. The template file has to be populated by data from a surveyor’s file or a database.
2. The resulting data file has to be made “canonical” so that encoding and decoding uses exactly the same basis for calculation of signatures.
3. One will have to add originator information and other details relevant for certificate and signature validity.
4. It is normally necessary to generate a “checksum” over the canonical data file and use this to calculate the signature. This reduces the size of the signature.
5. Finally, one calculates the signature and adds that to the file.

In reality, when standard mechanisms are used, easily available standard software libraries are used to do all the work. The standards that are proposed to be used for ship certificates are XML Schema (XSD) for file templates, Elliptic Curve Cryptography (Koblitz 1987) for signature, X.509 (ITU 2012) for the PKI and QR-codes (ISO/IEC 2015) for visual validation, if needed.

When these standards are used and the framework of specifications is in place, a basic code to generate a complete certificate file with signatures can be written in less than 100 lines.

4.7 Visual signature on printed documents

It may be desirable to have a printed version of the certificate that also can be verified by electronic means. This would be a direct replacement for the stamp and signature and may make the acceptance of the electronic system easier to achieve. The suggestion is to use a QR-code (example to the left). The QR-code is an international standard, ISO/IEC 18004.

The example to the left contains 306 bytes of binary information and is using a 7% error correction code (Level L). This is easily read on a smart phone or tablet, although the content is not obvious as it is binary encoded. This size QR-code is sufficient for capturing the most important parts of the certificate which can be verified against the embedded electronic signature and viewed in a suitable App.

It is possible to embed larger amounts of data in the QR-code, but this may not be necessary. It will reduce readability and does not necessarily add significantly to the security of the certificate. Eventually, the main method of validation will be based on direct check of the certificate file directly in any case. Checking the printed QR-code will initially be a transient and later an exceptional method.
Using the QR-code will add some complexity to the certificate generation, but not excessively. Again, standard libraries can be used to generate the code. One needs to add some additional fields to the certificate template files and one probably needs to embed the graphical QR-code in the certificate file.

4.8 Validation of certificates

The validation of a digital certificate is very similar to the generation. Thus, on the order of 100 code lines are needed to do the actual validation. This includes code to retrieve public keys from the PKI and for various other functionalities. Also, user friendliness needs to be considered for implementations on tablets as well as on office computers.

If the software needs to read QR-codes, this adds somewhat to complexity. However, this is certainly not an excessively large software component. The usage of open standards will also here contribute to providing functionality through public and easily available software libraries.

5 Use in other ship related data exchanges and e-navigation

5.1 Public key infrastructure (PKI)

There are other areas in the maritime domain where the technology described in this paper can be used. The most obvious is in areas where one needs authentication of originator of information as well as validation of content. The figure illustrates some of these areas. Briefly, the general cases are:

- **Electronic certificates:** Originator is a FS and it is typically the ship, a PS or another entity that needs to verify the validity of information. This case is more or less identical to all critical information issued to the ship, e.g. class certificates, ECDIS files or updates, flag or coastal State instructions, etc.

- **Electronic single window:** In this case it is the ship or the master which needs to sign information packages that will be inspected and validated by port or coastal State entities. This case is similar to electronic log books and all other documentation that is issued by the ship and which needs to be verifiable, tamper-proof and authenticated.

- **Operational data exchanges:** e-navigation points to a number of applications where critical information is exchanged between ship and shore or between ships. This could be traffic information, safety information updates or instructions to the ship from some shore entity. In this case, both sides of the exchange should sign information so that it can be validated by the receiver.
The main conclusion from this is that the use of digital data exchanges and the need for electronic signatures is not unique to the electronic certificate area. It is obvious that increasing use of digital information exchanges also will require more focus on the cyber-security issues.

The use of Elliptic Curve Cryptography (Koblitz 1987) is probably also necessary for e-navigation messaging over VHF data channels to keep signature sizes as small as possible. The PKI suggested in this document could also be used to issue keys to coastal States to sign any safety critical messages they broadcast in the e-navigation system.

Given that cybersecurity requires a systematic approach to the use of digital data exchanges and the validation of the messages, it seems obvious that the work on public-key cryptography and public key infrastructures should be coordinated across the different IMO committees.

5.2 Information model

The certificate information model should be harmonized with the Common Maritime Data Structure. This requires mapping to the S-100 information management system.

ISO TC8 has already started work to do the same exercise for ISO 28005 (Single Window) so this work could be incorporated into that activity.

This will also be harmonized with work in IEC TC80/WG17 that is doing the same exercise with the IEC 61162 series of standards for digital interfaces for bridge equipment.

5.3 Possibility for issuing keys to ships and other parties

The implementation of e-navigation may also require that signature keys are issued to ships so that they can sign and authenticate their messages. The PKI suggested in this document can in principle be extended also to ships, although the number of keys will increase dramatically.

The system could also be used for other parties in the shipping sector, including for commercial applications if so desired.
References


ISO 7372:2005 Trade data interchange – Trade data elements directory

ISO/IEC 18004:2015 Information technology – Automatic identification and data capture techniques – QR-Code bar code symbology specification


UN/ECE (2002) Recommendation 1, United Nations Layout Key for Trade Documents, ECE/TRADE/270


W3C XML Schema Definition Language (XSD) 1.1, W3C Recommendation 5 April 2012

W3C XSL Transformations (XSLT) Version 2.0, W3C Recommendation 23 January 2007
APPLICATION OF SINGLE-WINDOW CONCEPT

REQUIREMENTS FOR ACCESS TO, OR ELECTRONIC VERSIONS OF, CERTIFICATES AND DOCUMENTS, INCLUDING RECORD BOOKS REQUIRED TO BE CARRIED ON SHIPS

GUIDELINES ON THE FACILITATION ASPECTS OF PROTECTING THE MARITIME TRANSPORT NETWORK FROM CYBERTHREATS

Electronic Means for the Clearance of Ships

Report of the Working Group

General

1. The Working Group on Electronic Means for the Clearance of Ships (the group) met from 5 to 7 April 2016, under the chairmanship of Mr. R. Butturini (United States).

2. The group was attended by delegations from the following Member Governments:

ARGENTINA, AUSTRALIA, BELGIUM, BRAZIL, CAMEROON, CANADA, CHINA, DENMARK, ESTONIA, FINLAND, FRANCE, GERMANY, GREECE, INDONESIA, IRELAND, IRAN (ISLAMIC REPUBLIC OF), ITALY, JAPAN, KENYA, LATVIA, LIBERIA, MARSHALL ISLANDS, NIGERIA, NETHERLANDS, NORWAY, PANAMA, PERU, PHILIPPINES, POLAND, REPUBLIC OF KOREA.
RUSSIAN FEDERATION  SYRIAN ARAB REPUBLIC
SAINT KITTS AND NEVIS  THAILAND
SINGAPORE  UKRAINE
SWEDEN  UNITED STATES

and the following Associate Member of IMO:

HONG KONG, CHINA

3 The session was also attended by representatives from the following United Nations specialized agency:

UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE (UNECE)

observers from the following intergovernmental organizations:

WORLD CUSTOMS ORGANIZATION (WCO)
EUROPEAN COMMISSION (EC)

and observers from the following non-governmental organizations in consultative status:

INTERNATIONAL CHAMBER OF SHIPPING (ICS)
INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)
BIMCO
INTERNATIONAL ASSOCIATION OF CLASSIFICATION SOCIETIES (IACS)
INTERNATIONAL ASSOCIATION OF INDEPENDENT TANKER OWNERS (INTERTANKO)
CRUISE LINES INTERNATIONAL ASSOCIATION (CLIA)
INTERNATIONAL TRANSPORT WORKERS’ FEDERATION (ITF)
WORLD SHIPPING COUNCIL (WSC)
The Nautical Institute (NI)
INTERNATIONAL PORT COMMUNITY SYSTEMS ASSOCIATION (IPCSA)

Terms of reference

4 The group was instructed, taking into account decisions of, and comments and proposals made in plenary to:

Agenda item 5 — APPLICATION OF SINGLE-WINDOW CONCEPT

taking into account documents FAL 40/5, FAL 40/6/1, FAL 40/6/1/Corr.1, FAL 40/6/3, FAL 40/6/4 and FAL 40/6/5:

.1 consider the issue of harmonization and standardization of data reporting formats between different existing maritime single windows platforms and advise, as appropriate;

.2 consider the alternatives presented in paragraphs 9.1 and 9.3 of document FAL 40/5; recommend the way forward for the development of the Maritime Single-Window prototype; and define the scope of the project and of the prototype system, the high-level system's functional requirements, including the use of existing systems and the identification of resources needed and opportunities;
Agenda item 6 — REQUIREMENTS FOR ACCESS TO, OR ELECTRONIC VERSIONS OF, CERTIFICATES AND DOCUMENTS, INCLUDING RECORD BOOKS REQUIRED TO BE CARRIED ON SHIPS

taking into account document FAL 40/6:

.3 consider proposals on documents FAL 40/6/1 and FAL 40/6/1/Corr.1, taking into account comments on documents FAL 40/6/3, FAL 40/6/4 and FAL 40/6/5, and advise on the reformatting of FAL.5/Circ.40, IMO Compendium on Facilitation and Electronic Business as appropriate.

Agenda item 9 — GUIDELINES ON THE FACILITATION ASPECTS OF PROTECTING THE MARITIME TRANSPORT NETWORK FROM CYBERTHREATS

taking into account documents FAL 40/9, FAL 40/9/1, FAL 40/INF.4 and FAL 40/INF.5:

.7 consider, in principle, the facilitation aspects of cyberthreats that may affect international maritime traffic, in order to better inform the Maritime Safety Committee’s deliberations on cybersecurity; and

.8 submit a report on Thursday, 7 April 2016.

Consideration of proposals related to the reformatting of FAL.5/Circ.40 on IMO Compendium on Facilitation and Electronic Business

5 The group considered the proposals contained in documents FAL 40/6/1 and FAL 40/6/1/Corr.1, taking into account documents FAL 40/6/3, FAL 40/6/4 and FAL 40/6/5, in particular, with regard to the reformatting of FAL.5/Circ.40 on IMO Compendium on Facilitation and Electronic Business.

6 After some consideration, the group agreed that the IMO Compendium should not be reformatted, at this stage. It was recognized that the definitions for data in FAL forms contained in annex 1 to the IMO Compendium should be reviewed or clarified to address possible misinterpretations by relevant users of the Compendium and other stakeholders, such as ISO, UNECE and WCO, and to harmonize as much as possible with the underlying data models. The group was also of the view that the existing FAL forms and ship security-related information should be reviewed for possible mistakes and inconsistencies, as identified by WCO and Japan. In this context, the group was of the view that a correspondence group could be established to address the above-mentioned issues.
7 The group noted that further work on data mapping would be conducted in parallel by UNECE, WCO, ISO and private sector stakeholders (such as the Shipping Message Development Group (SMDG) and the PROTECT group), providing relevant inputs to the work of the correspondence group, if established.

Development of a Prototype Maritime Single-Window

8 The group considered the alternatives presented in paragraphs 9.1 and 9.3 of document FAL 40/5 related to the development of a MSW prototype, namely, reusing one of the systems offered by the donors (i.e. Chile, Norway, the Republic of Korea and the European Commission) or parts of different systems to create a prototype, or recommending the use of one or various existing systems to assist Member States willing to implement MSW systems. In this context, different views and opinions were expressed, as follows:

   .1 the majority of delegations were in favour of progressing the alternative described in paragraph 9.1 (i.e. to develop a prototype based on one of the existing systems offered by the donors), as it could also serve as a way of leading the harmonization and standardization of reporting requirements;

   .2 some delegations indicated their preference to proceed with the alternative described in paragraph 9.3, making use of existing systems and focusing efforts on the data reporting harmonization and standardization of MSWs already implemented; however, it was also indicated that this option would not be favourable for some of the donors as it could impact the level and the amount of assistance to be provided; and

   .3 other delegations were also of the view that, although it was not part of the terms of reference of the group, the alternative presented in paragraph 9.2 (i.e. develop a completely new prototype) could also be re-considered after agreeing the scope of the system.

9 The group noted that the alternatives presented in paragraphs 9.1 and 9.3 of document FAL 40/5 did not necessary exclude each other. Moreover, MSW systems offered by some of the donors were currently available to Member States requiring assistance, on a bilateral basis.

10 Among others, the group also noted the following views:

   .1 there were several EDIFACT versions, but all of them were backward compatible, and that there could be different versions of XML, not necessarily being fully compatible with each other;

   .2 a scalable modular development of a MSW prototype would be the most appropriate solution as it could be easily integrated into more wider SW concepts and promote interoperability;

   .3 there could be many different implementations of MSW at national level depending on the structure and responsibilities of different authorities involved in the process of clearance of ships; and

   .4 before selecting a base system for the development of a MSW prototype, it would be necessary to review users’ expectations and agree on key principles.
The group recognized that specific requirements from Member States willing to implement a MSW and requiring assistance should be further analysed in order to develop a product that would address their specific needs.

After a lengthy consideration and based on the information available, the group was not in a position to recommend a way forward for the development of a MSW prototype and agreed that further information would be required before considering the issue any further.

In this context, the group was of the view that user needs were very important to define the scope of a MSW prototype system and recommended that:

1. Member States requiring assistance for the implementation of MSWs should contact the Secretariat (falsec@imo.org) as soon as possible in order to discuss their specific needs and explore possible solutions;
2. Member States and organizations willing to assist with the implementation of MSWs or the development of a prototype MSW should be invited to contact the Secretariat or submit information to FAL 41; and
3. the Secretariat should report back to FAL 41 with an analysis of the needs, a summary of commonalities and any additional information.

**Harmonization and standardization of data reporting formats**

In considering issues related to the harmonization and standardization of data reporting formats between different existing MSW platforms, to among other things reduce the administrative burden on board ships, the group was of the view that there were both technical and policy issues that needed to be addressed. Moreover, the group noted that many of the technical issues related to harmonization and standardization would be addressed as part of the revision of the IMO Compendium, the cooperation work to be conducted between different stakeholders, in particular, UNECE, WCO and ISO, the implementation of MSWs, and the continuous work of the Committee in promoting interoperability and facilitation aspects.

The group recognized that harmonization and standardization issues are often driven by unavoidable differences in national legislation, organization, and data needs among the various receivers of information, including individual ports and port States. Furthermore, requesting port States should give some consideration to identifying the proper provider of information and that it might not always be the ship submitting pre-arrival information. The group agreed that Administrations should promote harmonization among their individual ports.

**Guidelines for use of electronic certificates**

The group reviewed the proposed amendments to FAL.5/Circ.39/Rev.1 on *Guidelines for use of electronic certificates*, as contained in annex 2 to document FAL 40/6.

The group considered whether the *Guidelines for use of electronic certificates* should be converted into an Assembly resolution or be incorporated into the IMO Compendium. The group agreed that, for the time being, it would be better to keep the guidelines as a FAL circular and to continue gathering experience with the implementation of electronic certificates.
18 After some consideration, the group also prepared the final text of the proposed amendments, with some modifications, as set out in annex 1, for the Committee’s approval.

19 The group was of the view that it would not be necessary to re-establish the Correspondence Group on Electronic Access to Certificates and Documents, but recommended that Member States implementing electronic certificates should continue to share their experiences by submitting information to FAL 41.

20 The group noted the proactive work by organizations such as ISO to develop the necessary standards to support development and implementation of fully digital certificates based on data models similar to those used for electronic messages and supported continuation of these types of initiatives.

Proposed amendments to resolution A.1052(27) on Procedures for port State control, 2011

21 The group reviewed the proposed amendments to resolution A.1052(27) on Procedures for port State control, 2011, as contained in annex 3 to document FAL 40/6 and, having agreed with some minor modifications, finalized the proposed amendments, as set out in annex 2, for the Committee’s approval.

Consideration of facilitation aspects of cyberthreats

22 The group held a lengthy discussion of facilitation aspects related to cyberthreats, and was of the view that the Committee should convey to the Maritime Safety Committee that:

- the FAL Committee has a role in the Organization's response to the growing cyberthreats;
- the FAL Committee has important responsibilities related to the management of risks associated with cyberthreats in respect to facilitation, such as MSWs, processes for electronic certificates and data exchange between ships and shore, pre-arrival information based on the Convention and processes involving ship-port interface; and
- should the MSC decide to develop guidelines, this should be done as a joint FAL/MSC guidelines, to avoid duplication, and whose principles could be applied to all stakeholders, including both the ship and the shoreside.

23 Bearing in mind that there would be two sessions of the MSC before FAL 41, the group recommended encouraging participation of FAL delegations in meetings of the Maritime Safety Committee in this respect.

Establishment of a correspondence group

24 Having completed the consideration of issues referred to the working group, the group recommended establishing a Correspondence Group on the Review of the IMO Compendium on Facilitation and Electronic Business, with the following terms of reference:

- review the definitions for data in FAL forms contained in annex 1 to the IMO Compendium to clarify their meaning and consistency with the WCO, UNECE and ISO and data models to promote harmonization and interoperability;
review the FAL forms' and ship's security-related information for possible mistakes and inconsistencies, taking into account documents FAL 40/6/1 and FAL 40/6/1/Corr.1 and FAL 40/6/5;

reconsider the need and feasibility of revising the layout of the technical data in the Compendium to accommodate the different data model maintenance tools used by the UNECE, WCO, ISO and similar stakeholders; and

submit a report to FAL 41.

The group noted with appreciation the United States' offer to coordinate the work of the correspondence group.

Action requested of the Committee

The Committee is invited to approve the report in general and, in particular, to:

note the discussion of the group related to the consideration of proposals related to the reformatting of FAL.5/Circ.40 on *IMO Compendium on Facilitation and Electronic Business* (paragraphs 5 to 7);

note the discussion of the group related to the development of a prototype MSW (paragraphs 8 to 13) and:

invite Member States requiring assistance for the implementation of MSWs to contact the Secretariat (falsec@imo.org) as soon as possible in order to discuss their specific needs and explore possible solutions;

invite Member States and organizations willing to assist with the implementation of MSWs or the development of a prototype MSW to contact the Secretariat or submit information to FAL 41; and

request the Secretariat to report back to FAL 41 with an analysis of the needs, a summary of commonalities and any additional information;

note the conclusions of the group related to the harmonization and standardization of data reporting formats and invite Administrations to promote and encourage harmonization among their individual ports (paragraphs 14 and 15);

endorse the view of the group to maintain the *Guidelines for use of electronic certificates* as a FAL circular (paragraph 17);

approve the draft amendments to FAL.5/Circ.39/Rev.1 on *Guidelines for use of electronic certificates* (paragraph 18 and annex 1);

*Noting that a revision to FAL form 7 may be needed.*
.6 note the view of the group that it was not necessary to re-establish the Correspondence Group on Electronic Access to Certificates and Documents and invite Member States implementing electronic certificates to continue to share their experiences by submitting information to FAL 41 (paragraph 19);

.7 approve the draft amendments to resolution A.1052(27) on Procedures for port State control, 2011, and forward them to the Maritime Safety Committee and the Marine Environment Protection Committee for approval and subsequent submission to the Assembly for adoption (paragraph 21 and annex 2);

.8 endorse the views of the group related to the facilitation aspects of cyberthreats and encourage participation of FAL delegations in meetings of the MSC in this respect (paragraphs 22 and 23); and

.9 establish a Correspondence Group on the Review of the IMO Compendium on Facilitation and Electronic Business, under the coordination of the United States, and approve its terms of reference (paragraphs 24 and 25).
ANNEX 1

DRAFT AMENDMENTS TO THE GUIDELINES FOR THE USE OF ELECTRONIC CERTIFICATES

1 Introduction

1.1 The Organization aims to reduce the administrative burden on Administrations, port State control officials, ships’ crews and other stakeholders caused, amongst other reasons, by reliance on traditional paper certificates.

1.2 Signed paper certificates issued by Governments and recognized organizations authorized to act on their behalf have been the traditional means of documenting compliance with IMO requirements.

1.3 Contracting Governments using electronic certificates, including printed versions of electronic certificates, have experienced instances of port State control officers or other stakeholders denying the validity of these certificates, resulting in a burden to the master and crew, shipowner or operator, port State control officers, Administration and other stakeholders.

1.4 In addition, ships have experienced instances of port State control actions because a traditional paper certificate has been issued but has not arrived on the ship or the traditional paper certificate has been damaged or lost.

1.5 Establishing a recognized set of features for using electronic certificates should help alleviate problems inherent in reliance on paper.

2 Purpose

The purpose of these guidelines is to facilitate the use and acceptance of electronic certificates.

3 Definitions

For the purpose of these guidelines:

.1 Certificate means a document issued by an Administration or its representatives that is used to show compliance with IMO requirements and used to describe operating conditions, crewing requirements, and ship equipment carriage requirements. The term "certificate" does not include publications, manuals, instructions or ships' logs used to record ongoing operations;

.2 Electronic certificate means a certificate issued in an electronic format;

.3 Electronic signature means data in electronic form, which is attached to or logically associated with other electronic data to serve as a method of authentication of the issuer and contents of the electronic data;

.4 Printed version of electronic certificate means a paper printout produced from the electronic certificate;
.5 Unique tracking number means a string of numbers, letters or symbols used as an identifier to distinguish an electronic certificate issued by an Administration or its representative from any other electronic certificate issued by the same Administration or its representative; and

.6 Verifying means a reliable, secure and continuously available process to confirm the authenticity and validity of an electronic certificate using the unique tracking number and other data contained on or embedded in the electronic certificate.

4 Features

4.1 Administrations that use electronic certificates should ensure that these certificates have the following features:

.1 validity and consistency with the format and content required by the relevant international convention or instrument, as applicable;

.2 protected from edits, modifications or revisions other than those authorized by the issuer or the Administration; and

.3 a unique tracking number used for verification as defined in paragraphs 3.5 and 3.6; and

.4 a printable and visible symbol that confirms the source of issuance.

4.2 Administrations that use websites for online viewing or verifying electronic certificates should ensure that these sites are constructed and managed in accordance with established information security standards for access control, fraud prevention, resistance to cyberattacks and resilience to man-made and natural disasters.

4.3 Shipowners, operators and crews on ships that carry and use electronic certificates should ensure that these certificates are controlled through the safety management system, as described in section 11 of the International Safety Management Code.

4.4 Electronic signatures applied to electronic certificates should meet security standards, as adopted by the Administration.

5 Verification

Instructions for verifying (see paragraph 3.6) the information contained in the electronic certificate, including confirmation of periodic endorsements, when necessary, should be available on board the ship.

---

1 Such as the International Organization for Standardization/International Electrotechnical Commission 27000 series standards and similar guidelines, including requirements of the Administration.
6 Notifications

Administrations deciding to issue or authorize issuance of electronic certificates are invited to inform the Committee on their experience. All Administrations are urged to communicate to the Organization through the relevant module in the Global Integrated Shipping Information System (GISIS), when available, the list of certificates categories identified in FAL.2/Circ.127-MEPC.1/Circ.817-MSC.1/Circ.1462 which will be issued by the Administration or its representative as electronic certificates.

7 Acceptance

All stakeholders should accept electronic certificates containing the features identified in section 4. These electronic certificates should be verified, when necessary, following the instructions available on board the ship (see paragraph 3.4). Furthermore, port State control officers, in accepting electronic certificates, should follow the Procedures for port State control, 2011 (resolution A.1052(27)).

8 Implementation

Administrations should put in place the necessary procedures in order to ensure that all related stakeholders’ needs, capacities, and expectations are taken into consideration before and during the implementation of electronic certificates.

***
ANNEX 2

PROPOSED AMENDMENTS TO THE PROCEDURES FOR PORT STATE CONTROL, 2011
(RESOLUTION A.1052(27))

Annex

PROCEDURES FOR PORT STATE CONTROL, 2011

1 Paragraph 1.7.11 is amended as follows:

1.7.11 Valid certificates: A certificate that has been issued electronically or on paper directly by a Party to a relevant convention or on its behalf by a recognized organization and contains accurate and effective dates meets the provisions of the relevant convention and to which the particulars of the ship, its crew and its equipment correspond.

2 Paragraph 2.2.4 is amended as follows:

2.2.4 If the certificates are valid and the PSCO’s general impression and visual observations on board confirm a good standard of maintenance, the PSCO should generally confine the inspection to reported or observed deficiencies, if any. The validity of electronic certificates should be verified, if deemed necessary, by using the procedures retained on board for this purpose.

\[\text{Refer to FAL.5/Circ.39/Rev.[2] on Guidelines for the use of electronic certificates.}\]
M13 - e-Certificates definition (Appendix 04)

30 APRIL 2016
CEDA – CErtificate Document Authority

Author IB

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NOTE:
Support Document to SA 2.1

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</tr>
<tr>
<td>1</td>
<td></td>
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<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.1</td>
<td>Obiettivi</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
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<td></td>
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<tr>
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<td></td>
<td>L'ESIGENZA</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
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<td></td>
<td>MODELLI INTERNAZIONALI</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
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</tr>
<tr>
<td>5</td>
<td></td>
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<td>13</td>
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<td>15</td>
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<td></td>
<td></td>
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<tr>
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<td></td>
<td>APPENDICE 1</td>
<td>18</td>
<td></td>
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## LIST OF ABBREVIATIONS

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<th>CeDA</th>
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<td>Trusted Third Party</td>
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<td>Dissemination Information Package</td>
<td>DIP</td>
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1 EXECUTIVE SUMMARY

1.1 Obiettivi

Obiettivo del presente documento è di definire le linee guida per la gestione, il rilascio, la conservazione, la distribuzione, l'approvazione, ed il riconoscimento, a livello internazionale, dei Certificati/Documenti emessi in un formato elettronico, di tipo riconosciuto, per navi di bandiera italiana.

Per la finalità della presente procedura i documenti/certificati si intendono emessi da qualsiasi Ente (Pubblico o Privato) e/o Autorità (Nazionale o Internazionale) competente, autorizzata e riconosciuta per tale rilascio.

Si vuole quindi dimostrare la validità e l'opportunità della creazione di una Certification e-Document Authority (CEDA) in ambito marittimo.

2 DOCUMENTI DI BORDO

I certificati e documenti che sono presenti a bordo di una nave sono di differente origine e natura.

In generale i Certificati sono emessi con la finalità di garantire:

• La sicurezza della nave;
• La sicurezza del carico;
• La salvaguardia della vita umana;
• La protezione dell'ambiente marino.

I Principali Enti e Autorità preposte e autorizzate alla emissione dei documenti nave:

• Ministero delle Infrastrutture e dei trasporti (MIT);
• Ministero della Sanità;
• Ministero delle Telecomunicazioni;
• CONSAP;
• Enti di Classificazione riconosciuti;
• International Maritime Organization (IMO);
• International Labour Organization (ILO);
• World Health Organization (WHO);
• International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW)

I principali utilizzatori dei documenti nave sono:

• Ministero delle Infrastrutture e dei trasporti (MIT);
• Ministero della Sanità;
• Ministero delle Telecomunicazioni;
• Enti di Classificazione riconosciuti;
• Port State Control;
• Agenti e agenzie maritime;
• Compagnie di Vetting;
• Armatori e noleggiatori.
La tipologia, la quantità e il dettaglio dei documenti, certificati e registri che competono ad una nave sono funzione della tipologia (dimensioni, stazza etc.) e del profilo della missione commerciale della nave stessa.

I documenti che debbono essere sempre presenti a bordo si possono suddividere in due tipologie:
- Documenti di tipo Giuridico;
- Documenti di tipo Tecnico.

2.1 **Documenti di tipo Giuridico**

Questa tipologia di documenti comprende:
- Atto di Nazionalità (rilasciato dal Direttore Marittimo della zona di immatricolazione della nave);
- Ruolo dell’equipaggio (validità tre anni e rilasciato dalla Capitaneria);
- Libri di Bordo (compilati dal Comandante su bollettari) e che comprendono:
  - Giornale nautico (sudiviso in quattro capitoli);
  - Giornale di macchina;
  - Giornale Radiotelegrafico;
  - Registro idrocarburi;
  - Registro del carico;

2.2 **Documenti di tipo Tecnico**

Questa tipologia di documenti è funzione della dimensione (strazza) della nave, della sua navigazione e della tipologia di carico (missione commerciale) in linea generale essa deve comprendere:
- Documenti tecnici (rilasciati dalla società di Classificazione):
  - Certificati di Classe;
  - Certificato di Stazza;
  - Certificati di Sicurezza;
  - Certificati di Bordo Libero;
  - Certificato Radiotelegrafico;
  - Stabilità;
  - International Oil Pollution Prevention Certificates (IOPP);
  - Conformità alla MARPOL;
  - Garbage Management Plan;
  - Accertamenti ISM e DOC;
  - Registro OIL;
- Documenti tecnici (rilasciati dalla società dallaAutorità Marittima):
  - Certificati di Sicurezza;
  - Rilascio ISM e DOC
  - Certificato Sicurezza Radiotelegrafico;
- Documenti doganali (redatti dal vettore e presentati all’ufficio delle Dogane):
  - Manifesto di carico;
  - Polizza di carico;
- Documenti sanitari (emessi dalla Sanità Marittima):
  - Certificato di derattizzazione;
  - Certificato per acque potabili;
2.3 Durata/scadenza

La durata e la scadenza dei certificati dipende dalla loro tipologia.

Alcuni sono connessi alla esistenza della nave stessa e valgono fino a quando la nave non cambia bandiera o dimensioni; fanno parte di questa tipologia:

- Atto di Nazionalità;
- Certificati di Stazza;

Tutti gli altri Documenti e Certificati sono soggetti a viste di rinnovo variabile da 6 mesi a 5 anni a seconda della loro tipologia.

In Appendice 1 si riporta, a titolo di esempio un elenco, non esaustivo, dei principali documenti che debbono essere presenti a bordo nave.

3 L'ESIGENZA

La certificazione di un documento elettronico (e-DOCUMENT che diventa e-CERTIFICATE) in sostituzione della carta in ambito marittimo in ottica B2A, quale ad esempio un certificato di stazza di una nave da presentare da parte di una nave/armatore ad una Autorità Marittima.
4 MODELLI INTERNAZIONALI

4.1 KOREA

Korea in sede IMO ha indicato una serie di funzioni e servizi che la CEDA deve possedere. In particolare il modello prevede che utenti abilitati all’emissione di documenti elettronici possano emettere un DIP Dissemination Information Package ed un certificato di autenticità in forma elettronica. I documenti possono anche essere stampati in quanto sono previste funzioni di autenticazione del documento cartaceo.

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<td>Prevention of information leakage during printing process</td>
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<td>Guarantee of legal effect through a link to a public key certificate</td>
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4.2 LIBERIA

L'Amministrazione della LIBERIA già dall'anno 2006 emette i certificati di sua competenza in formato elettronico.
I certificati che la LIBERIA emette in formato elettronico sono ad esempio i seguenti:
1. Certificates of Registry
2. International Safety Management Certificates
3. Minimum Safe Manning Certificates
4. International Ship Security Certificates
5. Continuous Synopsis Records
6. Ship Radio Licenses
7. Civil Liability Convention Certificates
8. Bunker Civil Liability Convention Certificates

A partire dall'anno 2009 tutti i certificati emessi dalla Liberia riportano in basso un identificativo numerico TID (Tracking Identification Number) costituito da 20 numeri al fine di verificare la validità e conformità del certificato accedendo al Data Base del registro Liberiano.

Si riporta un esempio di identificativo TID:

The Republic of Liberia

TID: 11111 - 22222 - 33333 - 44444

Tale identificativo è riportato sia nella pagine del certificato emesso che in tutti i suoi allegati ed in particolare anche nelle pagine relative alle validazioni e visite successive alla prima emissione. Restano ovviamente esclusi da tale codifica elettronica i certificati emessi dagli Enti di Classifica (a fine della Classe).

La LIBERIA infine ha definito una road-map finalizzata a:

- Censire TUTTI i certificati e documenti che debbono essere presenti a bordo nave e richiesti dalla Bandiera, dalle Amministrazioni, dalle Autorità Portuali in cui la nave si trova a operare, dal Enti
di Classifica, dalle Organizzazioni Internazionali (IMO, SOLAS, STCW, ILO etc), dalle Assicurazioni, dagli operatori (pubblici e privati) della logistica e del trasporto, dagli organi di Polizia, Port State Control, etc.,
- Definire un sistema per l’accesso elettronico finalizzato alla visione e verifica di tutti i Certificati e Documenti presenti e dovuti a bordo nave;
- Identificare i potenziali utilizzatori (comprese le loro esigenze e benefici attesi) di tale sistema elettronico di verifica degli e-Document comprese le azioni successive alla prima emissione (verifiche, ispezioni e validazioni successive):

4.3 **IMO**

L’IMO ha iniziato l’analisi della materia legata al riconoscimento del formato elettronico co dei documenti. In tale processo l’IMO ha in primo luogo preso contatto con l’IACS (International Association of Classification Societies) che sono gli “emittitori” di certificati a fini della Classificazione della Navale e a fini statutari ovvero su autorizzazione e riconoscimento delle Amministrazioni della bandiera battuta nave.

La posizione dell’IACS è che prima di procedere alla soppressione della “carta” a favore di un formato elettronico sia, tra l’altro, necessario:
- Definire i necessari “protocolli” per assicurare l’autenticità, l’integrità e la validità della firma digitale dei documenti firmati e da le necessarie procedure per le successive firme di rinnovo intermedie;
- Definire con le Amministrazioni di Bandiera i protocolli per le autorizzazioni all’accesso on line di tali certificati;
- Definire le modalità, da parte della nave, di accesso a tali data bese (on line off line etc.):

Sarà prevista definita una fase transitoria per il graduale passaggio dalla carta all’e-Document.

5 **IL MODELLO DI RIFERIMENTO**

Il modello di riferimento è il modello Korea in cui un soggetto Trusted Third Party provvede a mantenere un repository di documenti elettronici.
Ogni Ente emittente, come precedentemente riporatao, emetterà e-Certificate che vengono Certificati loro stessi da parte del CEDA (ente certificatore) e debitamente archiviati.

7 L’EMISSIONE DI UN E-DOCUMENT
L’armatore proprietario del Certificato entra nell’apposita area riservata di MIELE dove sono presenti dati nave e i certificati in formato digitale. Attraverso apposita funzione può effettuare lo scarico del e-Certificate per il recovery locale a bordo nave.
9 PUBLISH & SUBSCRIBE E PRESENTAZIONE AD AUTORITÀ COMPETENTI

## 2. Matching with the UN Rec. 35 Checklist

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| Legal Basis for SW Facility Implementation | - Legal Effect of e-document: Yes  
  - Use of Int'l standards: Yes |
| Organizational Structure for SW Facility | - SW Organization and its Legal Basis: Yes  
  - Further coordination among the players needed |
| Identification, Authentication & Authorization Procedure | - National laws provide basis for these issues |
| Authority for Data & Conditions for Sharing Data in SW Facility | - National Laws provide the basis  
  - Further coordination is desired. |
| Data Quality Issues | - National Laws provide the basis  
  - CeDA reinforces the basis |
| Data Protection Mechanism | - Data Privacy Act is installed  
  - Other relevant laws also prescribe data protection(privacy & confidentiality) issues |

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<th>Current Status</th>
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| Liability Issues | - National Laws provide the basis  
  - CeDA reinforces the basis |
| Arbitration and Dispute Resolution Mechanism | - National Laws provide the basis  
  - Korea Commercial Arbitration Board |
| Electronic Documents | - Fully implemented in all the relevant laws |
| Electronic Archiving | - National Laws provide the basis  
  - CeDA reinforces the basis |
| IPR and Database Ownership | - Caution is given in the stage of implementation.  
  - Further caution and review is desirable. |
| Competition Issues | - Caution is given in the stage of implementation.  
  - Further caution and review is desirable. |

11 ASPETTI TECNICI (COMPLIANT CON CAD ITALY)

La separazione dei repository è consigliata data la complessa normativa italiana sull’archiviazione sostitutiva.

I repository “pubblici” sono dei web services a cui gli utenti autorizzati possono accedere per scaricare (armatore) o visualizzare (ispettori) i certificati digitali. Possono essere di tre tipi:

- Centralizzati (es. Repository unico del MIT)
- Distribuiti (ogni ente ha solo i certificati da lui emessi)
- Misti (l’ente certificatore ha tutti i certificati che ha emesso più quelli del CONSAP)

Nel caso di repository centralizzati o misti la normativa a cui attenersi sarebbe quella della Amministrazioni Pubbliche (più restrittiva). Il CEDA trasmette una copia digitalizzata dei certificati digitali all’armatore che a sua volta li trasmetterà alla nave, sia in formato elettronico che cartaceo.

I certificati devono essere presenti a bordo della nave in formato cartaceo? Sì, quindi i certificati avranno un Tracking Identification Number (TID) tipo il modello della Liberia, in più avranno anche il QR Code per la connessione immediata al Repository “pubblico” dell’ente che ha emesso il certificato.

11.1 Formazione dei certificati

Nell’ente certificatore ci sono più di 300 persone autorizzate a “certificare”. Ogni nave ha circa 15 certificati, per una stima di 1500 navi ci sono circa 15000 documenti digitali certificati da gestire. Ogni nave potrebbe avere il suo fascicolo informatico contenente tutti i suoi certificati.

Per la legge italiana il certificato digitale è tale se “autenticato” con firma digitale o firma elettronica qualificata. La firma digitale viene emessa attraverso un sistema personale di chiavi, quindi l’ente certificatore dovrebbe avere circa 300 persone accreditate. L’ente certificatore dovrebbe diventare ente certificatore di certificati o affidarsi ad un ente di tale tipo per aver i certificati per le firme.

L’ente certificatore potrebbe munirsi di un software particolare che permetta di emettere certificati digitali in maniera automatica, un software centrale a cui si possono connettere i dipendenti che genera un “impronta” diversa per ogni file.

11.2 Archiviazione ed esibizione

Dovrebbe inoltre avere (o delegare a terzi) un archivio per la conservazione sostitutiva (normativa sui sistemi di archiviazione) dei certificati ed un archivio “pubblico” per gli armatori e gli ispettori.

Il trasferimento dei certificati digitali può avvenire o attraverso PEC o attraverso specifici pacchetti di versamento.

11.3 Documenti Informatici Certificati

In Italia la normativa sulla creazione di documenti informatici certificati è molto articolata. Sul sito di DigitPA sono presenti diversi riferimenti normativi, alcuni già in vigore e alcuni che sono per ora delle bozze di schemi di D.P.C.M.

Il Codice di riferimento è il CAD, il testo attuale è aggiornato al 22/11/2012. Nel testo ci sono diversi riferimenti all’oggetto della ricerca, in particolare ci sono le norme per la creazione dei documenti informatici e delle copie di documenti informatici e analogici. Il capo II del codice è interamente dedicato al DOCUMENTO INFORMATICO ed alle FIRME ELETTRONICHE. Sostanzialmente un documento informatico certificato è caratterizzato dall’immodificabilità del documento stesso e da una serie di metadati:

a) l’identificativo univoco e persistente;

b) il riferimento temporale;

c) l’oggetto;
d) il soggetto che ha formato il documento;
ed) l’eventuale destinatario.

I metadati sono insieme di dati associati a un documento informatico, o a un fascicolo informatico, o ad un'aggregazione documentale informatica per identificarlo e descriverne il contesto, il contenuto e la struttura, nonché per permetterne la gestione nel tempo nel sistema di conservazione.

La chiave dell'autenticità dei documenti è nella firma elettronica avanzata, qualificata o digitale.

Firma digitale: un particolare tipo di firma elettronica avanzata basata su un certificato qualificato e su un **sistema di chiavi crittografiche**, una pubblica ed una privata, correlate tra loro, che consente al titolare tramite la chiave privata ed al destinatario tramite chiave pubblica, rispettivamente, di rendere manifesta e di verificare la provenienza e l'integrità del documento informatico o di un sistema di documenti informatici.

Anche le copie di documenti certificati vengono poi certificati con apposizione di firma digitale o altra firma elettronica qualificata.

L’articolo 24 del CAD è sulla **FIRMA DIGITALE**:  

1. La firma digitale deve riferirsi in maniera univoca ad un solo soggetto ed al documento o all'insieme di documenti cui è apposta o associata.

2. **L'apposizione di firma digitale integra e sostituisce l'apposizione di sigilli, punzoni, timbri, contrassegni e marchi di qualsiasi genere ad ogni fine previsto dalla normativa vigente.**

3. Per la generazione della firma digitale deve adoperarsi un certificato qualificato che, al momento della sottoscrizione, non risulti scaduto di validità ovvero non risulti revocato o sospeso.

4. Attraverso il certificato qualificato si devono rilevare, secondo le regole tecniche stabilite ai sensi dell’articolo 71, la validità del certificato stesso, nonché gli elementi identificativi del titolare e del certificatore e gli eventuali limiti d'uso.

L'ultimo schema delle regole tecniche delle firme digitali risale al DPCM del 19 gennaio 2012. Il decreto stabilisce le regole tecniche per la generazione, apposizione e verifica della firma elettronica avanzata, qualificata e digitale, per la validazione temporale, nonché per lo svolgimento delle attività dei certificatori qualificati.

I particolare si definisce **HSM** l’insieme di hardware e software che realizza dispositivi sicuri per la generazione delle firme in grado di gestire in modo sicuro una o più coppie di chiavi crittografiche.

Il dispositivo può essere una chiavetta USB (es. posteKEY ) o una smart card con lettore.

Un altro concetto chiave è il riferimento temporale che viene fatto attraverso la marca temporale.

**Marca temporale**: il riferimento temporale che consente la validazione temporale e che dimostra l’esistenza di un’evidenza informatica in un tempo certo. Viene generata tramite apposito sistema di validazione temporale.

Una marca temporale contiene almeno le seguenti informazioni:

a) identificativo dell’emittente;
b) numero di serie della marca temporale;
c) algoritmo di sottoscrizione della marca temporale;
d) certificato relativo alla chiave utilizzata per la verifica della marca temporale;
e) riferimento temporale della generazione della marca temporale;
f) identificativo della funzione di hash utilizzata per generare l'impronta dell'evidenza informatica sottoposta a validazione temporale;
g) valore dell'impronta dell'evidenza informatica.

Il trasferimento elettronico dei documenti certificati può essere fatto con PEC (Posta Elettronica Certificata) o con “pacchetto di versamento”.

Una bozza di schema di DPCM è dedicata alle regole tecniche in materia di **SISTEMA DI CONSERVAZIONE**, in particolare l’art. 10 è dedicato alle Modalità di esibizione: “il sistema di
conservazione permette ai soggetti autorizzati l’accesso diretto, anche da remoto, al documento informatico conservato, attraverso la produzione di un pacchetto di distribuzione secondo le modalità descritte nel manuale di conservazione”.

I formati di file indicati del la conservazione dei documenti certificati sono:
- PDF – PDF/A
- TIFF
- JPG
- Office Open XML (OOXML)
- Open Document Format
- XML
- TXT
- Messaggi di posta elettronica: per preservare l’autenticità dei messaggi di posta elettronica, lo standard a cui fare riferimento è RFC 2822/MIME.

Sugli standard e le specifiche tecniche esiste un allegato tecnico dedicato in cui sono elencate tutte le norme di riferimento, come anche sulle specifiche tecniche del pacchetto di archiviazione e sui METADATI.

Per entrare nello specifico dei formati che devono essere usati le ultime Regole per il riconoscimento e la verifica del documento informatico risalgono al 2010 (pubblicate sulla GU 17 agosto 2010). Descrivono gli algoritmi per la generazione e la verifica della firma digitale, i profili dei diversi certificati, le regole per la validazione temporale, i formati per la busta crittografica di firma, etc …

Un interessante progetto è “FIRMA DIGITALE con LINUX” (http://opensignature.sourceforge.net/index.php): un tentativo di realizzare un software libero per la Firma Digitale che affianchi quello proprietario sviluppato dai certificatori inclusi nell’elenco pubblico di DigitPA - Ente nazionale per la digitalizzazione della pubblica amministrazione (DigitPA), hanno realizzato un kit open source (OpenSignPDF) per creare pdf firmato digitalmente.
12 APPENDICE 1

Elenco, non esaustivo, dei principali documenti che debbono essere presenti a bordo nave con identificazione di:

- Oggetto del documento
- Ente/soggetto che mette il documento
- Titolare/responsabile del documento
- Finalità del documento
- Scadenza calendariale
- Ente soggetto che controlla il documento
- Tipologia di visita cui il documento si riferisce
<table>
<thead>
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<td>Sanità marittima</td>
<td>Sanità marittima</td>
<td>non nota perché non di pertinenza ente certificatore</td>
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<td>ANALISI ACQUA POTABILE</td>
<td>Laboratorio Certificato</td>
<td>Laboratorio Certificato</td>
<td>verifica annuale efficienza del liquido</td>
<td>alle visite periodiche safety equipment</td>
<td>Soc Classifica, Flag Administration, PSc, Vetting</td>
<td>Periodica Safety equipment</td>
</tr>
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<td>Laboratorio Certificato</td>
<td>Laboratorio Certificato</td>
<td>verifica annuale efficienza del liquido</td>
<td>alle visite periodiche safety equipment</td>
<td>Soc Classifica, Flag Administration, PSc, Vetting</td>
<td>Periodica Safety equipment</td>
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<td>Autorità di bandiera</td>
<td>Autorità di bandiera</td>
<td>Iscrizione nave ai Registri internazionali</td>
<td>Non vi è una cadenza precisa, comunque a richiesta di qualsiasi entità</td>
<td>Autorità Marittima, PSC, Assicurazioni, ITF…</td>
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<td>Sanità marittima</td>
<td>Attesta che il sistema HCCP è in forza</td>
<td>durante la visita tecnico sanitaria</td>
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<td>Autorità marittima sulla scorta di dichiarazione ente certificatore</td>
<td>Autorità di bandiera</td>
<td>Permesso di trasporto passeggeri su navi da carico</td>
<td>alle visite periodiche safety equipment</td>
<td>Soc Classifica, Flag Administration, PSC, Vetting</td>
<td>Periodica Safety equipment</td>
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<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
<td>Rispondenza annesso VI MARPOL</td>
<td>Alle Visite periodiche, PSC</td>
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<td>Periodica IAPP (annuale)</td>
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<td>Periodica IOPP (annuale)</td>
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<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
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<td>Soc. Classifica, Flag Adm., PSC inspector</td>
<td>Alle visite periodiche statutarie</td>
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<td>Comando di bordo</td>
<td>verifica dotazioni e struttura MS</td>
<td>alle visite periodiche safety equipment o safety passenger</td>
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<td>Verifica corretto funzionamento</td>
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<td>fabbricante o un suo rappresentante</td>
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<td>Alle visite periodiche statutarie(annuale)</td>
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<td>Rispondenza ai decreti nazionali italiani in merito al trasporto autoveicoli Alle visite periodiche</td>
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<td>Soc. Classifica, Flag Adm., PSC inspector</td>
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<td>In occasione del passaggio nel canale (pagamento fees)</td>
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<td>Soc. Classifica, Flag Adm., PSC inspector</td>
<td>Alle visite periodiche statutarie (annuale)</td>
</tr>
<tr>
<td>CERTIFICATO INTERNAZIONALE SECURITY NAVE</td>
<td>Amministrazione di bandiera o Recognized Organization (es. RINA)</td>
<td>Amministrazione di bandiera o Recognized Organization (es. RINA)</td>
<td>Rispondenza requisiti SOLAS applicabili + ISPS Code</td>
<td>Alle Visite periodiche, PSC</td>
<td>Soc. Classifica, Flag Adm., PSC inspector</td>
<td>Alle visite periodiche statutarie e ISPS</td>
</tr>
<tr>
<td>CONTINUOUS SYNOPSIS RECORD (CSR) DATI STATISTICI</td>
<td>Amministrazione di bandiera o Recognized Organization (es. RINA)</td>
<td>Amministrazione di bandiera o Recognized Organization (es. RINA)</td>
<td>Rispondenza requisiti SOLAS applicabili + ISPS Code</td>
<td>Alle Visite periodiche, PSC</td>
<td>Soc. Classifica, Flag Adm., PSC inspector</td>
<td>Alle visite periodiche statutarie e ISPS</td>
</tr>
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<td>DICH. DI CONFORMITA' STOCKHOLM AGREEMENT</td>
<td>Amministrazione di bandiera Europea o recognized Organization</td>
<td>Amministrazione di bandiera Europea o recognized Organization</td>
<td>Rispondenza alla direttiva europea</td>
<td>alle visite periodiche safety safety passenger</td>
<td>Soc. Classifica, Flag Adm., PSC inspector</td>
<td>alle visite periodiche safety safety passenger</td>
</tr>
</tbody>
</table>

Page 23 of 33
<table>
<thead>
<tr>
<th>DICHIARAZIONE DI STAZZA NAZIONALE</th>
<th>Amministrazione di bandiera o Recognized Organization (es RINA)</th>
<th>Amministrazione di bandiera o Recognized Organization (es RINA)</th>
<th>Rispondenza regole di stazza nazionale</th>
<th>Flag Adm</th>
</tr>
</thead>
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<tr>
<td>DICHIARAZIONE PREV. INQUINAMENTO RIFIUTI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>DL 28 VERIFICA INIZIALE NAVE (art.5)</td>
<td>Amministrazione Di bandiera Europea della nazione in cui esercita l' unità RO-RO Pax</td>
<td>Amministrazione Di bandiera Europea della nazione in cui esercita l' unità RO-RO Pax</td>
<td>Rispondenza alle direttive Europee sul trasporto PAX su navi RO-RO</td>
<td>alle visite periodiche safety passenger</td>
</tr>
<tr>
<td>DL 28 VERIFICA INIZIALE SOCIETÀ (arl.4)</td>
<td>Amministrazione Di bandiera Europea della nazione in cui esercita l' unità RO-RO Pax</td>
<td>Amministrazione Di bandiera Europea della nazione in cui esercita l' unità RO-RO Pax</td>
<td>Rispondenza alle direttive Europee sul trasporto PAX su navi RO-RO</td>
<td>alle visite periodiche safety passenger</td>
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<tr>
<td>DL 28 VISITA SPEC PER ESERCIZIO(art.8)</td>
<td>Amministrazione Di bandiera Europea della nazione in cui esercita l' unità RO-RO Pax</td>
<td>Amministrazione Di bandiera Europea della nazione in cui esercita l' unità RO-RO Pax</td>
<td>Rispondenza alle direttive Europee sul trasporto PAX su navi RO-RO</td>
<td>alle visite periodiche safety passenger</td>
</tr>
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<td>Amministrazione Di bandiera Europea della nazione in cui esercita l' unità RO-RO Pax</td>
<td>Amministrazione Di bandiera Europea della nazione in cui esercita l' unità RO-RO Pax</td>
<td>Rispondenza alle direttive Europee sul trasporto PAX su navi RO-RO</td>
<td>alle visite periodiche safety passenger</td>
</tr>
<tr>
<td>DL 28 VISITA SPECIFICA PERIODICA (arl.8)</td>
<td>Amministrazione Di bandiera Europea della nazione in cui esercita l' unità RO-RO Pax</td>
<td>Amministrazione Di bandiera Europea della nazione in cui esercita l' unità RO-RO Pax</td>
<td>Rispondenza alle direttive Europee sul trasporto PAX su navi RO-RO</td>
<td>alle visite periodiche safety passenger</td>
</tr>
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<td>HIDRO TEST BOMBOLE ARIA</td>
<td>esterno</td>
<td>Recognized Organization or Authorized laboratory</td>
<td>Verifica interna ed di idoneita all' uso di recipienti in pressione</td>
<td>alle visite periodiche safety equipment o safety passenger</td>
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<td>alle visite periodiche safety equipment o safety passenger</td>
</tr>
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<td>HIDRO TEST EST. A SCHIUMA</td>
<td>esterno</td>
<td>Recognized Organization or Authorized laboratory</td>
<td>Verifica interna ed di idoneita all' uso di recipienti in pressione</td>
<td>alle visite periodiche safety equipment o safety passenger</td>
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<td>HIDRO TEST EST. C02 E POLVERE PRESS.</td>
<td>esterno</td>
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<td>alle visite periodiche safety equipment o safety passenger</td>
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<td>HIDRO TEST EST. POLVERE NOPRESSURIZZATI</td>
<td>esterno</td>
<td>Recognized Organization or Authorized laboratory</td>
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<td>alle visite periodiche safety equipment o safety passenger</td>
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<td>HYDRO TEST 10% BOMBOLE CO2 IMP. FISSO</td>
<td>esterno</td>
<td>Recognized Organization or Authorized laboratory</td>
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<td>alle visite periodiche safety equipment o safety passenger</td>
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<td>HYDRO TEST BOMBOLE OSSIGENO TERAPEUTICO</td>
<td>esterno</td>
<td>Recognized Organization or Authorized laboratory</td>
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<td>alle visite periodiche safety equipment o safety passenger</td>
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<td>MOU PSC</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>LIGHT DUES PORTI ESTERI</td>
<td>LICENZA DI ESERCIZIO RADIO GMDSS</td>
<td>Amministrazione di bandiera</td>
<td>amministrazione di bandiera</td>
<td>Per poter eserciare la radio di bordo</td>
</tr>
<tr>
<td>--------------------------</td>
<td>----------------------------------</td>
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</tr>
<tr>
<td>OIL 32</td>
<td></td>
<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
<td>Rigpondenza requisiti SOLAS applicabili</td>
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<td>PESATURA BOMBOLE/TANK IMP.F1550 CO2</td>
<td>esterno</td>
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<td>Verifica interna ed idoneita all’uso di recipienti in pressione</td>
<td>alle visite periodiche safety equipment o safety passenger</td>
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<td>alle visite periodiche safety equipment o safety passenger</td>
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<td>Recognized Organization or Authorized laboratory</td>
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<td>alle visite periodiche safety equipment o safety passenger</td>
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<td>esterno</td>
<td>Recognized Organization or Authorized laboratory</td>
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<td>alle visite periodiche safety equipment o safety passenger</td>
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<td>ZATTERERE/EPIR</td>
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<td>Recognized Organization or Authorized laboratory</td>
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<td>alle visite periodiche safety equipment o safety passenger</td>
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<td>REVISIONE SCIVOLI DI EVACUAZIONE (MES)</td>
<td>esterno</td>
<td>Recognized Organization or Authorized laboratory</td>
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<td>alle visite periodiche safety equipment o safety passenger</td>
</tr>
<tr>
<td>REVISIONE ZATTERE AUTOGONFIABILI</td>
<td>esterno</td>
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<td>Verifica interna ed idoneita all’uso di recipienti in pressione</td>
<td>alle visite periodiche safety equipment o safety passenger</td>
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<td>Recognized Organization or Authorized laboratory</td>
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<td>alle visite periodiche safety equipment o safety passenger</td>
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<td>RICARICA/REVISIONE ESTINTORI A SCHIUMA</td>
<td>esterno</td>
<td>Recognized Organization or Authorized laboratory</td>
<td>Verifica interna ed idoneita all’uso di recipienti in pressione</td>
<td>alle visite periodiche safety equipment o safety passenger</td>
</tr>
<tr>
<td>RINA STAT. IOPP FOR USCG COMPLIANCE</td>
<td>RINA on appliance of USCG CFR</td>
<td>RINA on appliance of USCG CFR</td>
<td>Compliance con le norme usa (USCG CFR) sull'inquinamento marino da olii minerali</td>
<td>Ad ogni approdo USA</td>
</tr>
<tr>
<td>-------------------------------------</td>
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<td>-------------------</td>
</tr>
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<td>SCHEDA REGISTRAZIONE DATI EPIRB</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCHEDA REGISTRAZIONE SISTEMA ARES</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>SHORE BASED MAINTENANCE CONTRACT</td>
<td>Esterno</td>
<td>Compagnia di gestione e manutenzione del GDMSS</td>
<td>per ottemperare alla normative SOLAS per le radio</td>
<td>Ad ogni visita periodica safety radio.</td>
</tr>
<tr>
<td>SOLAS 111/20 ISPEZIONE ANNUALE</td>
<td>Esterno</td>
<td>Fabbricante, Suo concessionario o ditta autorizzata</td>
<td>Ispezione dispositivi di ammaino mezzi di salvataggio</td>
<td>alle visite periodiche safety equipment o safety passenger</td>
</tr>
<tr>
<td>SOLAS 111/20 ISPEZIONE QUINQUENNALE</td>
<td>Esterno</td>
<td>Fabbricante, Suo concessionario o ditta autorizzata</td>
<td>Ispezione dispositivi di ammaino mezzi di salvataggio</td>
<td>alle visite periodiche safety equipment o safety passenger</td>
</tr>
<tr>
<td>SOSTITUZIONE BOA EPIRB</td>
<td>Interno o esterno</td>
<td>Fabbricante, Suo concessionario o ditta autorizzata oppure personale di bordo</td>
<td>certificazione dell'avvenuta sostituzione dell'elemento che ha una sua scadenza</td>
<td>alle visite periodiche safety equipment o safety passenger</td>
</tr>
<tr>
<td>SOSTITUZIONE CAVI FAST RESCUE BOAT</td>
<td>Interno o esterno</td>
<td>Fabbricante, Suo concessionario o ditta autorizzata oppure personale di bordo</td>
<td>certificazione dell'avvenuta sostituzione dell'elemento che ha una sua scadenza (per i cavi è quinquennale)</td>
<td>alle visite periodiche safety equipment o safety passenger</td>
</tr>
<tr>
<td><strong>SOSTITUZIONE CAVI LANCE DI SALVATAGGIO</strong></td>
<td>Interno o esterno</td>
<td>Fabbricante, Suo concessionario o ditta autorizzata oppure personale di bordo</td>
<td>certificazione dell' avvenuta sostituzione dell' elemento che ha una sua scadenza (per i cavi è quinquennale)</td>
<td>alle visite periodiche safety equipment o safety passenger</td>
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<td>Interno o esterno</td>
<td>Fabbricante, Suo concessionario o ditta autorizzata oppure personale di bordo</td>
<td>certificazione dell' avvenuta sostituzione dell' elemento che ha una sua scadenza (per i cavi è quinquennale)</td>
<td>alle visite periodiche safety equipment o safety passenger</td>
</tr>
<tr>
<td><strong>SOSTITUZIONE CAVI ZATTERE AMMAINABILI</strong></td>
<td>Interno o esterno</td>
<td>Fabbricante, Suo concessionario o ditta autorizzata oppure personale di bordo</td>
<td>certificazione dell' avvenuta sostituzione dell' elemento che ha una sua scadenza (per i cavi è quinquennale)</td>
<td>alle visite periodiche safety equipment o safety passenger</td>
</tr>
<tr>
<td><strong>TABELLA DEVIAZIONI BUSSOLA MAGNETICA</strong></td>
<td>Interno (per navi estere) esterno (per navi italiane)</td>
<td>Comandante Nave o Compensatore di bussole autorizzato</td>
<td>Verifica compensazione bussola magnetica</td>
<td>alle visite periodiche safety equipment o safety passenger</td>
</tr>
<tr>
<td><strong>TABELLA DI ARMAMENTO</strong></td>
<td>Amministrazione</td>
<td>Amministrazione</td>
<td>Minimo numero di componenti equipaggio in ottemperanza all' ILO (international Labour office) e leggi nazionali</td>
<td>alle visite periodiche safety equipment o safety passenger</td>
</tr>
<tr>
<td><strong>TEST SSAS</strong></td>
<td>Amministrazione di bandiera o Recognized Organization per SAS Test (organizzazioni diverse dai registri di classificazione)</td>
<td>Amministrazione di bandiera o Recognized Organization per SAS Test (organizzazioni diverse dai registri di classificazione)</td>
<td>Verifica del sistema di avviso di violazione della security nave (attacco pirati, attentati, ...)</td>
<td>Alle visite periodiche Safety Radio e ISPS</td>
</tr>
<tr>
<td>VERBALE COLLAUDO STAZIONE RADIO GMDSS</td>
<td>Amministrazione o recognized organization per la verifica stazione radio (diversa da registro di classifica)</td>
<td>Amministrazione o recognized organization per la verifica stazione radio (diversa da registro di classifica)</td>
<td>Colaudo impianti radiotelegrafici (annuale)</td>
<td>Alle visite periodiche Safety Radio</td>
</tr>
<tr>
<td>-----------</td>
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<td>VERBALE DI IDONEITÀ TRASPORTO Passegeri</td>
<td>Amministrazione italiana (previsto solo in itala)</td>
<td>Amministrazione italiana (previsto solo in itala)</td>
<td>verifica idoneità alla visita iniziale ed in occasione di importanti modifiche nave</td>
<td>alle visite periodiche safety passenger</td>
</tr>
<tr>
<td>TASSA ANCORAGGIO NAZIONALE</td>
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<td></td>
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<td></td>
</tr>
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<td>VERBALE ISPEZIONE STAZIONE RADIO GMDSS</td>
<td>Amministrazione o recognized organization per la verifica stazione radio (diversa da registro di classifica)</td>
<td>Amministrazione o recognized organization per la verifica stazione radio (diversa da registro di classifica)</td>
<td>Colaudo impianti radiotelegrafici (annuale)</td>
<td>Alle visite periodiche Safety Radio</td>
</tr>
<tr>
<td>VERBALE VISITA SERVIZI DI BORDO</td>
<td>Amministrazione italiana (previsto solo in itala)</td>
<td>Amministrazione italiana (previsto solo in itala)</td>
<td>verifica della preparazione alle emergenze dell’ equipaggio ogni 6 mesi (14 se la nave è all’estero)</td>
<td></td>
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<td>VERBALE VISITA TECNICO SANITARIA</td>
<td>Amministrazione italiana (previsto solo in itala)</td>
<td>Amministrazione italiana (previsto solo in itala)</td>
<td>Ispezione delle sistemazioni nave per la rispondenza alle norme nazionali in materia igenico sanitaria ogni anno</td>
<td></td>
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<td>VISITA ANNUALE CERI SIC. COSTRUZIONE</td>
<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
<td>Rispondenza requisiti SOLAS applicabili</td>
<td>Alle Visite periodiche, PSC</td>
</tr>
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<td>VISITA ANNUALE CCII. SICUREZZA DOTAZIONI</td>
<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
<td>Rispondenza requisiti SOLAS applicabili</td>
<td>Alle Visite periodiche, PSC</td>
</tr>
<tr>
<td>VISITA ANNUALE CERTIFICATO BORDO LIBERO</td>
<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
<td>Rispondenza requisiti SOLAS applicabili</td>
<td>Alle Visite periodiche, PSC</td>
</tr>
<tr>
<td>VISITA ANNUALE CLASSE</td>
<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
<td>Rispondenza requisiti classe applicabili</td>
<td>Alle Visite periodiche, PSC</td>
</tr>
<tr>
<td>VISITA ANNUALE DICHI. PREV. INQ. RIFIUTI</td>
<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
<td>Rispondenza requisiti MARPOLapplicabili</td>
<td>Alle Visite periodiche, PSC</td>
</tr>
<tr>
<td>VISITA ANNUALE DOC</td>
<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
<td>Rispondenza requisiti MARPOLapplicabili</td>
<td>Alle Visite periodiche, PSC</td>
</tr>
<tr>
<td>VISITA ANNUALE IAPP</td>
<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
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<td>Rispondenza requisiti MARPOLapplicabili</td>
<td>Alle Visite periodiche, PSC</td>
</tr>
<tr>
<td>VISITA ANNUALE IOPP</td>
<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
<td>Rispondenza requisiti MARPOLapplicabili</td>
<td>Alle Visite periodiche, PSC</td>
</tr>
<tr>
<td>VISITA ANNUALE ISPP</td>
<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
<td>Rispondenza requisiti MARPOLapplicabili</td>
<td>Alle Visite periodiche, PSC</td>
</tr>
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<td>VISITA ANNUALE OIL 32</td>
<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
<td>Rispondenza requisiti ilo applicabili</td>
<td>Alle Visite periodiche, PSC</td>
</tr>
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<td>VISITA ANNUALE QUALIFICA ASCENSORE</td>
<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
<td>Rispondenza requisiti classe applicabili</td>
<td>Alle Visite periodiche, PSC</td>
</tr>
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<td>VISITA ANNUALE NNSP, MERCI PERICOLOSE</td>
<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
<td>Rispondenza requisiti SOLAS applicabili</td>
<td>Alle Visite periodiche, PSC</td>
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<td>VISITA ANNUALE TRASPORTO AUTOVEICOLI</td>
<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
<td>Rispondenza requisiti Nazionali italiani applicabili</td>
<td>Alle Visite periodiche</td>
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<td>VISITA INTERMEDIA ISSC</td>
<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
<td>Rispondenza requisiti SOLAS applicabili</td>
<td>Alle Visite periodiche, PSC</td>
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<td>VISITA INTERMEDIA SMC</td>
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<td>Amministrazione di bandiera o Recognized Organization (es RINA)</td>
<td>Rispondenza requisiti SOLAS applicabili</td>
<td>Alle Visite periodiche, PSC</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------------------------------------------------------</td>
<td>---------------------------------------------------------------</td>
<td>----------------------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>ELEMENTI SOGGETTI A MANUTENZIONE PROGRAMMATA PMS</td>
<td>interno</td>
<td>Bordo (direttore di Macchina autorizzato)</td>
<td>Attesta l’evvenuta manutenzione secondo un programma approvato dalla Classe</td>
<td>alle visite periodiche di classe</td>
</tr>
<tr>
<td>PIANO MANUTENZIONE PROGRAMMATA</td>
<td>interno</td>
<td>Bordo (direttore di Macchina autorizzato)</td>
<td>Attesta l’evvenuta manutenzione secondo un programma approvato dalla Classe</td>
<td>alle visite periodiche di classe</td>
</tr>
<tr>
<td>DIARIO MANUTENZIONI EFFETTUATE (CORRETTIVE/GUASTO) PROGRAMMATE</td>
<td>interno</td>
<td>Bordo (direttore di Macchina autorizzato)</td>
<td>Attesta l’evvenuta manutenzione secondo un programma approvato dalla Classe</td>
<td>alle visite periodiche di classe</td>
</tr>
<tr>
<td>LOG ORE MOTO PER MACCHINARIO</td>
<td>interno</td>
<td>Bordo (direttore di Macchina autorizzato)</td>
<td>Attesta l’evvenuta manutenzione secondo un programma approvato dalla Classe</td>
<td>alle visite periodiche di classe</td>
</tr>
</tbody>
</table>

\^ FAL 37/7/1

\^ Vedi http://www.interpares.org/display_file.cfm?doc=ip3_korea_dissemination_cs_park_citra-2010.pdf
M13 - e-Certificates definition (Appendix 05)

30 APRIL 2016
ANY OTHER BUSINESS

Format for electronic exchange and standard reports

Submitted by the International Association of Classification Societies (IACS)

SUMMARY

Executive summary: This document contains in its annex the latest version of IACS Recommendation No. 75 on the Format for Electronic Exchange and Standard Reports as referred to in MSC 95/21/6

Strategic direction: 4.0

High-level action: 4.0.2

Planned output: 4.0.2.1

Action to be taken: Paragraph 3

Related document: MSC 95/21/6

1 Document MSC 95/21/6 discusses the establishment of a harmonized Universal Data Exchange Format (UDEF) for Electronic Exchange and Standard Reports, and invites interested Member States to contact IACS with a view to co-sponsoring a submission to MSC 96 seeking a relevant new output to amend, or supplement, the RO Code in this regard.

2 The relevant technical issues are discussed in the latest version of IACS Recommendation No. 75 on the Format for Electronic Exchange and Standard Reports, as set out in the annex.

Action requested of the Committee

3 The Committee is invited to note the information provided in the context of its consideration of document MSC 95/21/6.

***
ANNEX

IACS Recommendation No. 75

Format for Electronic Exchange and Standard Reports

(June 2001)(Rev.1 Feb 2015 Complete revision)

Abstract:

This document details "Unified Data Exchange Format (UDEF)" for electronic exchange of class and statutory data between IACS Member Societies and flag States.
1. **Electronic Access to Class and Statutory Data**

1.1 **Introduction**

1.1.1 This document details the data requirements that have been developed to facilitate the exchange of class and statutory data by IACS Member Societies with flag State Administrations. Two means of exchange are defined in this document:

- **Electronic exchange**: Data definitions and data fields for the electronic exchange of data are detailed. The mechanism of exchange is explained below.

- **Formats and layout** standards are shown for the visual presentation of the data using an online system.

1.2 **Electronic Exchange and online viewing**

1.2.1 The societies shall not provide printed information except by special cases. It is the responsibility of individual flag States to access the information and produce any relevant reports based on the data collected.

1.2.2 Access to the information shall be at the discretion of the individual society. Each society is invited to develop and run at its server the converting software to make the society’s data compatible with the data format as described below.

1.2.3 This implementation of Unified Data Exchange Format (UDEF) will make data from all societies available and harmonized for further processing and allow arrangement of single window reporting, were any end user may collect complete and reliable data.

1.2.4 Usage of aggregating server software, based at any/some/all Member’s server(s) or at IACS server, or specially designed application software installed at the end user’s computer may provide flag States or other organizations with the complete data in single report irrelatively of a number of IACS members performing activities on behalf of the flag State.

1.2.5 The advantages UDEF may encourage IACS Members to facilitate processes of data supply for flag States and stimulate IACS for further integration of "Single Window" reporting in the IMO RO Code.

1.2.6 For the purposes of electronic exchange of data with flag State the anticipated means of exchange will be by XML files via web service. The formats of data are shown in the relevant section of the document.

1.2.7 As a temporary measure the XML file may be generated by IACS Member(s) and sent by email/ftp on single or regularly bases to flag State(s). Frequency is the subject of bilateral agreement with flag State(s).

1.2.8 Other means of data/file formats should be investigated as technology improves.

1.3 **Report formats**

1.3.1 A set of standard report formats has been developed for presenting key information on ships and management companies to flag States in a consistent manner.
1.3.2 The following report formats have been developed:

- Periodical List of Certificates Issued, listing all certificates issued by the society on behalf of the flag State along with associated survey dates.

- Periodical Report of Ship Management Company Audits, for each company, audit information is shown, giving the status of approval for the various ship types mentioned in the ISM Code, ISPS Code, MLC, the audit type and date, and the certificate date of issue and date of expiry.

- Ship Survey Status Report, this report provides basic information about a ship, together with a listing of the current survey range dates and survey status. A list of ship comments is appended to the report.

1.3.3 It is anticipated that each society would implement systems for producing reports, in the agreed format, as part of their existing corporate database systems.

1.4 Data Formats

1.4.1 All dates exchanged shall be in the form of yyyy-mm-dd (ISO 8601) as used in XML standard.

1.4.2 All numeric data exchanged shall be used without thousand separator.

1.4.3 Special characters used by individual societies, e.g. in Class Notations, which are not present in the standard character sets are to be substituted by an appropriate alternative character(s) as deemed appropriate by the individual society concerned.

1.5 Security

1.5.1 The data shall be reasonably protected. Any user's or aggregation software must be properly validated with appropriate access granted.

1.6 Reporting of ISM, ISPS, MLC Information

1.6.1 Administrations should be aware that ISM, ISPS and MLC reporting from a single RO may not be complete.

2. Electronic Exchange

2.1 Introduction

2.1.1 This document does not affect internal data processing of any IACS member and does not specify the means of exchange or requirements for server, user's or aggregation software.

2.1.2 For the UDEF implementation IACS members are invited to develop and run at their servers specific software for translating external requests and returning the selected data from their databases to the initiators of requests.
2.2 Operation

2.2.1 The external requests must operate only with the data fields named in table 1 below. The scope of data may vary on flag State’s requests, but not exceed the data fields named in table 1.

2.2.2 Some typical reports are shown in paragraph 3 – Format of reports.

Table 1

<table>
<thead>
<tr>
<th>Field</th>
<th>Mandatory</th>
<th>Type</th>
<th>Format / Max Field Size</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RO</td>
<td>Y</td>
<td>Text</td>
<td>20</td>
<td>RO may be one of the following codes: ABS=American Bureau of Shipping BV=Bureau Veritas CCS=China Classification Society DNV=Det Norske Veritas DNV-GL GL=Germanischer Lloyd KR=Korean Register of Shipping LR=Lloyd’s Register of Shipping NK=Nippon Kaiji Kyokai PRS=Polish Register of Shipping RINA=RINA Services S.p.A. RS=Russian Maritime Register of Shipping IRS=Indian Register of Shipping CRS=Croatian Register of Shipping Non-IACS members ROs may use other codes and abbreviations.</td>
</tr>
<tr>
<td>Date</td>
<td>Y</td>
<td>Date</td>
<td>yyyy-mm-dd</td>
<td>Export date</td>
</tr>
<tr>
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<td>Y</td>
<td>Number</td>
<td>2</td>
<td>Release Number of the data protocol.</td>
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<td></td>
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<td></td>
</tr>
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<td>yyyy-mm-dd</td>
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<tr>
<td>SHIP_Keel_Laid_Date</td>
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<td>Date</td>
<td>yyyy-mm-dd</td>
<td>Date of entry into class of the RO.</td>
</tr>
<tr>
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<td>IMO Number may not be available.</td>
</tr>
<tr>
<td>SHIP_Flag</td>
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<td>Text</td>
<td>3</td>
<td>ABS=American Bureau of Shipping BV=Bureau Veritas CCS=China Classification Society DNV=Det Norske Veritas DNV-GL GL=Germanischer Lloyd KR=Korean Register of Shipping LR=Lloyd’s Register of Shipping</td>
</tr>
<tr>
<td>SHIP_Classed_By</td>
<td>Y</td>
<td>Text</td>
<td>20</td>
<td>ABS=American Bureau of Shipping BV=Bureau Veritas CCS=China Classification Society DNV=Det Norske Veritas DNV-GL GL=Germanischer Lloyd KR=Korean Register of Shipping LR=Lloyd’s Register of Shipping</td>
</tr>
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<td>Field Name</td>
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<td>Text</td>
<td>Description</td>
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<td>------</td>
<td>-------------</td>
<td></td>
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<td>SHIP_Port_Of_Registry</td>
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<td>yyyy-mm-dd</td>
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<td>Number</td>
<td>20</td>
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<td>Text</td>
<td>10</td>
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</tr>
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</table>
| SHIP_General_Type_description | Y | Text | 4 | BA=Barge  
BAAC=Accommodation/pipe Laying Barge  
BADR=Dredger Barge  
BAFG=Flat Top Deck Cargo Barge  
BAFL=Flat Top Barge  
BAFW=Flat Top Oil/Water Barge  
BAHA=Hatch Barge  
BAHP=Hopper Barge  
BAJA=Jack-Up Barge  
BAOI=Oil Barge  
BAPI=Piling Barge  
BASO=Sludge/Slop Barge  
BAWO=Work Barge  
BC=Bulk Carrier  
BCOB=Ore/Bulk Carrier  
C2=Container Ship-2nd Generation  
C3=Container Ship-3rd Generation  
CC=Vehicle Carrier  
CCCV=Container Vehicle Carrier  
CCRR=RORO Car Carrier  
CF=Container Ship-Feeder  
CH=Chemical Tanker  
CL=Cable Laying Ship  
CO=Coaster  
CR=Container Ship-Roll On/Off  
CS=Container Ship  
CX=Crane Barge  
DL=Drill Ship  
DR=Dredger  
DS=Dead Ship  
FB=Ferry Boat  
FBPC=Passenger/Car Ferry  
FBPG=Passenger/Cargo Ferry  
FBVF=Passenger Vehicular Ferry  
FR=General Cargo  
FRRR=RORO Cargo  
FS=Factory Ship  
FV=Fishing Trawler  
HS=Heavy load Semi-Submersible  
IB=Icebreaker  
JU=Junk  
LA=Lash Vessel |

Non-IACS members may use other codes and abbreviations.
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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</thead>
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<td>LC</td>
<td>Landing Craft</td>
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<td>LI</td>
<td>Lighter</td>
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<td>LNG</td>
</tr>
<tr>
<td>LP</td>
<td>LPG</td>
</tr>
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<td>LU</td>
<td>Passenger Launch</td>
</tr>
<tr>
<td>LV</td>
<td>Live-Stock Vessel</td>
</tr>
<tr>
<td>NN</td>
<td>Nuclear Power Vessel</td>
</tr>
<tr>
<td>NV</td>
<td>Naval Vessel</td>
</tr>
<tr>
<td>OB</td>
<td>Oil-Bulk-Ore Carrier</td>
</tr>
<tr>
<td>OBOL</td>
<td>Oil-Gas Carrier</td>
</tr>
<tr>
<td>OR</td>
<td>Oil Rig</td>
</tr>
<tr>
<td>OT</td>
<td>Others</td>
</tr>
<tr>
<td>PM</td>
<td>Motorized Pleasure Boat</td>
</tr>
<tr>
<td>PMCB</td>
<td>Cabin Cruiser</td>
</tr>
<tr>
<td>PMCT</td>
<td>Motorized Catamaran</td>
</tr>
<tr>
<td>PMDI</td>
<td>Motorized Dinghy</td>
</tr>
<tr>
<td>PMFU</td>
<td>Motorized Funboat</td>
</tr>
<tr>
<td>PMHO</td>
<td>Motorized Hovercraft</td>
</tr>
<tr>
<td>PMHY</td>
<td>Hydrofoil</td>
</tr>
<tr>
<td>PMSB</td>
<td>Ski-Boat</td>
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<tr>
<td>PMSP</td>
<td>Speedboat</td>
</tr>
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<td>Motorized Trimaran</td>
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<td>Rowing Boat</td>
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<td>Passenger Hovercraft</td>
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<td>SA</td>
<td>Salvage Vessel</td>
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<td>SM</td>
<td>Sampan</td>
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<tr>
<td>SMBG</td>
<td>Big Motor Sampan</td>
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<tr>
<td>SMBI</td>
<td>Big Non-Motorized Sampan</td>
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<td>SMBM</td>
<td>Bumboat</td>
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<td>Motor Sampan</td>
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<td>Rowing Sampan</td>
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<td>SMTO</td>
<td>Tongkang</td>
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<tr>
<td>SMTW</td>
<td>Chinese Twako</td>
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<tr>
<td>SV</td>
<td>Supply Vessel</td>
</tr>
<tr>
<td>SVOF</td>
<td>Offshore Supply Vessel</td>
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<tr>
<td>TA</td>
<td>Tanker</td>
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<tr>
<td>TABU</td>
<td>Bunker Tanker</td>
</tr>
<tr>
<td>TACO</td>
<td>Crude Oil Tanker</td>
</tr>
<tr>
<td>TALG</td>
<td>Liquefied Gas Carrier</td>
</tr>
<tr>
<td>TAP1</td>
<td>Petroleum Product Tanker (&gt;=60c)</td>
</tr>
<tr>
<td>TAP2</td>
<td>Petroleum Product Tanker (&lt;60c)</td>
</tr>
<tr>
<td>TAPC</td>
<td>Petroleum/Chemical Tanker</td>
</tr>
<tr>
<td>Taul</td>
<td>ULCC</td>
</tr>
<tr>
<td>TAVL</td>
<td>VLCC</td>
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<tr>
<td>TAWD</td>
<td>Wooden Bunker Craft</td>
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<tr>
<td>TS</td>
<td>Training Ship</td>
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<td>Field</td>
<td>Type</td>
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</tr>
<tr>
<td>SHIP_CERTIFICATE_Issued_By</td>
<td>Y</td>
</tr>
<tr>
<td>SHIP_CERTIFICATE_Code</td>
<td>Y</td>
</tr>
<tr>
<td>MSC 95/INF.13</td>
<td>Annex, page 9</td>
</tr>
<tr>
<td>---------------</td>
<td>---------------</td>
</tr>
<tr>
<td><strong>SCN</strong> = Cargo Ship Safety Construction Certificate (Non-Convention Ships)</td>
<td></td>
</tr>
<tr>
<td><strong>SE</strong> = Cargo Ship Safety Equipment Certificate</td>
<td></td>
</tr>
<tr>
<td><strong>SHE</strong> = Cargo Ship Safety Equipment Certificate Harmonized</td>
<td></td>
</tr>
<tr>
<td><strong>SEN</strong> = Cargo Ship Safety Equipment Certificate (Non-Convention Ships)</td>
<td></td>
</tr>
<tr>
<td><strong>SR</strong> = Cargo Ship Safety Radio Certificate</td>
<td></td>
</tr>
<tr>
<td><strong>SRH</strong> = Cargo Ship Safety Radio Certificate Harmonized</td>
<td></td>
</tr>
<tr>
<td><strong>SRN</strong> = Cargo Ship Safety Radio Certificate (Non-Convention Ships)</td>
<td></td>
</tr>
<tr>
<td><strong>BCH</strong> = Certificate of Fitness for Carriage of Dangerous Chemicals in Bulk (BCH Code)</td>
<td></td>
</tr>
<tr>
<td><strong>GC</strong> = Certificate of Fitness for Carriage of Liquefied Gases in Bulk (GC Code)</td>
<td></td>
</tr>
<tr>
<td><strong>CH</strong> = Classification Certificate (Hull)</td>
<td></td>
</tr>
<tr>
<td><strong>CM</strong> = Classification Certificate (Machinery)</td>
<td></td>
</tr>
<tr>
<td><strong>CAS</strong> = Conditional Assessment Scheme</td>
<td></td>
</tr>
<tr>
<td><strong>CA</strong> = Crew Accommodation Certificate</td>
<td></td>
</tr>
<tr>
<td><strong>DSC</strong> = Dynamically Supported Craft Construction and Equipment Certificate</td>
<td></td>
</tr>
<tr>
<td><strong>DOC</strong> = Document of Compliance (ISM Code)</td>
<td></td>
</tr>
<tr>
<td><strong>IDOC</strong> = Interim Document of Compliance (ISM Code)</td>
<td></td>
</tr>
<tr>
<td><strong>HSCS</strong> = High-Speed Craft Safety Certificate</td>
<td></td>
</tr>
<tr>
<td><strong>IAPP</strong> = International Air Pollution Prevention Certificate</td>
<td></td>
</tr>
<tr>
<td><strong>IBC</strong> = International Certificate of Fitness for Dangerous Chemicals in Bulk (IBC Code)</td>
<td></td>
</tr>
<tr>
<td><strong>IGC</strong> = International Certificate of Fitness for Carriage of Liquefied Gases in Bulk (IGC Code)</td>
<td></td>
</tr>
<tr>
<td><strong>ILL</strong> = International Load Line Certificate</td>
<td></td>
</tr>
<tr>
<td><strong>IOPP</strong> = International Oil Pollution Prevention Certificate</td>
<td></td>
</tr>
<tr>
<td><strong>NLS</strong> = International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk (NLS Certificate)</td>
<td></td>
</tr>
<tr>
<td><strong>ISPP</strong> = International Sewage Pollution Prevention Certificate</td>
<td></td>
</tr>
<tr>
<td><strong>ISS</strong> = International Ship Security Certificate</td>
<td></td>
</tr>
<tr>
<td><strong>IISS</strong> = Interim International Ship Security Certificate</td>
<td></td>
</tr>
<tr>
<td><strong>IT</strong> = International Tonnage Certificate</td>
<td></td>
</tr>
<tr>
<td><strong>MODU</strong> = Mobile Offshore Drilling Unit Safety Certificate</td>
<td></td>
</tr>
<tr>
<td><strong>PSS</strong> = Passenger Ship Safety Certificate</td>
<td></td>
</tr>
<tr>
<td><strong>SMC</strong> = Safety Management Certificate (ISM Code)</td>
<td></td>
</tr>
<tr>
<td><strong>ISMC</strong> = Interim Safety Management Certificate (ISM Code)</td>
<td></td>
</tr>
<tr>
<td><strong>SAPP</strong> = Singapore Air Pollution Prevention Certificate</td>
<td></td>
</tr>
<tr>
<td><strong>SLL</strong> = Singapore Load Line Certificate</td>
<td></td>
</tr>
<tr>
<td><strong>SOPP</strong> = Singapore Oil Pollution Prevention Certificate</td>
<td></td>
</tr>
<tr>
<td><strong>ST</strong> = Singapore Tonnage Certificate</td>
<td></td>
</tr>
<tr>
<td>Field</td>
<td>Type</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>SPSS</td>
<td></td>
</tr>
<tr>
<td>ML</td>
<td></td>
</tr>
<tr>
<td>IML</td>
<td></td>
</tr>
<tr>
<td>DOCDG</td>
<td></td>
</tr>
<tr>
<td>INF</td>
<td></td>
</tr>
<tr>
<td>OTHER</td>
<td></td>
</tr>
<tr>
<td>SHIP_CERTIFICATE_ValidType</td>
<td>Y</td>
</tr>
<tr>
<td>SHIP_CERTIFICATE_Category</td>
<td>Y</td>
</tr>
<tr>
<td>SHIP_CERTIFICATE_Description</td>
<td>N</td>
</tr>
<tr>
<td>SHIP_CERTIFICATE_Issue_Date</td>
<td>Y</td>
</tr>
<tr>
<td>SHIP_CERTIFICATE_Expiry_Date</td>
<td>N</td>
</tr>
<tr>
<td>SHIP_CERTIFICATE_Declaration_Date</td>
<td>N</td>
</tr>
<tr>
<td>SHIP_CERTIFICATE_Declaration_Place</td>
<td>N</td>
</tr>
<tr>
<td><strong>SURVEYS /AUDITS</strong></td>
<td><strong>Y</strong></td>
</tr>
<tr>
<td>---------------------</td>
<td>-------</td>
</tr>
<tr>
<td>SHIP_SURVEY_Code</td>
<td></td>
</tr>
<tr>
<td>SHIP_SURVEY_Type</td>
<td></td>
</tr>
</tbody>
</table>

See the SHIP_CERTIFICATE_Code. For the class surveys this shall be "CH" or "CM".

For statutory surveys SHIP_SURVEY_Type must be one of the following:
- A=Annual survey, annual survey or periodical inspection;
- AD=Additional/Occasional survey;
- B=Inspection of the outside of the ship’s bottom (dry);
- W=Inspection of the outside of the ship’s bottom (iws);
- T=Tailshaft (They could be more than one: T1, T2, etc);
- Bo=Boiler (They could be more than one: Bo1, Bo2, etc);
- I=Initial survey;
- IN=Intermediate survey;
- P=Periodical survey;
- R=Renewal survey;
- Int=Interim /pre-audit /pre-verification (for ISM, ISPS, MLC certificates);
For classification surveys SHIP_SURVEY_Type will be in accordance with the rules, regulations and practice of the particular classification society which has classed the ship.

SHIP_SURVEY_Description Y Text 120 The class society specific description.

<table>
<thead>
<tr>
<th><strong>LAST</strong></th>
<th><strong>Y</strong></th>
<th><strong>Date</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>SHIP_SURVEY_Held_Date</td>
<td></td>
<td>yyyy-mm-dd</td>
</tr>
<tr>
<td>SHIP_SURVEY_PLACE_Held</td>
<td></td>
<td>Text 5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>NEXT</strong></th>
<th><strong>Y</strong></th>
<th><strong>Date</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>SHIP_SURVEY_Due_Date</td>
<td></td>
<td>yyyy-mm-dd</td>
</tr>
<tr>
<td>SHIP_SURVEY_Postponement_Date</td>
<td></td>
<td>yyyy-mm-dd</td>
</tr>
</tbody>
</table>

SHIP_SURVEY_Status Y Text 1 To be filled in only for survey not yet carried out or completed. It would be one of the following:
- D=the current date is within the survey range dates.
- O=the current date is after the survey range to date.
- P=the survey has been started but is not yet complete.
The contents of this field may be calculated at run-time.

SHIP_SURVEY_RANGE_FROM_DATE N Date yyyy-mm-dd
SHIP_SURVEY_RANGE_TO_DATE N Date yyyy-mm-dd
<table>
<thead>
<tr>
<th>Field</th>
<th>Required</th>
<th>Type</th>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHIP_COMMENT_Type</td>
<td>Y</td>
<td>Text</td>
<td>1</td>
<td>It would be normally one of the following: M=&quot;Memorandum&quot; R=&quot;Recommendation&quot;</td>
</tr>
<tr>
<td>SHIP_COMMENT_Certificates</td>
<td>N</td>
<td>Text</td>
<td>500</td>
<td>List of certificates, separated by comma, linked to the Comment Mandatory only for &quot;Recommendation&quot;.</td>
</tr>
<tr>
<td>SHIP_COMMENT_Date_Issued</td>
<td>Y</td>
<td>Date</td>
<td>yyyy-mm-dd</td>
<td>Location where the survey was undertaken which resulted in the imposition of the comment. UNECE code: <a href="http://www.unece.org/cefact/locode/service/location.html">http://www.unece.org/cefact/locode/service/location.html</a></td>
</tr>
<tr>
<td>SHIP_COMMENT_Date_Issued</td>
<td>N</td>
<td>Date</td>
<td>yyyy-mm-dd</td>
<td>Not Applicable in case of &quot;Memorandum&quot;. Normally used for specifying a due date, but may be linked to another survey (see the field below). When both are present it means the first between (SHIP_COMMENT_Due_Date and SHIP_COMMENT_ExpireSurvey).</td>
</tr>
<tr>
<td>SHIP_COMMENT_Due_Date</td>
<td>N</td>
<td>Date</td>
<td>yyyy-mm-dd</td>
<td>Not Applicable in case of &quot;Memorandum&quot;. Normally: A=&quot;Active&quot; - the comment is still applicable. P=&quot;Postponed&quot; - the comment is still applicable and the due date/expiry survey have been changed. O=&quot;Overdue&quot; - the comment is still applicable and is also overdue for implementation.</td>
</tr>
<tr>
<td>SHIP_COMMENT_ExpireSurvey</td>
<td>N</td>
<td>Text</td>
<td>500</td>
<td>Not Applicable in case of &quot;Memorandum&quot;. SHIP_CERTIFICATE_Code and SHIP_SURVEY_Type.</td>
</tr>
<tr>
<td>SHIP_COMMENT_Status</td>
<td>N</td>
<td>Text</td>
<td>1</td>
<td>Not Applicable in case of &quot;Memorandum&quot;. Normally: A=&quot;Active&quot; - the comment is still applicable. P=&quot;Postponed&quot; - the comment is still applicable and the due date/expiry survey have been changed. O=&quot;Overdue&quot; - the comment is still applicable and is also overdue for implementation.</td>
</tr>
<tr>
<td>SHIP_COMMENT_Postponed_Date</td>
<td>N</td>
<td>Date</td>
<td>yyyy-mm-dd</td>
<td>Not Applicable in case of &quot;Memorandum&quot;. Due date after the last postponement.</td>
</tr>
<tr>
<td>SHIP_COMMENT_Postponed_ExpireSurvey</td>
<td>N</td>
<td>Text</td>
<td>500</td>
<td>Not Applicable in case of &quot;Memorandum&quot;. Expire survey after the last postponement.</td>
</tr>
<tr>
<td>SHIP_COMMENT_ISM_CODE</td>
<td>N</td>
<td>Text</td>
<td>5</td>
<td>Applicable only in case of ISM /ISPS /MLC Comments. Chapter/ Paragraph number of the Regulation for ISM /ISPS /MLC.</td>
</tr>
<tr>
<td>SHIP_COMMENT_Text_Item</td>
<td>Y</td>
<td>Integer</td>
<td>2</td>
<td>If the comment text is longer than 4000, it is necessary to split in items. This field counts and orders the items.</td>
</tr>
<tr>
<td>SHIP_COMMENT_Text</td>
<td>Y</td>
<td>Text</td>
<td>4000</td>
<td></td>
</tr>
</tbody>
</table>

**COMPANY**

<table>
<thead>
<tr>
<th>Field</th>
<th>Required</th>
<th>Type</th>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPANY_Management_ID</td>
<td>Y</td>
<td>Text</td>
<td>20</td>
<td>Ship Management Company ID is the unique identifier assigned by the classification society to identify the ship management company.</td>
</tr>
<tr>
<td>COMPANY_IMO_Number</td>
<td>N</td>
<td>Integer</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>COMPANY_Name</td>
<td>Y</td>
<td>Text</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>COMPANY_Address</td>
<td>Y</td>
<td>Text</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>COMPANY_MLC</td>
<td>N</td>
<td>Text</td>
<td>1</td>
<td>Company takes responsibility on MLC2006</td>
</tr>
</tbody>
</table>

https://edocs.imo.org/Final Documents/English/MSC 95-INF.13 (E).docx
<table>
<thead>
<tr>
<th>Responsibility</th>
<th></th>
<th>Y/N.</th>
</tr>
</thead>
</table>

**ISM DOC CERTIFICATES**

<table>
<thead>
<tr>
<th>COMPANY_CERTIFICATE_ID</th>
<th>Y</th>
<th>Text</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPANY_CERTIFICATE_Flag</td>
<td>N</td>
<td>Text</td>
<td>3</td>
</tr>
</tbody>
</table>

A company may be issued with a DOC to manage ships of a certain type by one or more flag administrations. Flag code utilized shall be in accordance with ISO3166 with additional qualification where required to identify a particular flag State.

<table>
<thead>
<tr>
<th>COMPANY_CERTIFICATE_Issued_By</th>
<th>Y</th>
<th>Text</th>
<th>20</th>
</tr>
</thead>
</table>

Name of the organization which issued the certificate. If this is the IACS classification society, then the code defined in SHIP_Classed_by is used.

<table>
<thead>
<tr>
<th>COMPANY_CERTIFICATE_Name</th>
<th>Y</th>
<th>Text</th>
<th>5</th>
</tr>
</thead>
</table>

Certificate name must be:
DOC=Document of compliance
Other certificate types may be defined in the future.

<table>
<thead>
<tr>
<th>COMPANY_CERTIFICATE_DOC_Type</th>
<th>Y</th>
<th>Text</th>
<th>1</th>
</tr>
</thead>
</table>

DOC_type must be one of the following:
V=Voluntary
C=Convention

<table>
<thead>
<tr>
<th>COMPANY_CERTIFICATE_DOC Validity_Type</th>
<th>Y</th>
<th>Text</th>
<th>1</th>
</tr>
</thead>
</table>

DOC_status must be one of the following:
F=Full
I=Interim
S=Short-term

<table>
<thead>
<tr>
<th>COMPANY_CERTIFICATE_Issue_Date</th>
<th>Y</th>
<th>Date</th>
<th>yyyy-mm-dd</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>COMPANY_CERTIFICATE_Expire_Date</th>
<th>Y</th>
<th>Date</th>
<th>yyyy-mm-dd</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>COMPANY_CERTIFICATE_Ship_Types</th>
<th>Y</th>
<th>Text</th>
<th>30</th>
</tr>
</thead>
</table>

This is a list of ship types, separated by commas.
The possible values are:
BC=Bulk carrier
CH=Cargo high speed craft
CT=Chemical tanker
GC=Gas carrier
MO=Mobile offshore drilling unit
OT=Oil tanker
OC=Other cargo ship
PH=Passenger high speed craft
PS=Passenger ship
PR=Passenger ferry (ro-ro)

---

2.2.3 The "SHIPS" fields contain the information that is needed to describe a ship.

2.2.4 The "SHIP_CERTIFICATES" fields contain information about the classification certificates that have been issued for the ship by the Society and the statutory certificates that have been issued on behalf of the flag State; one ship may have many certificates.

2.2.5 The "SHIP_SURVEYS" fields contain the information that is needed to identify surveys/audits carried out on ships/companies; one certificate may have many surveys/audits.

2.2.6 The "SHIP_COMMENTS" fields contain pertinent information about the ship that is of interest to a Societies surveyor or flag administration; one ship may have many comments.

https://edocs.imo.org/Final Documents/English/MSC 95-INF.13 (E).docx
2.2.7 The "COMPANY" fields contain the information that is needed to describe a Ship Management Company.

2.2.8 Important note: Data could contain a record for a company without containing a record for a ship, e.g. where ship is classed by a different society and also ISM SMC certificate is issued by a different society.

2.2.9 The "COMPANY_CERTIFICATES" fields contain information about the certificates issued to the ship management company; a company may have many certificates.

2.3 Data collection and processing

2.3.1 All data is to be placed in the XML file(s) for UDEF transmission.

2.3.2 At least two main types of data are to be formed depending on requests:

- Data table (Tier 1, this is to start testing of UDEF and to work out further development of the harmonized UDEF for the Tier 2);
- Data string (Tier 2).

2.3.3 Data table is primarily intended to facilitate data supply from each RO to flag Administration and provides general information about a number of vessels (all vessels) flying the flag and requests no aggregation of data between ROs. It may start with at least only one RO and one flag State involved.

2.3.4 The following diagram shows the relations between the different tables and anticipates a view of the possible data organization in the XML File.

2.3.5 The description of the tables is described in table 2.
Table 2

<table>
<thead>
<tr>
<th>Table name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENERAL_DATA</td>
<td>Root of the datafile containing general information about the RO in charge</td>
</tr>
<tr>
<td>CLASSED_SHIPS</td>
<td>General data of the Classed Ships.</td>
</tr>
<tr>
<td>MMS_SHIPS</td>
<td>General data of ships, not classed by the RO, for which the RO manages at</td>
</tr>
<tr>
<td></td>
<td>least one certification between ISM SMC, ISPS and MLC.</td>
</tr>
<tr>
<td>ISM_COMPANIES</td>
<td>General data of companies for which the RO manages the ISM DOC</td>
</tr>
<tr>
<td></td>
<td>certification.</td>
</tr>
<tr>
<td>CERTIFICATES</td>
<td>Data of the certificates/documents issued by the RO for a ship and not yet</td>
</tr>
<tr>
<td></td>
<td>withdrawn or withdrawn in the last month.</td>
</tr>
<tr>
<td>ISM DOC CERTIFICATES</td>
<td>Data of the ISM DOC issued by the RO for a company and not yet withdrawn</td>
</tr>
<tr>
<td></td>
<td>or withdrawn in the last month.</td>
</tr>
<tr>
<td>SURVEYS / AUDIT</td>
<td>Type of surveys or type of audits for each certificate.</td>
</tr>
<tr>
<td>LAST</td>
<td>Data of the last survey carried out on ships for each type of survey in the</td>
</tr>
<tr>
<td></td>
<td>current certification period, if it exists.</td>
</tr>
<tr>
<td>NEXT</td>
<td>Data of the next surveys due for each type of survey, if already scheduled.</td>
</tr>
<tr>
<td>COMMENTS</td>
<td>Data of &quot;Condition of Class&quot;, &quot;Statutory Recommendation&quot; and &quot;Memorandum&quot;.</td>
</tr>
</tbody>
</table>

2.3.6 Data string is intended to supply the end user with complete data about the ship(s). The data is collected from all available sources (e.g.: Class=RO1, Statutory=RO2, ISM=RO3, MLC=RO4, e.t.c.). This may be realized effectively when the UDEF starts at least among all (or majority) of IACS members.

2.4 Special restrictions and comments

2.4.1 Some data (like SHIP_Class_Notation, SHIP_Gross_Tons, SHIP_Deadweight) aggregated from different ROs may vary and should be provided by the RO were the ship is originally classed (NOT ISM, MLC e.t.c) to avoid complaints.

2.4.2 The same data shall not be repeated in the same XML file to avoid its increasing (e.g. data relevant to ISM Companies (certificates and audits) should be extracted in the XML file only once).

3. Format of Reports for Printed Exchange and Online Viewing

3.1 Introduction

3.1.1 Three report layouts are typically to be used by class societies when reporting to flag States.

3.1.2 The following reports for web access have been defined:

- Periodical List of Certificates Issued (optionally for a particular period);
- Periodical Report of Ship Management Company Audits;
- Ship Survey Status Report.

3.1.3 Text printed italics show the field from which the data originates.

3.1.4 For the cases if reports are printed for/by the flag States A4 landscape format looks preferable. The layout of titles and data items should be preserved.
3.1.5 On requests by web services all data requested should be placed in the XML file in accordance with XML file manner by the server software of the IACS Member and returned to flag State.

3.1.6 Flag States may use any compatible software for XML processing and making reports in accordance with their own requirements.

3.2 Periodical List of Certificates Issued

3.2.1 The purpose of this report is to list the statutory certificates issued and surveys that have been carried out by a society on vessels that are sailing under a particular flag State.

3.2.2 The report shall have the following layout:

<table>
<thead>
<tr>
<th>Periodical List of Certificates Issued</th>
<th>Period:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vessel Header:</td>
<td></td>
</tr>
<tr>
<td>IMO No:</td>
<td>Class No:</td>
</tr>
<tr>
<td>Vessel Name:</td>
<td></td>
</tr>
<tr>
<td>Data:</td>
<td></td>
</tr>
<tr>
<td>Certificate Code</td>
<td>Type</td>
</tr>
<tr>
<td>Code</td>
<td>Type</td>
</tr>
<tr>
<td>…</td>
<td>…</td>
</tr>
<tr>
<td>Code</td>
<td>Type</td>
</tr>
</tbody>
</table>

Page Header: Periodical List of Certificates Issued

Page Footer: Page X of XX

Report Footer: IACS Standardized Report of Ship Surveys Report Name; Report Date; Report version: XXXX

3.2.3 Users may obtain the information in this report in three ways:

- download the data for all ships in a period;
- view online to find the information relating to a particular vessel in a period;
- view online for all ships in a period for printing.

3.2.4 This report shall not include any data for CLASS surveys, i.e. \( \text{SHIP\_CERTIFICATE\_Code <> "CLASS"} \)

3.2.5 The Page Header shall show the title of the report and the period that the data it presents relates to.

3.2.6 For each vessel in the report the following information is provided.

IMO Number = \( \text{SHIP\_IMO\_Number} \)

Class Number = \( \text{SHIP\_Class\_Number} \)

Vessel Name = \( \text{SHIP\_Name} \)

3.2.7 For browsing/printing each vessel should start on a new page.
3.2.8 For each vessel shown the following data should be presented:

- Code=SHIP_CERTIFICATE_Code
- Type=SHIP_CERTIFICATE_Type
- Description=SHIP_CERTIFICATE_Description
- Expiry=SHIP_CERTIFICATE_Expiry_Date
- ID=SHIP_CERTIFICATE_ID

3.2.9 For each certificate the list of surveys carried out should be presented:

- Type=SHIP_SURVEY_Type
- Date=SHIP_SURVEY_Held_Date
- Place=SHIP_SURVEY_Place_Held

3.2.10 Each page should display the date the report is printed and the current number page of the report.

3.2.11 The report shall have a footer which lists any abbreviations used in the report. These shall be in line with the codes described previously in this document.

3.2.12 Additionally, the report should state "IACS Standardized Report of Ship Surveys Report Name, Report Date, Report version..." at the end.

### 3.3 Periodical Report of Ship Management Company Audits

3.3.1 The purpose of this report is to list any audits of Ship Management Companies that have been carried out by the reporting classification society.

<table>
<thead>
<tr>
<th>Page Header:</th>
<th>Periodical Report of Ship Management Company Audits</th>
<th>Period:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company Header:</td>
<td>Company Name:</td>
<td>Address:</td>
</tr>
<tr>
<td>Data:</td>
<td>Certificate</td>
<td>Audit</td>
</tr>
<tr>
<td>Name</td>
<td>Type</td>
<td>Status</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Name</td>
<td>Type</td>
<td>Status</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Page Footer:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Page X of XX</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Report Footer:</th>
</tr>
</thead>
<tbody>
<tr>
<td>IACS Standardized Report of Company Audit</td>
</tr>
<tr>
<td>Report Name; Report Date; Report version: XXXX</td>
</tr>
</tbody>
</table>

3.3.2 Users may obtain the information in this report in three ways:

1. download the data for all companies in a period;
3.3.3 The Page Header shall show the title of the report and the period that the data it presents relates to.

3.3.4 For each company the following information shall be presented:

Company Name=COMPANY_Name
Address=COMPANY_Address

3.3.5 For printing each company should start on a new page.

3.3.6 For each company details of its current certificates should be displayed:

Name= COMPANY_CERTIFICATE_Name
Type=COMPANY_CERTIFICATE_DOC_Type
Status= COMPANY_CERTIFICATE_DOC_Status
Date=COMPANY_CERTIFICATE_Issue_Date
Expiry=COMPANYCERTIFICATE_Expiry_Date
Ship Types=COMPANY_CERTIFICATE_Ship_Types_Approved

3.3.7 Each page should display the date the report is printed and the current number page of the report.

3.3.8 The report shall have a footer which lists any abbreviations used in the report. These shall be in line with the codes described previously in this document.

3.3.9 Additionally, the report should state "IACS Standardized Report of Company Audit Report Name, Report Date, Report version..." at the end.

3.4 Ship Survey Status Report

3.4.1 The purpose of this report is to provide a flag State with a concise report of the current survey and certificate status of a vessel. It lists when all surveys are next due.

<table>
<thead>
<tr>
<th>Page Header:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ship Survey Status Report</td>
</tr>
<tr>
<td>Vessel Header:</td>
</tr>
<tr>
<td>Vessel Name:</td>
</tr>
<tr>
<td>Classed by:</td>
</tr>
<tr>
<td>Class No:</td>
</tr>
<tr>
<td>Data:</td>
</tr>
<tr>
<td>Certificate</td>
</tr>
<tr>
<td>Code</td>
</tr>
<tr>
<td>Code</td>
</tr>
<tr>
<td>...</td>
</tr>
</tbody>
</table>
3.4.2 Users can obtain the information in this report in the following ways:

- View online to find the information relating to a particular vessel.

3.4.3 The Page Header shall show the title of the report.

3.4.4 For the vessel displayed the following information shall be presented:

Vessel Name=SHIP_Name

IMO No=SHIP_IMO_Number

Flag=SHIP_Flag

Port of Registry=SHIP_Port_Of_Registry

Classed by=SHIP_Classed_By

Class Notation=SHIP_Class_Notation

Gross Tons=SHIP_Gross_Tons

Official Number=SHIP_Official_Number

Class No=SHIP_Class_Number

Ship Type=SHIP_General_Type_Description

Deadweight=SHIP_Deadweight

Call Sign: SHIP_Call_Sign

Code=SHIP_CERTIFICATE_Code

Type=SHIP_CERTIFICATE_Type

Description=SHIP_CERTIFICATE_Description
Expiry=SHIP_CERTIFICATE_Expiry_Date
ID=SHIP_CERTIFICATE_ID
Code=SHIP_SURVEY_Code
Type=SHIP_SURVEY_Type
Description=SHIP_SURVEY_Description
Last Survey Date=SHIP_SURVEY_Held_Date
Place Held=SHIP_SURVEY_Place_Held
Due Date=SHIP_SURVEY_Due_Date
Date1=SHIP_SURVEY_Range_From_Date
Date2=SHIP_SURVEY_Range_To_Date
Status=SHIP_SURVEY_Status
Comment Type=SHIP_COMMENT_Type
Date Issued=SHIP_COMMENT_Date_Issued
Place Issued=SHIP_COMMENT_Place_Issued
Due Date=SHIP_COMMENT_Comment_Due_Date
Status=SHIP_COMMENT_Status
Text=SHIP_COMMENT_Text

3.4.5 Each page should display the date the report is printed and the current number page of the report.

3.4.6 The report shall have a footer which lists any abbreviations used in the report. These shall be in line with the codes described previously in this document.

3.4.7 Additionally, the report should state "IACS Standardized Report of Ship Survey Stats, Report Name, Report Date, Report version..." at the end.
M13 - e-Certificates definition (Appendix 06)

30 APRIL 2016
<table>
<thead>
<tr>
<th>Field</th>
<th>Mandatory</th>
<th>Type</th>
<th>at/max field</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>RO</td>
<td>Y</td>
<td>Text</td>
<td>20</td>
<td>RO may be one of the following codes:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ABS=American Bureau of Shipping</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>BV=Bureau Veritas</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CCS=China Classification Society</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DNV=Det Norske Veritas</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DNV-GL</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>GL=Germanischer Lloyd</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>KR=Korean Register of Shipping</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>LR=Lloyd's Register of Shipping</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NK=Nippon Kaiji Kyokai</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PRS=Polish Register of Shipping</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>RINA=RINA Services S.p.A.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>RS=Russian Maritime Register of Shipping</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>IRS=Indian Register of Shipping</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CRS=Croatian Register of Shipping</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Non-IACS members ROs may use other codes and abbreviations.</td>
</tr>
<tr>
<td>Date</td>
<td>Y</td>
<td>Date</td>
<td>yyyy-mm-dd</td>
<td>Export date</td>
</tr>
<tr>
<td>Release</td>
<td>Y</td>
<td>Number</td>
<td>2</td>
<td>Release Number of the data protocol.</td>
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<tr>
<td>SHIP_Name</td>
<td>Y</td>
<td>Text</td>
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<td></td>
</tr>
<tr>
<td>IP_Build_Date</td>
<td>Y</td>
<td>Date</td>
<td>yyyy-mm-dd</td>
<td></td>
</tr>
<tr>
<td><em>Keel_Laid</em></td>
<td>Y</td>
<td>Date</td>
<td>yyyy-mm-dd</td>
<td></td>
</tr>
<tr>
<td>Class_Entry</td>
<td>Y</td>
<td>Date</td>
<td>yyyy-mm-dd</td>
<td>Date of entry into class of the RO.</td>
</tr>
<tr>
<td>P.IMO_Num</td>
<td>N</td>
<td>Integer</td>
<td>7</td>
<td>IMO Number may not be available.</td>
</tr>
<tr>
<td>SHIP_Flag</td>
<td>Y</td>
<td>Text</td>
<td>3</td>
<td>Country Name in accordance with ISO 3166-1 alpha-3.</td>
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<tr>
<td>IP_Classed_</td>
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<td>Text</td>
<td>20</td>
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<tr>
<td>SHIP_Clas_num</td>
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<td>Text</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Port_Of_Rep</td>
<td>N</td>
<td>Text</td>
<td>5</td>
<td>Port Name in accordance with UNECE code:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><a href="http://www.unece.org/cefact/locode/service/loc">http://www.unece.org/cefact/locode/service/loc</a></td>
</tr>
<tr>
<td>Field</td>
<td>Type</td>
<td>Description</td>
<td></td>
<td></td>
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<td>-----------------------------------------------------------------------------</td>
<td></td>
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</tr>
<tr>
<td>Date Of Registry</td>
<td>N</td>
<td>Date yy-mm-dd</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Port Of Registry</td>
<td>N</td>
<td>Port Name in accordance with UNECE code: <a href="http://www.unece.org/cefact/locode/service/locates.html">http://www.unece.org/cefact/locode/service/locates.html</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Registry Number</td>
<td>N</td>
<td>Number of registration in the Port Registry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Call Sign</td>
<td>N</td>
<td>Text</td>
<td></td>
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</tr>
<tr>
<td>General Type Description</td>
<td>Y</td>
<td>Text</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Descriptions:**

- BA = Barge
- BAAC = Accommodation/Pipe Laying Barge
- BADR = Dredger Barge
- BAFG = Flat Top Deck Cargo Barge
- BAFL = Flat Top Barge
- BAFW = Flat Top Oil/Water Barge
- BAH = Hatch Barge
- BAH = Hopper Barge
- BAJA = Jack-Up Barge
- BAOI = Oil Barge
- BAPI = Piling Barge
- BASO = Sludge/Slop Barge
- BAWO = Work Barge
- BC = Bulk Carrier
- BCOB = Ore/Bulk Carrier
- C2 = Container Ship-2nd Generation
- C3 = Container Ship-3rd Generation
- CC = Vehicle Carrier
- CCCV = Container Vehicle Carrier
- CCRR = RORO Car Carrier
- CF = Container Ship-Feeder
- CH = Chemical Tanker
- CL = Cable Laying Ship
- CO = Coaster
- CR = Container Ship-Roll On/Off
- CS = Container Ship
- CX = Crane Barge
- DL = Drill Ship
- DR = Dredger
- DS = Dead Ship
- FB = Ferry Boat
- FBPC = Passenger/Car Ferry
- FBPG = Passenger/Cargo Ferry
- FBVF = Passenger Vehicular Ferry
- FR = General Cargo
- FRRR = RORO Cargo
- FS = Factory Ship
- FV = Fishing Trawler
- HS = Heavy load Semi-Submersible
- IB = Icebreaker
- JU = Junk
- LA = Lash Vessel
- LC = Landing Craft
- LI = Lighter
- LN = LNG
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LP</td>
<td>LPG</td>
</tr>
<tr>
<td>LU</td>
<td>Passenger Launch</td>
</tr>
<tr>
<td>LV</td>
<td>Live-Stock Vessel</td>
</tr>
<tr>
<td>NN</td>
<td>Nuclear Power Vessel</td>
</tr>
<tr>
<td>NV</td>
<td>Naval Vessel</td>
</tr>
<tr>
<td>OB</td>
<td>Oil-Bulk-Ore Carrier</td>
</tr>
<tr>
<td>OBOL</td>
<td>Oil-Gas Carrier</td>
</tr>
<tr>
<td>OR</td>
<td>Oil Rig</td>
</tr>
<tr>
<td>OT</td>
<td>Others</td>
</tr>
<tr>
<td>PM</td>
<td>Motorized Pleasure Boat</td>
</tr>
<tr>
<td>PMCB</td>
<td>Cabin Cruiser</td>
</tr>
<tr>
<td>PMCT</td>
<td>Motorized Catamaran</td>
</tr>
<tr>
<td>PMDI</td>
<td>Motorized Dinghy</td>
</tr>
<tr>
<td>PMFU</td>
<td>Motorized Funboat</td>
</tr>
<tr>
<td>PMHO</td>
<td>Motorized Hovercraft</td>
</tr>
<tr>
<td>PMHY</td>
<td>Hydrofoil</td>
</tr>
<tr>
<td>PMSB</td>
<td>Ski-Boat</td>
</tr>
<tr>
<td>PMSP</td>
<td>Speedboat</td>
</tr>
<tr>
<td>PMTR</td>
<td>Motorized Trimaran</td>
</tr>
<tr>
<td>PR</td>
<td>Rowing Boat</td>
</tr>
<tr>
<td>PRCA</td>
<td>Canoe</td>
</tr>
<tr>
<td>PRDI</td>
<td>Rowing Dinghy</td>
</tr>
<tr>
<td>PRFU</td>
<td>Rowing Funboat</td>
</tr>
<tr>
<td>PS</td>
<td>Sailing Boat</td>
</tr>
<tr>
<td>PSCT</td>
<td>Catamaran</td>
</tr>
<tr>
<td>PSDI</td>
<td>Sailing Dinghy</td>
</tr>
<tr>
<td>PSFU</td>
<td>Sailing Funboat</td>
</tr>
<tr>
<td>PSTR</td>
<td>Trimaran</td>
</tr>
<tr>
<td>PT</td>
<td>Parcel Tanker</td>
</tr>
<tr>
<td>PV</td>
<td>Passenger Vessel</td>
</tr>
<tr>
<td>PVHO</td>
<td>Passenger Hovercraft</td>
</tr>
<tr>
<td>RE</td>
<td>Reefer Vessel</td>
</tr>
<tr>
<td>RV</td>
<td>Research/Survey Vessel</td>
</tr>
<tr>
<td>SA</td>
<td>Salvage Vessel</td>
</tr>
<tr>
<td>SC</td>
<td>Semi-Container Ship</td>
</tr>
<tr>
<td>SM</td>
<td>Sampan</td>
</tr>
<tr>
<td>SMBG</td>
<td>Big Motor Sampan</td>
</tr>
<tr>
<td>SMBI</td>
<td>Big Non-Motorized Sampan</td>
</tr>
<tr>
<td>SMBM</td>
<td>Bumboat</td>
</tr>
<tr>
<td>SMMO</td>
<td>Motor Sampan</td>
</tr>
<tr>
<td>SMRO</td>
<td>Rowing Sampan</td>
</tr>
<tr>
<td>SMTO</td>
<td>Tongkang</td>
</tr>
<tr>
<td>SMTW</td>
<td>Chinese Twako</td>
</tr>
<tr>
<td>SV</td>
<td>Supply Vessel</td>
</tr>
<tr>
<td>SVOF</td>
<td>Offshore Supply Vessel</td>
</tr>
<tr>
<td>TA</td>
<td>Tanker</td>
</tr>
<tr>
<td>TABU</td>
<td>Bunker Tanker</td>
</tr>
<tr>
<td>TACO</td>
<td>Crude Oil Tanker</td>
</tr>
<tr>
<td>TALG</td>
<td>Liquefied Gas Carrier</td>
</tr>
<tr>
<td>TAP1</td>
<td>Petroleum Product Tanker (&gt;=60c)</td>
</tr>
<tr>
<td>TAP2</td>
<td>Petroleum Product Tanker (&lt;60c)</td>
</tr>
<tr>
<td>TAPC</td>
<td>Petroleum/Chemical Tanker</td>
</tr>
</tbody>
</table>
### nautical abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAUL=ULCC</td>
<td>TANKER BUNKER CRAFT</td>
</tr>
<tr>
<td>TAVL=VLCC</td>
<td>TANKER BULK CARGO VESSEL</td>
</tr>
<tr>
<td>TAWD=Wooden Bunker Craft</td>
<td>Wooden Bunker Craft</td>
</tr>
<tr>
<td>TS=Training Ship</td>
<td>Training Ship</td>
</tr>
<tr>
<td>TU=Tug Boat</td>
<td>TUG</td>
</tr>
<tr>
<td>TUPU=Pusher Tug</td>
<td>Pusher Tug</td>
</tr>
<tr>
<td>TUSV=Tug/Supply Vessel</td>
<td>TUG/UTILITY VESSEL</td>
</tr>
<tr>
<td>UT=Utility Vessel</td>
<td>UTILITY VESSEL</td>
</tr>
<tr>
<td>WA=Waterboat</td>
<td>WATERBOAT</td>
</tr>
<tr>
<td>WB=Workboat</td>
<td>WORKBOAT</td>
</tr>
<tr>
<td>YA=Yacht</td>
<td>YACHT</td>
</tr>
<tr>
<td>YA50=International 505</td>
<td>YACHT</td>
</tr>
<tr>
<td>YAMO=Motorized Yacht</td>
<td>MOTORIZED YACHT</td>
</tr>
<tr>
<td>YASL=Sailing Yacht</td>
<td>SAILING YACHT</td>
</tr>
<tr>
<td>BAHT=Heavy Transport Vessel</td>
<td>HEAVY TRANSPORT VESSEL</td>
</tr>
<tr>
<td>TABA=Tanker Barge</td>
<td>TANKER BARGE</td>
</tr>
<tr>
<td>TAWA=Water Tanker</td>
<td>WATER TANKER</td>
</tr>
<tr>
<td>TAAT=Asphalt Tanker</td>
<td>ASPHALT TANKER</td>
</tr>
<tr>
<td>TUCC=Supply Vessel/ Cement Carrier</td>
<td>TUG/CEMENT CARRIER</td>
</tr>
<tr>
<td>UTD=Supply Vessel</td>
<td>UTILITY TUG</td>
</tr>
<tr>
<td>UTOS=Oil Spill Response Vessel</td>
<td>OIL SPILL RESPONSE VESSEL</td>
</tr>
<tr>
<td>WBCB=Crewboat</td>
<td>CREWBOAT</td>
</tr>
<tr>
<td>ORSS=Semi-Submersible Rig</td>
<td>SEMI-SUBMERSIBLE RIG</td>
</tr>
<tr>
<td>ORJA=Jack-Up Rig</td>
<td>JACK-UP RIG</td>
</tr>
<tr>
<td>ORAC=Accommodation Rig</td>
<td>ACCOMMODATION RIG</td>
</tr>
<tr>
<td>ORTE=Tender Rig</td>
<td>TENDER RIG</td>
</tr>
<tr>
<td>TACG=Chemical/Gas Tanker</td>
<td>CHEMICAL/GAS TANKER</td>
</tr>
<tr>
<td>TAOC=Oil/Chemical/Gas Tanker</td>
<td>OIL/CHEMICAL/GAS TANKER</td>
</tr>
<tr>
<td>TAFO=Floating Storage Offshore</td>
<td>FLOATING STORAGE OFFSHORE</td>
</tr>
<tr>
<td>TAFU=Floating Storage Unit</td>
<td>FLOATING STORAGE UNIT</td>
</tr>
<tr>
<td>TAMO=Mobile Offshore Production Unit</td>
<td>MOBILE OFFSHORE PRODUCTION UNIT</td>
</tr>
<tr>
<td>BCCC=Cement Carrier</td>
<td>CEMENT CARRIER</td>
</tr>
<tr>
<td>TAVO=Vegetable Oil Tanker</td>
<td>VEGETABLE OIL TANKER</td>
</tr>
<tr>
<td>SR=Submarine Support &amp; Rescue Vessel</td>
<td>SUBMARINE SUPPORT &amp; RESCUE VESSEL</td>
</tr>
</tbody>
</table>

### class status and ship status

Class _Status may be one of the following codes:
- V=Class valid
- S=Class suspended
- W=Class Withdrawn

Ship _Status may be one of the following codes:
- E=In service
- L=Laid Up
- P=Lost

### class service notation

Class Service Notation assigned by the RO.

### general type description

Format: 99999999.99 GT as defined in the International Tonnage Convention of 1969 or tons for National Tonnage.

### deadweight

In tones, as required for Gas, Oil and Chemical Tankers.

### registered owner

Registered Owner name: official name of the ship owner according to the Certificate of Registry and published on the Register Book.
<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Length</th>
<th>Description</th>
</tr>
</thead>
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</tr>
<tr>
<td>ISM_Shipowner</td>
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<td>Text</td>
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<tr>
<td>MLC_Shipowner_ID</td>
<td>N</td>
<td>Text</td>
<td>8</td>
</tr>
<tr>
<td>MLC_Shipowner</td>
<td>N</td>
<td>Text</td>
<td>80</td>
</tr>
<tr>
<td>SHIP_ISM_Type</td>
<td>Y</td>
<td>Text</td>
<td>4</td>
</tr>
<tr>
<td>SHIP_ISM_Shipowner_IMO</td>
<td>N</td>
<td>Integer</td>
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</tr>
<tr>
<td>SHIP_ISM_Shipowner</td>
<td>N</td>
<td>Text</td>
<td>80</td>
</tr>
<tr>
<td>MLC_Shipowner_ID</td>
<td>N</td>
<td>Text</td>
<td>8</td>
</tr>
<tr>
<td>MLC_Shipowner</td>
<td>N</td>
<td>Text</td>
<td>80</td>
</tr>
<tr>
<td>MLC_Certificate_Number</td>
<td>Y</td>
<td>Text</td>
<td>20</td>
</tr>
<tr>
<td>MLC_Certificate_Issued_By</td>
<td>Y</td>
<td>Text</td>
<td>20</td>
</tr>
<tr>
<td>Certificate Code</td>
<td>Description</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>-------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SHE</td>
<td>Cargo Ship Safety Equipment Certificate Harmonized</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEN</td>
<td>Cargo Ship Safety Equipment Certificate (Non-Convention Ships)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SR</td>
<td>Cargo Ship Safety Radio Certificate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SRH</td>
<td>Cargo Ship Safety Radio Certificate Harmonized</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SRN</td>
<td>Cargo Ship Safety Radio Certificate (Non-Convention Ships)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BCH</td>
<td>Certificate of Fitness for Carriage of Dangerous Chemicals in Bulk (BCH Code)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GC</td>
<td>Certificate of Fitness for Carriage of Liquefied Gases in Bulk (GC Code)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CH</td>
<td>Classification Certificate (Hull)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CM</td>
<td>Classification Certificate (Machinery)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAS</td>
<td>Conditional Assessment Scheme</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CA</td>
<td>Crew Accommodation Certificate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DSC</td>
<td>Dynamically Supported Craft Construction and Equipment Certificate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DOC</td>
<td>Document of Compliance (ISM Code)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IDOC</td>
<td>Interim Document of Compliance (ISM Code)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HSCS</td>
<td>High-Speed Craft Safety Certificate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IAPP</td>
<td>International Air Pollution Prevention Certificate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBC</td>
<td>International Certificate of Fitness for Dangerous Chemicals in Bulk (IBC Code)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IGC</td>
<td>International Certificate of Fitness for Carriage of Liquefied Gases in Bulk (IGC Code)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ILL</td>
<td>International Load Line Certificate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IOPP</td>
<td>International Oil Pollution Prevention Certificate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NLS</td>
<td>International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk (NLS Certificate)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISPP</td>
<td>International Sewage Pollution Prevention Certificate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISS</td>
<td>International Ship Security Certificate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IISS</td>
<td>Interim International Ship Security Certificate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IT</td>
<td>International Tonnage Certificate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MODU</td>
<td>Mobile Offshore Drilling Unit Safety Certificate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSS</td>
<td>Passenger Ship Safety Certificate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMC</td>
<td>Safety Management Certificate (ISM Code)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISMC</td>
<td>Interim Safety Management Certificate (ISM Code)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAPP</td>
<td>Singapore Air Pollution Prevention Certificate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SLL</td>
<td>Singapore Load Line Certificate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOPP</td>
<td>Singapore Oil Pollution Prevention Certificate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ST</td>
<td>Singapore Tonnage Certificate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPSS</td>
<td>Special Purpose Ship Safety Certificate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ML</td>
<td>Maritime Labour Certificate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IML</td>
<td>Interim Maritime Labour Certificate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DOCDG</td>
<td>Document of Compliance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Field Name</td>
<td>Data Type</td>
<td>Length</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-----------</td>
<td>--------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>INF=International Certificate of</td>
<td>Text</td>
<td>1</td>
<td>Is used to identify the validity type of the certificate issued. It must be one of the following codes: F=Full Term issue l=Interim/Unconditional Issue S=Short term C=Conditional.</td>
</tr>
<tr>
<td>Carriage of INF Cargo (INF Code)</td>
<td>N</td>
<td>Date</td>
<td>MTC Declaration Date (MTC Declaration date and place may be different with the certificate date and place).</td>
</tr>
<tr>
<td>OTHER=Other Certificate</td>
<td>N</td>
<td>Text</td>
<td>A field for the further description of the certificate code. This is required if the SHIP_CERTIFICATE_Code = &quot;OTHER&quot;.</td>
</tr>
<tr>
<td>SHIP_CERTIFICATE_Code</td>
<td>Y</td>
<td>Text</td>
<td>5 See the SHIP_CERTIFICATE_Code. For the class surveys this shall be &quot;CH&quot; or &quot;CM&quot;.</td>
</tr>
<tr>
<td>SHIP_SURVEY_Type</td>
<td>Y</td>
<td>Text</td>
<td>5 For statutory surveys SHIP_SURVEY_Type must be one of the following: A=Annual survey, annual survey or periodical inspection; AD=Additional/Occasional survey; B=Inspection of the outside of the ship's bottom (dry); W=Inspection of the outside of the ship’s bottom (iws) T=Tailshaft (They could be more than one: T1, T2, etc) Bo=Boiler (They could be more than one: Bo1, Bo2, etc) I=Initial survey; IN=Intermediate survey; P=Periodical survey; R=Renewal survey; Int=Interim/pre-audit/pre-verification (for ISM, ISPS, MLC certificates);</td>
</tr>
<tr>
<td>SHIP_SURVEY_Type</td>
<td>Y</td>
<td>Text</td>
<td>5 For statutory surveys SHIP_SURVEY_Type must be one of the following: A=Annual survey, annual survey or periodical inspection; AD=Additional/Occasional survey; B=Inspection of the outside of the ship's bottom (dry); W=Inspection of the outside of the ship’s bottom (iws) T=Tailshaft (They could be more than one: T1, T2, etc) Bo=Boiler (They could be more than one: Bo1, Bo2, etc) I=Initial survey; IN=Intermediate survey; P=Periodical survey; R=Renewal survey; Int=Interim/pre-audit/pre-verification (for ISM, ISPS, MLC certificates);</td>
</tr>
<tr>
<td>Field</td>
<td>Type</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------</td>
<td>------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>SHIP_SURVEY_Type</strong></td>
<td>Y Text</td>
<td>The class society specific description.</td>
<td></td>
</tr>
<tr>
<td><strong>SHIP_SURVEY_Description</strong></td>
<td>N Date</td>
<td>yyyy-mm-dd</td>
<td></td>
</tr>
<tr>
<td><strong>SHIP_SURVEY_Held_Date</strong></td>
<td>Y Date</td>
<td>yyyy-mm-dd</td>
<td></td>
</tr>
<tr>
<td><strong>SHIP_SURVEY_Place_Held</strong></td>
<td>Y Text</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td><strong>SHIP_SURVEY_Due_Date</strong></td>
<td>N Date</td>
<td>yyyy-mm-dd</td>
<td></td>
</tr>
<tr>
<td><strong>SHIP_SURVEY_Postpone_Date</strong></td>
<td>N Date</td>
<td>yyyy-mm-dd</td>
<td></td>
</tr>
<tr>
<td><strong>SHIP_SURVEY_Status</strong></td>
<td>Y Text</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>SHIP_SURVEY_Range_From_Date</strong></td>
<td>N Date</td>
<td>yyyy-mm-dd</td>
<td></td>
</tr>
<tr>
<td><strong>SHIP_SURVEY_Range_To_Date</strong></td>
<td>N Date</td>
<td>yyyy-mm-dd</td>
<td></td>
</tr>
<tr>
<td><strong>SHIP_COMMENT_Type</strong></td>
<td>Y Text</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>SHIP_COMMENT_Date_Issued</strong></td>
<td>Y Date</td>
<td>yyyy-mm-dd</td>
<td></td>
</tr>
<tr>
<td><strong>SHIP_COMMENT_Due_Date</strong></td>
<td>N Date</td>
<td>yyyy-mm-dd</td>
<td></td>
</tr>
<tr>
<td><strong>SHIP_COMMENT_ExpirySurvey</strong></td>
<td>N Text</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td><strong>SHIP_CERTIFICATE_Codeand</strong></td>
<td>N Text</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td><strong>SHIP_COMMENT_Status</strong></td>
<td>N Text</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

For classification surveys, the SHIP_SURVEY_Type will be in accordance with the rules, regulations, and practice of the particular classification society which has classed the ship.

The contents of this field may be calculated at runtime.

To be filled in only for survey not yet carried out or completed. It would be one of the following:

- **D** = the current date is within the survey range dates.
- **O** = the current date is after the survey range to date.
- **P** = the survey has been started but is not yet complete.

It would be normally one of the following:

- **M** = "Memorandum"
- **R** = "Recommendation"

List of certificates, separated by comma, linked to the Comment Mandatory only for "Recommendation".

Location where the survey was undertaken which resulted in the imposition of the comment.

UNECE code:
http://www.unece.org/cefact/locode/service/location.html

Location where the survey was undertaken which resulted in the imposition of the comment.

UNECE code:
http://www.unece.org/cefact/locode/service/location.html

Not Applicable in case of "Memorandum".

Normally used for specifying a due date, but may be linked to another survey (see the field below). When both are present it means the first between (SHIP_COMMENT_Due_Date and SHIP_COMMENT_ExpirySurvey).

Not Applicable in case of "Memorandum".

Normally:
A = "Active" - the comment is still applicable.
<table>
<thead>
<tr>
<th>Column Name</th>
<th>Type</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHIP_COMMENT_STATUS</td>
<td>N</td>
<td>Text</td>
<td>1</td>
</tr>
<tr>
<td>NT_Postponed_Due_Date</td>
<td>N</td>
<td>Date</td>
<td>yyyy-mm-dd</td>
</tr>
<tr>
<td>P</td>
<td>&quot;Postponed&quot;- the comment is still applicable and the due date/expiry survey have been changed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>O</td>
<td>&quot;Overdue&quot;- the comment is still applicable and is also overdue for implementation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SHIP_COMMENT_Postponed_Exp</td>
<td>N</td>
<td>Text</td>
<td>500</td>
</tr>
<tr>
<td>Not Applicable in case of &quot;Memorandum&quot;. Due date after the last postponement.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ExpirySurv</td>
<td>N</td>
<td>Text</td>
<td>5</td>
</tr>
<tr>
<td>Applicable only in case of ISM /ISPS /MLC Comments. Chapter/ Paragraph number of the Regulation for ISM /ISPS /MLC.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SHIP_COMMENT_TEXT_ITEM</td>
<td>Y</td>
<td>Integer</td>
<td>2</td>
</tr>
<tr>
<td>If the comment text is longer than 4000, it is necessary to split in items. This field counts and orders the items.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SHIP_COMMENT_TEXT</td>
<td>Y</td>
<td>Text</td>
<td>4000</td>
</tr>
<tr>
<td>Company Management ID is the unique identifier assigned by the classification society to identify the ship management company.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMPANY_Management_ID</td>
<td>Y</td>
<td>Text</td>
<td>20</td>
</tr>
<tr>
<td>COMPANY_IMO_Number</td>
<td>N</td>
<td>Integer</td>
<td>7</td>
</tr>
<tr>
<td>Company takes responsibility on MLC2006 Y/N.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMPANY_Name</td>
<td>Y</td>
<td>Text</td>
<td>20</td>
</tr>
<tr>
<td>COMPANY_Address</td>
<td>Y</td>
<td>Text</td>
<td>120</td>
</tr>
<tr>
<td>COMPANY_MLC_Responsibility</td>
<td>N</td>
<td>Text</td>
<td>1</td>
</tr>
<tr>
<td>Company takes responsibility on MLC2006 Y/N.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMPANY_CERTIFICATE_ID</td>
<td>Y</td>
<td>Text</td>
<td>20</td>
</tr>
<tr>
<td>COMPANY_CERTIFICATE_Flag</td>
<td>N</td>
<td>Text</td>
<td>3</td>
</tr>
<tr>
<td>A company may be issued with a DOC to manage ships of a certain type by one or more flag administrations. Flag code utilized shall be in accordance with ISO3166 with additional qualification where required to identify a particular flag State.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMPANY_CERTIFICATE_Issued_By</td>
<td>Y</td>
<td>Text</td>
<td>20</td>
</tr>
<tr>
<td>Name of the organization which issued the certificate. If this is the IACS classification society, then the code defined in SHIP_Classed_by is used.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMPANY_CERTIFICATE_Name</td>
<td>Y</td>
<td>Text</td>
<td>5</td>
</tr>
<tr>
<td>Certificate name must be:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DOC=Document of compliance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other certificate types may be defined in the future.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMPANY_CERTIFICATE_DOC_Type</td>
<td>Y</td>
<td>Text</td>
<td>1</td>
</tr>
<tr>
<td>DOC_type must be one of the following:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V=Voluntary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C=Convention</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMPANY_NAME</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
This is a list of ship types, separated by commas. The possible values are:

- BC=Bulk carrier
- CH=Cargo high speed craft
- CT=Chemical tanker
- GC=Gas carrier
- MO=Mobile offshore drilling unit
- OT=Oil tanker
- OC=Other cargo ship
- PH=Passenger high speed craft
- PS=Passenger ship
- PR=Passenger ferry (ro-ro)
<table>
<thead>
<tr>
<th>Structure - code list</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>Submison date</td>
</tr>
<tr>
<td>CHAR(35)</td>
<td>Different length</td>
</tr>
<tr>
<td>CHAR(9)</td>
<td>Different length</td>
</tr>
<tr>
<td>CHAR(3) - 3166-1</td>
<td>The same</td>
</tr>
<tr>
<td>CHAR(6) – locode</td>
<td></td>
</tr>
<tr>
<td>CHAR(10) - Rec.28</td>
<td>Different code list</td>
</tr>
<tr>
<td>CHAR(18)</td>
<td>Different code list</td>
</tr>
<tr>
<td>----------</td>
<td>---------------------</td>
</tr>
<tr>
<td>CHAR(175)</td>
<td>On security report only</td>
</tr>
<tr>
<td>CHAR(35)</td>
<td>On security report only</td>
</tr>
<tr>
<td>----------</td>
<td>-------------------------</td>
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</tr>
</tbody>
</table>


GUIDELINES FOR THE USE OF ELECTRONIC CERTIFICATES

1 The Facilitation Committee, at its fortieth session (4 to 8 April 2016), approved the attached Guidelines for the use of electronic certificates (the Guidelines).

2 Member Governments are invited to bring the Guidelines to the attention of all stakeholders, in particular, those who are involved in the process of issuance, maintenance, endorsement and revision of electronic certificates, such as recognized organizations, port State control officers, shipowners and crew, agents and vetting companies.

3 Member Governments are also invited to take the necessary actions at the national level to ensure that adequate legislation is in place for the use and acceptance of electronic certificates, as may be required.

4 Member Governments, international organizations and non-governmental organizations with consultative status are also invited to bring to the attention of the Committee, at the earliest opportunity, the results of the experience gained from the use of the Guidelines for consideration of action to be taken.

5 This circular revokes FAL.5/Circ.39/Rev.1.

***
ANNEX

GUIDELINES FOR THE USE OF ELECTRONIC CERTIFICATES

1 Introduction

1.1 The Organization aims to reduce the administrative burden on Administrations, port State control officials, ships' crews and other stakeholders caused, amongst other reasons, by reliance on traditional paper certificates.

1.2 Signed paper certificates issued by Governments and recognized organizations authorized to act on their behalf have been the traditional means of documenting compliance with IMO requirements.

1.3 Contracting Governments using electronic certificates, including printed versions of electronic certificates, have experienced instances of port State control officers or other stakeholders denying the validity of these certificates, resulting in a burden to the master and crew, shipowner or operator, port State control officers, Administration and other stakeholders.

1.4 In addition, ships have experienced instances of port State control actions because a traditional paper certificate has been issued but has not arrived on the ship or the traditional paper certificate has been damaged or lost.

1.5 Establishing a recognized set of features for using electronic certificates should help alleviate problems inherent in reliance on paper.

2 Purpose

The purpose of these Guidelines is to facilitate the use and acceptance of electronic certificates.

3 Definitions

For the purpose of these Guidelines:

.1 Certificate means a document issued by an Administration or its representatives that is used to show compliance with IMO requirements and used to describe operating conditions, crewing requirements, and ship equipment carriage requirements. The term "certificate" does not include publications, manuals, instructions or ships' logs used to record ongoing operations;

.2 Electronic certificate means a certificate issued in an electronic format;

.3 Electronic signature means data in electronic form which is attached to or logically associated with other electronic data to serve as a method of authentication of the issuer and contents of the electronic data;
Printed version of electronic certificate means a paper printout produced from the electronic certificate;

Unique tracking number means a string of numbers, letters or symbols used as an identifier to distinguish an electronic certificate issued by an Administration or its representative from any other electronic certificate issued by the same Administration or its representative; and

Verifying means a reliable, secure and continuously available process to confirm the authenticity and validity of an electronic certificate using the unique tracking number and other data contained on or embedded in the electronic certificate.

4 Features

4.1 Administrations that use electronic certificates should ensure that these certificates have the following features:

1 validity and consistency with the format and content required by the relevant international convention or instrument, as applicable;

2 protected from edits, modifications or revisions other than those authorized by the issuer or the Administration;

3 a unique tracking number used for verification as defined in paragraphs 3.5 and 3.6; and

4 a printable and visible symbol that confirms the source of issuance.

4.2 Administrations that use websites for online viewing or verifying electronic certificates should ensure that these sites are constructed and managed in accordance with established information security standards for access control, fraud prevention, resistance to cyberattacks and resilience to man-made and natural disasters.\(^1\)

4.3 Shipowners, operators and crews on ships that carry and use electronic certificates should ensure that these certificates are controlled through the safety management system, as described in section 11 of the International Safety Management Code.

4.4 Electronic signatures applied to electronic certificates should meet authentication standards, as adopted by the Administration.

5 Verification

Instructions for verifying (see paragraph 3.6) the information contained in the electronic certificate, including confirmation of periodic endorsements, when necessary, should be available on board the ship.

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\(^1\) Such as the International Organization for Standardization/International Electrotechnical Commission 27000 series standards and similar guidelines, including requirements of the Administration.
6 Notifications

Administrations deciding to issue or authorize issuance of electronic certificates are invited to inform the Committee on their experience. All Administrations are urged to communicate to the Organization through the relevant module in the Global Integrated Shipping Information System (GISIS), the list of certificates categories identified in FAL.2/Circ.127-MEPC.1/Circ.817-MSC.1/Circ.1462 which will be issued by the Administration or its representative as electronic certificates.

7 Acceptance

All stakeholders should accept electronic certificates containing the features identified in section 4. These electronic certificates should be verified, when necessary, following the instructions available on board the ship (see paragraph 3.4). Furthermore, port State control officers, in accepting electronic certificates, should follow the Procedures for Port State Control, 2011 (resolution A.1052(27)).

8 Implementation

Administrations should put in place the necessary procedures in order to ensure that all related stakeholders’ needs, capacities and expectations are taken into consideration before and during the implementation of electronic certificates.
Establishment of a domestic Certified e-Document Authority (CeDA)
Since 1990, the Republic of Korea has been promoting the development of systems for the efficient electronic documents interchange (also called EDI – Electronic Data Interchange systems) in order to reduce paper document management costs and improve companies’ business processes. Therefore, the Korean Government promoted the CeDA project and regularized it amending the relevant national laws in 2005, so that e-documents - submitted either in digital or paper format, scanned, registered, and retained in CeDA - could be recognized as authentic and reliable digital documents. The first CeDA was designated in 2007 and regulated, inter alia, by the following laws:

- “Framework Act on Electronic Commerce”: this act defines the fundamental roles and responsibilities of CeDA.
- “Regulation on the CeDA Facilities and Equipment”: this act addresses the detailed requirements for facilities and equipment for the CeDA, such as required systems with mandatory functions, equipment for network time protocol, security systems of the network and required facilities for certificates.
- “Regulation for Standard Work Process”: this defines the CeDA’s management process, work process, security management process and other processes.
- “Regulation on Digitalization Procedures and Methods”: this deals with the environment of the authorized workplace and the detailed specifications of all digitalization systems and scanning equipment.
- “Detailed Regulation on Digitization Facilities and Equipment”: this regulation standardizes the authorized workplace, IT systems, scanning equipment and all the digitalization facilities.
- “Notice of the CeDA Personnel Qualification”: this notice provides the required qualifications and responsibilities for authorized personnel of the CeDA.

CeDA is currently a trusted third-party institution, its operational soundness is examined and evaluated by regular government auditing each year.

Organization of CeDA
The governance of CeDA consists of:
1. Ministry of Knowledge Economy (MKE) which establishes the relevant acts, notices, and regulations that the CeDA adheres to, and officially approves new CeDA service providers;
2. Korea Institute for Electronic Commerce (KIEC) which sets up practical guidelines and technical standards for the CeDA, evaluates and screens IT services companies that are potential CeDA service providers; and
3. Certified e-Document Authority (CeDA).

The work of CeDA is managed by the following processes:

- **Document management process** – dealing with the registration, preservation, retrieval, reformatting, transfer and disposal of e-documents;
- **Digitization management process** – ensuring that the digitized documents have the same contents as the originals;
- **Operation and security management processes** – managing the processes related to the daily work at CeDA (e.g. procedural, organizational and technical security requirements; organization of regular system inspection).

How CeDA works
Both paper- and e-documents can be archived by CeDA according to the following procedures:

a) paper documents

Paper documents are digitized according to the official digitization procedure by the authorized digitization experts of the CeDA and then archived;

b) e-documents

There are two methods of archiving e-documents:

b.1) the client brings hard disks or CD-ROMS to the CeDA facility and the CeDA registers those e-documents to the digital archiving system; or

b.2) the client can connect its own IT systems to CeDA's digital archiving system. Once connected, all the data of the clients can be sent to CeDA’s system and automatically registered and archived.

Once e-documents are submitted to the CeDA or paper documents are digitized in the CeDA, they are converted into an “information package” based on the OAIS (Open Archival Information System) reference...
model (ISO14721). CeDA creates and retains three types of information package: Submission Information Package (SIP), Archival Information Package (AIP), and Dissemination Information Package (DIP), as specified in OAIS model.

The purpose of using an information package is to prevent forgery of e-documents, and to ensure the e-documents’ reliability and integrity. In order to preserve contents, structure, and context of the e-documents, each information package consists of actual contents and metadata. The metadata has information about registration, classification, preservation, and structure of the e-documents retained in the CeDA. The metadata has been developed based on ISO standard for records management (ISO15489) and ISO RM metadata standard (ISO23081). The CeDA registers, preserves, retrieves, reformats, disposes of, and transfers e-documents for the clients. At each activity, the CeDA creates a history log and audit trail of information as evidence. The certificate is a record of this evidence that is given to clients when asking for certificates to verify the reliability of certain e-documents.

CeDa services
CeDA offers mainly three kind services:

- **Archiving service with official digitizing**: archiving service is offered based on the OAIS model. Each document is registered and packaged in SIP, stored in AIP, and accessed in DIP. Necessary metadata is created at each stage of the document lifecycle and packaged in the information packages together with original e-document.

- **Intermediary service for e-document exchange**: Clients of CeDA can allow other business partners to access the retained documents. CeDA offers intermediary service for the secure exchange of e-documents. By using CeDA’s user identification system and encryption technology based on Public Key Infrastructure (PKI), clients can send and receive e-documents without the risk of unauthorized data change, unwanted data loss, or repudiation.

- **Certification service**: To ensure authenticity and reliability of the retained documents, CeDA provides clients with certificates at each stage of document’s lifecycle.

The above-mentioned services are schematically illustrated in the figure below (Fig. 1)

![Figure 1: Major Services offered by CeDA.](image)

**Official repository that ensures e-document’s reliability**

1. Preserving born-digital and born-again digital documents;
2. Ensuring legal authority of all retained documents;
3. Certifying the lifecycle of e-documents; and

Proposals of Republic of Korea at IMO
In the context of the IMO FAL Committee’s discussion on the online access to certificates and documents required to be carried onboard ships, the Republic of Korea presented the established CeDA system in January 2009 (document FAL 35/7/2) in view of proposing a Certified e-Document Authority Model for maritime area in order to facilitate the exchange of documentations between the port Authorities and the ship at its arrival and departure to/from the port.

In the following years, the Republic of Korea submitted documents to FAL sessions in order to
1. update the Committee on the development of CeDA and the services which can provide (FAL document FAL36/7/2):
   a. basic services (i.e. archiving; reading and searching; issuance of certificates related to the archiving, delivery of electronic documents to third parties); and
   b. additional services (i.e. linking and scanning services).
2. illustrate a concrete case applied to a hospital, which decided to eliminate paper document in order to improve its administration processes (FAL document FAL 36/7/2); and
3. propose the development of “Single Window Guideline for Maritime Transport”, illustrating the technical aspects of a single window (FAL 37/5/2);
4. present a model of CeDA suitable for maritime transport business, describing also security aspects, such as security of data, communication security, physical security and user maintenance (document FAL 37/7/1);
5. present the result of a research on relevant technologies for a data communication network at sea carried out since 2010 (document FAL 38/INF.2) in view of establishing a technology of digital VHF radio system for enhancing maritime logistic (document FAL 39/INF.5).

Proposed model of CeDA for maritime transport business
Main functions of Certified e-Document Authority proposed by the Republic of Korea, include storage, certification and issuance of electronic documents. In relation to the maritime transport business:
• The electronic documents stored in Certified e-Document Authority could be viewed, issued, or printed only by relevant ships.
• Port authority could only view the stored documents and obtain relevant information about ships.
• Technical specification of electronic documents could be a physical unit for registering, preserving, disseminating, and transferring them. Additionally, an electronic document refers to the combination of its actual content and its metadata.
• Security should be guarantee taking into account the sensitivity and the importance of the information archived.

Fig. 2: Structure of the proposed CeDA for maritime transport business and of the exchanged information packages.

FAL 37 – in prioritizing the works on online access to certificates and documents required to be carried onboard ships – agreed to define the architecture of the system (e.g. ship-based system, centralized
database, distributed databases or a combination of any) after defining the objectives, scope and vision of the system bearing in mind the user’s needs.

The following FAL sessions focused on other aspects of the online access (e.g. use and acceptance of electronic certificates), therefore submissions on how to put in place the system of online access to certificates and documents or a ship-based system, are expected for next FAL session (FAL 40 - 4/8 April 2016).

Data communication network at sea
Currently, data communication at sea relies on such methods as satellite, HF, MF and VHF, which are used, for example, for voice communication with line telephone, sending messages related to vessel movement and location information with Automatic Identification System (AIS) and exchanging simple e-mail and Short Message Service (SMS).

As international trade increases, the number and variety of pieces of logistics-related information needed to be handled on ships have increased and current data communication networks have limitations in supporting increased volumes.

Therefore, the Republic of Korea is developing an advanced data communication network (i.e. SANET – Ship Ad hoc Network), in order to provide high performance, reliability and low cost.

The SANET consists of base stations on land and ships at sea which are both nodes of the network and participate in forwarding data for other nodes.

This means that the system enables dynamic determination of ships on the sea as a node, so that maritime logistics information can be forwarded to the base station in land (see Fig. 3). Then, the base station stores maritime logistics information received from ships and provides a real-time monitoring and information service to the stakeholders such as shippers and ship owners.

Fig. 3: Network configuration of the SANET System.

SANET system is multi-band maritime data communication and includes VHF communication for littoral sea (within 100 km) and for high seas, HF and satellite communication. The communication skims are interlocked and selectively used according to the situation. Especially, VHF digital communication that utilizes newly reallocated VHF frequencies could be used for more efficient maritime mobile procedures.

The Republic of Korea will develop CeDA accessing plan with SANET so that additional services and related business processes, electronic access to vessel-related documents/certificates could be resolved and interoperability and information sharing in maritime logistics industry could be enhanced and standardized.

Further updates on the system will be submitted by the Republic of Kora at next FAL session (FAL 40 - 4/8 April 2016).
M13 - e-Certificates definition (Appendix 09)

30 APRIL 2016

L’analisi suddetta viene svolta in riferimento al documento emanato all’interno della FAL.2/Circ.127-MEPC.1/Circ.817-MSC.1/Circ.1462 in data 1 Luglio 2013.

La colonna “CATEGORY”, riportata nella seguente tabella, contiene la categoria alla quale ognuno dei documenti analizzati è stato caratterizzato secondo tale legenda:

<table>
<thead>
<tr>
<th>No.</th>
<th>Contents</th>
<th>Reference</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>All ships to which the referenced convention applies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td><strong>International Tonnage Certificate (1969)</strong></td>
<td>Tonnage Convention, article 7</td>
<td>Certificate</td>
</tr>
<tr>
<td></td>
<td>An International Tonnage Certificate (1969) shall be issued to every ship, the gross and net tonnage of which have been determined in accordance with the Convention.</td>
<td></td>
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</tr>
<tr>
<td>B</td>
<td><strong>International Load Line Certificate</strong></td>
<td>LL Convention, article 16; 1988 LL Protocol, article 16</td>
<td>Certificate</td>
</tr>
<tr>
<td></td>
<td>An International Load Line Certificate shall be issued under the provisions of the International Convention on Load Lines, 1966, to every ship which has been surveyed and marked in accordance with the Convention or the Convention as modified by the 1988 LL Protocol, as appropriate.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td><strong>International Load Line Exemption Certificate</strong></td>
<td>LL Convention, article 6;</td>
<td>Certificate</td>
</tr>
<tr>
<td></td>
<td>An International Load Line Exemption Certificate shall be</td>
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</table>

- **CERTIFICATE** → Certificati rilasciati da Classification Society, Ministero o Enti Terzi al momento del varo, e/o soggetti a eventuale possibile rinnovo.
- **PLANS/MANUAL/BOOKLET/DRAWING** → Documenti generalmente che non cambiano nel tempo, che possono essere soggetti ad aggiornamenti qualora avvengano revamping della nave.
- **ELB**: Log Book (giornali) che riportano attività in una determinata forma (spesso cartacei a compilazione manuale) da rendere Elettronici.
- **FORM**: Form sono moduli compilati (spesso rientrano nella tipologia Check-list) da personale di bordo o da “Parti Terze” che dettagliano un attività di controllo ad evento (in un determinato momento, esempio all’imbarco) o periodica (ad esempio ogni tre mesi.). I Form non necessariamente vengono gestiti all’interno dell’ELB in quanto si può optare, se attualmente gestiti attraverso un qualche altro software dedicato, anche di archiviarli in forma cartacea dopo eventuale stampa. Qualora vengano gestiti invece all’interno dell’ELB, possono essere gestiti/archiviati in forma elettronica con Firma Elettronica Debole (senza necessità di stampa e firma manuale)
- **RIUSO**: ELB o FORM che contengono singole informazioni (Individual Data Elements) da destinare al RIUSO della Administration contrassegnate (*). Tali informazioni ne è richiesto (in corso o in progress) l’invio all’Administration all’accadere dell’Evento o all’Arrivo/Partenza nave da un porto.
- Facendo riferimento a elenco sotto:
  1N:  on board training
  1T:  ship position, marine casualties, injury
  1AA: oil record book
  1AE: waste disposal or detection
  1AT: fuel oil changeover: ship, date, time, position changeover, tnk qty LS (Low sulphur)
  3L:  oil or ballast discharge monitoring: ship, date, time, Lt/nautical miles, total
  4B:  cargo record book: cargo manifest, DG manifest, pax/crew list
<p>| | | | |</p>
<table>
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</table>
| D | **Coating Technical File**  
A Coating Technical File, containing specifications of the coating system applied to dedicated seawater ballast tanks in all types of ships and double-side skin spaces of bulk carriers of 150 m in length and upwards, record of the shipyard’s and shipowner’s coating work, detailed criteria for coating sections, job specifications, inspection, maintenance and repair, shall be kept on board and maintained throughout the life of the ship. | 1988 LL Protocol, article 16 | SOLAS 1974, regulation II-1/3-2;  
Performance standard for protective coatings for dedicated seawater ballast tanks in all types of ships and double-side skin spaces of bulk carriers (resolution MSC.215(82)) | Certificate |
| E | **Construction drawings**  
A set of as-built construction drawings and other plans showing any subsequent structural alterations shall be kept on board a ship constructed on or after 1 January 2007. | SOLAS 1974, regulation II-1/3-7;  
MSC/Circ.1135 on As-built construction drawings to be maintained on board the ship and ashore | SOLAS 1974, regulation II-1/3-7;  
MSC/Circ.1135 on As-built construction drawings to be maintained on board the ship and ashore | Drawing Plans |
| F | **Ship Construction File**  
A Ship Construction File with specific information should be kept on board oil tankers of 150 m in length and above and bulk carriers of 150 m in length and above, constructed with single deck, top-side tanks and hopper side tanks in cargo spaces, excluding ore carriers and combination carriers:  
1) for which the building contract is placed on or after 1 July 2016;  
2) in the absence of a building contract, the keels of which are laid or which are at a similar stage of construction on or after 1 July 2017; or  
3) the delivery of which is on or after 1 July 2020 shall carry a Ship Construction File containing information in accordance with regulations and guidelines, and updated as appropriate throughout the ship’s life in order to facilitate safe operation, maintenance, survey, repair and emergency measures. | SOLAS 1974, regulation II-1/3-10;  
MSC.1/Circ.1343 on Guidelines for the information to be included in a Ship Construction File | SOLAS 1974, regulation II-1/3-10;  
MSC.1/Circ.1343 on Guidelines for the information to be included in a Ship Construction File | Certificate |
| G | **Stability information**  
Every passenger ship regardless of size and every cargo ship of 24 m and over shall be inclined on completion and the elements of their stability determined. The master shall be supplied with stability information containing such information as is necessary to enable him, by rapid and simple procedures, to obtain accurate guidance as to the stability of the ship under varying conditions of service to maintain the required intact stability and stability after damage. For bulk carriers, the information required in a bulk carrier booklet may be contained in the stability information. | SOLAS 1974, regulations II-1/5 and II-1/5-1;  
LL Convention;  
1988 LL Protocol, regulation 10 | SOLAS 1974, regulations II-1/5 and II-1/5-1;  
LL Convention;  
1988 LL Protocol, regulation 10 | Plan |
<p>| H | <strong>Damage control plans and booklets</strong> | SOLAS 1974, Plan | SOLAS 1974, Plan | Plan |</p>
<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Related Regulations and Forms</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Minimum safe manning document</td>
<td>SOLAS 1974, regulation V/14.2</td>
</tr>
<tr>
<td>L</td>
<td>Fire safety training manual</td>
<td>SOLAS 1974, regulation II-2/15.2.3</td>
</tr>
<tr>
<td>M</td>
<td>Fire control plan/booklet</td>
<td>SOLAS 1974, regulations II-2/15.2.4 and II-2/15.3.2</td>
</tr>
<tr>
<td>N</td>
<td>Onboard training and drills record</td>
<td>SOLAS 1974, regulation II-2/15.2.5</td>
</tr>
<tr>
<td>O</td>
<td>Fire safety operational booklet</td>
<td>SOLAS 1974, regulation II-2/16.2</td>
</tr>
<tr>
<td>P</td>
<td>Maintenance plans</td>
<td>SOLAS 1974, regulations II-2/14.2.2 and II-2/14.4</td>
</tr>
<tr>
<td>Column</td>
<td>Description</td>
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<td>--------</td>
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</tbody>
</table>
| Q      | **Training manual**  
The training manual, which may comprise several volumes, shall contain instructions and information, in easily understood terms illustrated wherever possible, on the life-saving appliances provided in the ship and on the best methods of survival. Any part of such information may be provided in the form of audio-visual aids in lieu of the manual. | SOLAS 1974, regulation III/35 |
| R      | **Nautical charts and nautical publications**  
Nautical charts and nautical publications for the intended voyage shall be adequate and up to date. An electronic chart display and information system (ECDIS) is also accepted as meeting the chart carriage requirements of this subparagraph. | SOLAS 1974, regulations V/19.2.1.4 and V/27 |
| S      | **International Code of Signals and a copy of Volume III of IAMSAR Manual**  
All ships required to carry a radio installation shall carry the International Code of Signal; all ships shall carry an up-to-date copy of Volume III of the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual. | SOLAS 1974, regulation V/21 |
| T      | **Records of navigational activities**  
All ships engaged on international voyages shall keep on board a record of navigational activities and incidents including drills and pre-departure tests. When such information is not maintained in the ship’s logbook, it shall be maintained in another form approved by the Administration. | SOLAS 1974, regulations V/26 and V/28.1 |
| U      | **Manoeuvring booklet**  
The stopping times, ship headings and distances recorded on trials, together with the results of trials to determine the ability of ships having multiple propellers to navigate and manoeuvre with one or more propellers inoperative, shall be available on board for the use of the master or designated personnel. | SOLAS 1974, regulation II-1/28 |
| V      | **Material Safety Data Sheets (MSDS)**  
Ships carrying oil or oil fuel, as defined in regulation 1 of annex 1 of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto, shall be provided with material safety data sheets, based on the recommendations developed by the Organization, prior to the loading of such oil as cargo in bulk or bunkering of oil fuel. | SOLAS 1974, regulation VI/5-1; resolution MSC.286(86) |
| W      | **AIS test report**  
The Automatic Identification System (AIS) shall be subjected to an annual test by an approved surveyor or an approved testing or servicing facility. A copy of the test report shall be retained on board and should be in accordance with a model form set out in the annex to MSC.1/Circ.1252 | SOLAS 1974, regulation V/18.9; MSC.1/Circ.1252 |
<p>| Y      | <strong>Certificates for masters, officers or ratings</strong> | STCW 1978, Certificate |</p>
<table>
<thead>
<tr>
<th>Certificate Type</th>
<th>Description</th>
<th>Note</th>
</tr>
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<tbody>
<tr>
<td>Certificates for masters, officers or ratings</td>
<td>Certificates for masters, officers or ratings shall be issued to those candidates who, to the satisfaction of the Administration, meet the requirements for service, age, medical fitness, training, qualifications and examinations in accordance with the provisions of the STCW Code annexed to the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978. Formats of certificates are given in section A-I/2 of the STCW Code. Certificates must be kept available in their original form on board the ships on which the holder is serving.</td>
<td>article VI, regulation I/2; STCW Code, section A-I/2</td>
</tr>
<tr>
<td>X</td>
<td>Records of hours of rest</td>
<td>Records of daily hours of rest of seafarers shall be maintained on board.</td>
</tr>
<tr>
<td>Z</td>
<td>International Oil Pollution Prevention Certificate</td>
<td>An international Oil Pollution Prevention Certificate shall be issued, after survey in accordance with regulation 6 of Annex I of MARPOL, to any oil tanker of 150 gross tonnage and above and any other ship of 400 gross tonnage and above which is engaged in voyages to ports or offshore terminals under the jurisdiction of other Parties to MARPOL. The certificate is supplemented with a Record of Construction and Equipment for Ships other than Oil Tankers (Form A) or a Record of Construction and Equipment for Oil Tankers (Form B), as appropriate.</td>
</tr>
<tr>
<td>AA</td>
<td>Oil Record Book</td>
<td>Every oil tanker of 150 gross tonnage and above and every ship of 400 gross tonnage and above other than an oil tanker shall be provided with an Oil Record Book, Part I (Machinery space operations). Every oil tanker of 150 gross tonnage and above shall also be provided with an Oil Record Book, Part II (Cargo/ballast operations).</td>
</tr>
<tr>
<td>AB</td>
<td>Shipboard Oil Pollution Emergency Plan</td>
<td>Every oil tanker of 150 gross tonnage and above and every ship other than an oil tanker of 400 gross tonnage and above shall carry on board a Shipboard Oil Pollution Emergency Plan.</td>
</tr>
<tr>
<td>Code</td>
<td>Description</td>
<td>Relevant Regulations</td>
</tr>
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<td>--------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>AC</td>
<td><strong>International Sewage Pollution Prevention Certificate</strong></td>
<td>MARPOL Annex IV, regulation 5; MEPC/Circ.408</td>
</tr>
<tr>
<td></td>
<td>An International Sewage Pollution Prevention Certificate shall be issued,</td>
<td>Certificates</td>
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<td></td>
<td>after an initial or renewal survey in accordance with the provisions of</td>
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<td></td>
<td>regulation 4 of Annex IV of MARPOL, to any ship which is required to comply</td>
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<td></td>
<td>with the provisions of that Annex and is engaged in voyages to ports or</td>
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<td></td>
<td>offshore terminals under the jurisdiction of other Parties to the</td>
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<tr>
<td></td>
<td>Convention.</td>
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</tr>
<tr>
<td>AD</td>
<td><strong>Garbage Management Plan</strong></td>
<td>MARPOL Annex V, regulation 10; resolution MEPC.71(38); MEPC/Circ.317</td>
</tr>
<tr>
<td></td>
<td>Every ship of 100 gross tonnage and above and every ship which is certified</td>
<td>Plan</td>
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<td>to carry 15 persons or more shall carry a garbage management plan which the</td>
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<td></td>
<td>crew shall follow.</td>
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<tr>
<td>AE</td>
<td><strong>Garbage Record Book</strong></td>
<td>MARPOL Annex V, regulation 10</td>
</tr>
<tr>
<td></td>
<td>Every ship of 400 gross tonnage and above and every ship which is</td>
<td>ELB (*), <strong>FORM</strong></td>
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<tr>
<td></td>
<td>certified to carry 15 persons or more engaged in voyages to ports or</td>
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<td></td>
<td>offshore terminals under the jurisdiction of other Parties to the Convention</td>
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<td></td>
<td>and every fixed and floating platform engaged in exploration and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>exploitation of the seabed shall be provided with a Garbage Record Book.</td>
<td></td>
</tr>
<tr>
<td>AF</td>
<td><strong>Voyage data recorder system – certificate of compliance</strong></td>
<td>SOLAS 1974, regulation V/18.8</td>
</tr>
<tr>
<td></td>
<td>The voyage data recorder system, including all sensors, shall be subjected</td>
<td><strong>FORM</strong></td>
</tr>
<tr>
<td></td>
<td>to an annual performance test. The test shall be conducted by an approved</td>
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<tr>
<td></td>
<td>testing or servicing facility to verify the accuracy, duration and</td>
<td>Third parts</td>
</tr>
<tr>
<td></td>
<td>recoverability of the recorded data. In addition, tests and inspections</td>
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<td></td>
<td>shall be conducted to determine the serviceability of all protective</td>
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<tr>
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<td>enclosures and devices fitted to aid location. A copy of the certificate</td>
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<td>of compliance issued by the testing facility, stating the date of</td>
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<td></td>
<td>compliance and the applicable performance standards, shall be retained on</td>
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<tr>
<td></td>
<td>board the ship.</td>
<td></td>
</tr>
<tr>
<td>AG</td>
<td><strong>Cargo Securing Manual</strong></td>
<td>SOLAS 1974, regulations VI/5.6 and VII/5; MSC.1/Circ.1353</td>
</tr>
<tr>
<td></td>
<td>All cargoes other than solid and liquid bulk cargoes, cargo units and</td>
<td>Manual</td>
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<td></td>
<td>cargo transport units, shall be loaded, stowed and secured throughout the</td>
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<td></td>
<td>voyage in accordance with the Cargo Securing Manual approved by the</td>
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<td></td>
<td>Administration. In ships with ro-ro spaces, as defined in regulation II-2/</td>
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<td></td>
<td>3.41, all securing of such cargoes, cargo units and cargo transport units,</td>
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<td></td>
<td>in accordance with the Cargo Securing Manual, shall be completed before the</td>
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<td></td>
<td>ship leaves the berth. The Cargo Securing Manual is required on all types</td>
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<td>of ships engaged in the carriage of all cargoes other than solid and</td>
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<td>liquid bulk cargoes, which shall be drawn up to a standard at least</td>
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<td>equivalent to the guidelines developed by the Organization.</td>
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<tr>
<td>AH</td>
<td><strong>Document of Compliance</strong></td>
<td>SOLAS 1974, regulation IX/4; ISM Code, paragraph 13</td>
</tr>
<tr>
<td></td>
<td>A document of compliance shall be issued to every company which complies</td>
<td>Certificate</td>
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<td></td>
<td>with the requirements of the ISM Code. A copy of the document shall be kept</td>
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<td></td>
<td>on board.</td>
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</tr>
<tr>
<td>Code</td>
<td>Description</td>
<td>Relevant Regulations/Conventions</td>
</tr>
<tr>
<td>------</td>
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</tr>
</tbody>
</table>
| AI   | Safety Management Certificate  
A Safety Management Certificate shall be issued to every ship by the Administration or an organization recognized by the Administration. The Administration or an organization recognized by it shall, before issuing the Safety Management Certificate, verify that the company and its shipboard management operate in accordance with the approved safety management system. | SOLAS 1974, regulation IX/4; ISM Code, paragraph 13 | Certificate |
| AL   | International Ship Security Certificate (ISSC) or Interim International Ship Security Certificate  
An International Ship Security Certificate (ISSC) shall be issued to every ship by the Administration or an organization recognized by it to verify that the ship complies with the maritime security provisions of SOLAS chapter XI-2 and part A of the ISPS Code. An interim ISSC may be issued under the ISPS Code, part A, section 19.4. | SOLAS 1974, regulation XI-2/9.1.1; ISPS Code, part A, section 19 and appendices. | Certificate |
| AM   | Ship Security Plan and associated records  
Each ship shall carry on board a ship security plan approved by the Administration. The plan shall make provisions for the three security levels as defined in part A of the ISPS Code. Records of the following activities addressed in the ship security plan shall be kept on board for at least the minimum period specified by the Administration:  
1. training, drills and exercises;  
2. security threats and security incidents;  
3. breaches of security;  
4. changes in security level;  
5. communications relating to the direct security of the ship such as specific threats to the ship or to port facilities the ship is, or has been, in;  
6. internal audits and reviews of security activities;  
7. periodic review of the ship security assessment;  
8. periodic review of the ship security plan;  
9. implementation of any amendments to the plan; and  
10. maintenance, calibration and testing of any security equipment provided on board, including testing of the ship security alert system. | SOLAS 1974, regulation XI-2/9; ISPS Code, part A, sections 9 and 10 | Plan + FORM |
| AN   | Continuous Synopsis Record (CSR)  
Every ship to which chapter I of the Convention applies shall be issued with a Continuous Synopsis Record. The Continuous Synopsis Record provides an onboard record of the history of the ship with respect to the information recorded therein. | SOLAS 1974, regulation XI-1/5 | FORM (like Certificate) “issued by administration of the ship which would fly its flag” |
| AO   | International Anti-fouling System Certificate  
Ships of 400 GT and above engaged in international voyages, excluding fixed or floating platforms, FSUs, and FPSOs, shall be issued after inspection and survey an international Anti-fouling System Certificate together with a Record of Anti-fouling Systems. | AFS Convention, regulation 2(1) of annex 4 | Certificate |
| AP   | Declaration on Anti-fouling System | AFS Convention | Certificate |
| AQ | **International Air Pollution Prevention Certificate**  
Ships constructed before the date of entry into force of the Protocol of 1997 shall be issued with an International Air Pollution Prevention Certificate. Any ship of 400 gross tonnage and above engaged in voyages to ports or offshore terminals under the jurisdiction of other Parties and platforms and drilling rigs engaged in voyages to waters under the sovereignty or jurisdiction of other Parties to the Protocol of 1997 shall be issued with an International Air Pollution Prevention Certificate. | MARPOL Annex VI, regulation 6 | Certificate |
| AR | **International Energy Efficiency Certificate**  
An International Energy Efficiency Certificate for the ship shall be issued after a survey in accordance with the provisions of regulation 5.4 to any ships of 400 gross tonnage and above before that ship may engage in voyages to ports or offshore terminals under the jurisdiction of other Parties. | MARPOL Annex VI, regulation 6 | Certificate |
| AS | **Ozone-depleting Substances Record Book**  
Each ship subject to MARPOL Annex VI, regulation 6.1 that has rechargeable systems that contain ozone-depleting substances shall maintain an ozone-depleting substances record book. | MARPOL Annex VI, regulation 12.6 | ELB |
| AT | **Fuel Oil Changeover Procedure and Logbook (record of fuel changeover)**  
Those ships using separate fuel oils to comply with MARPOL Annex VI, regulation 14.3 and entering or leaving an emission control area shall carry a written procedure showing how the fuel oil changeover is to be done. The volume of low-sulphur fuel oils in each tank as well as the date, time and position of the ship when any fuel oil changeover operation is completed prior to the entry into an emission control area or commenced after exit from such an area shall be recorded in such logbook as prescribed by the Administration. | MARPOL Annex VI, regulation 14.6 | ELB (*) |
| AU | **Manufacturer's Operating Manual for Incinerators**  
Incinerators installed in accordance with the requirements of MARPOL Annex VI, regulation 16.6.1 shall be provided with a Manufacturer's Operating Manual, which is to be retained with the unit. | MARPOL Annex VI, regulation 16.7 | Manual |
| AV | **Bunker Delivery Note and Representative Sample**  
Bunker Delivery Note and representative sample of the fuel oil delivered shall be kept on board in accordance with requirements of MARPOL Annex VI, regulations 18.6 and 18.8.1. | MARPOL Annex VI, regulations 18.6 and 18.8.1 | ELB |
| AW | **Ship Energy Efficiency Management Plan (SEEMP)** | MARPOL Annex VI, | FORM |
| All ships of 400 gross tonnage and above, excluding platforms (including FPSOs and FSUs) and drilling rigs, regardless of their propulsion, shall keep on board a ship specific Ship Energy Efficiency Management Plan (SEEMP). This may form part of the ship's Safety management System (SMS). | regulation 22; MEPC.1/Circ.795 | Third parts |
| EEDI Technical File | MARPOL Annex VI, regulation 20 | FORM Third parts |
| Technical File | NOx Technical Code, paragraph 2.3.4 | FORM Third parts |
| Record Book of Engine Parameters | NOx Technical Code, paragraph 2.3.7 | ELB |
| Exemption Certificate1 | SOLAS 1974, regulation I/12; 1988 SOLAS Protocol, regulation I/12 | Certificate |
| LRIT conformance test report | SOLAS 1974, regulation V/19-1; MSC.1/Circ.1307 | FORM (Check list) Third parts |
| Noise Survey Report | SOLAS 1974, regulation II-1/3-12; Code on noise levels on board ships, section 4.3 | FORM Third parts |
| Ship-specific Plans and Procedures for Recovery of Persons from the Water | SOLAS 1974, regulation III/17-1; Resolution MSC.346(91); MSC.1/Circ.1447 | Plan |
first periodical or renewal safety equipment survey of the ship to be carried out after 1 July 2014, whichever comes first.
Ro-ro passenger ships which comply with regulation III/26.4 shall be deemed to comply with this regulation.
The Plans and Procedures should be considered as a part of the emergency preparedness plan required by paragraph 8 of the ISM Code.

| Note: The above mandatory requirements are expected to enter into force on 1/7/2014 |

| 2 | In addition to the certificates listed in section 1 above, passenger ships shall carry: |

| A | Passenger Ship Safety Certificate |
|   | A certificate called a Passenger Ship Safety Certificate shall be issued after inspection and survey to a passenger ship which complies with the requirements of chapters II-1, II-2, III, IV and V and any other relevant requirements of SOLAS 1974. A Record of Equipment for the Passenger Ship Safety Certificate (Form P) shall be permanently attached. |
|   | SOLAS 1974, regulation I/12; 1988 SOLAS Protocol, regulation I/12 |

|   | STP 71, rule 5 |
|   | SSTP 73, rule 5 |

| C | Search and rescue cooperation plan |
|   | Passenger ships to which chapter I of the Convention applies shall have on board a plan for cooperation with appropriate search and rescue services in event of an emergency. |
|   | SOLAS 1974, regulation V/7.3 |

| D | List of operational limitations |
|   | Passenger ships to which chapter I of the Convention applies shall keep on board a list of all limitations on the operation of the ship, including exemptions from any of the SOLAS regulations, restrictions in operating areas, weather restrictions, sea state restrictions, restrictions in permissible loads, trim, speed and any other limitations, whether imposed by the Administration or established during the design or the building stages. |
|   | SOLAS 1974, regulation V/30 |

| E | Decision support system for masters |
|   | In all passenger ships, a decision support system for emergency management shall be provided on the navigation bridge. |
|   | SOLAS 1974, regulation III/29 |

| 3 | In addition to the certificates listed in section 1 above, cargo ships shall carry: |

<p>| A | Cargo Ship Safety Construction Certificate |
|   | A certificate called a Cargo Ship Safety Construction Certificate shall be issued after survey to a cargo ship of 500 gross tonnage and over which satisfies the requirements for cargo ships on survey, set out in regulation I/10 of SOLAS 1974, and complies with the applicable requirements of chapters II-1 and II-2, other than those relating to fire- |
|   | SOLAS 1974, regulation I/12; 1988 SOLAS Protocol, regulation I/12 |</p>
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<tr>
<th></th>
<th><strong>extinguishing appliances and fire-control plans.</strong></th>
<th>SOLAS 1974, regulation I/12; 1988 SOLAS Protocol, regulation I/12</th>
<th>Certificate</th>
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<tr>
<td>B</td>
<td><strong>Cargo Ship Safety Equipment Certificate</strong></td>
<td>A certificate called a Cargo Ship Safety Equipment Certificate shall be issued after survey to a cargo ship of 500 gross tonnage and over which complies with the relevant requirements of chapters II-1 and II-2, III and V and any other relevant requirements of SOLAS 1974. A Record of Equipment for the Cargo Ship Safety Equipment Certificate (Form E) shall be permanently attached.</td>
<td>SOLAS 1974, regulation I/12, as amended by the GMDSS amendments; 1988 SOLAS Protocol, regulation I/12</td>
</tr>
<tr>
<td>C</td>
<td><strong>Cargo Ship Safety Radio Certificate</strong></td>
<td>A certificate called a Cargo Ship Safety Radio Certificate shall be issued after survey to a cargo ship of 300 gross tonnage and over, fitted with a radio installation, including those used in life-saving appliances, which complies with the requirements of chapter IV and any other relevant requirements of SOLAS 1974. A Record of Equipment for the Cargo Ship Safety Radio Certificate (Form R) shall be permanently attached.</td>
<td>SOLAS 1974, regulation I/12</td>
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<tr>
<td>D</td>
<td><strong>Cargo Ship Safety Certificate</strong></td>
<td>A certificate called a Cargo Ship Safety Certificate may be issued after survey to a cargo ship which complies with the relevant requirements of chapters II-1, II-2, III, IV and V and other relevant requirements of SOLAS 1974 as modified by the 1988 SOLAS Protocol, as an alternative to the Cargo Ship Safety Construction Certificate, Cargo Ship Safety Equipment Certificate and Cargo Ship Safety Radio Certificate. A Record of Equipment for the Cargo Ship Safety Certificate (Form C) shall be permanently attached.</td>
<td>1988 SOLAS Protocol, regulation I/12</td>
</tr>
<tr>
<td>E</td>
<td><strong>Document of authorization for the carriage of grain and grain loading manual</strong></td>
<td>A document of authorization shall be issued for every ship loaded in accordance with the regulations of the International Code for the Safe Carriage of Grain in Bulk. The document shall accompany or be incorporated into the grain loading manual provided to enable the master to meet the stability requirements of the Code.</td>
<td>SOLAS 1974, regulation VI/9; International Code for the Safe Carriage of Grain in Bulk, section 3</td>
</tr>
<tr>
<td>F</td>
<td><strong>Certificate of insurance or other financial security in respect of civil liability for oil pollution damage</strong></td>
<td>A certificate attesting that insurance or other financial security is in force shall be issued to each ship carrying more than 2,000 tonnes of oil in bulk as cargo. It shall be issued or certified by the appropriate authority of the State of the ship's registry after determining that the requirements of article VII, paragraph 1, of the CLC Convention have been complied with.</td>
<td>CLC 1969, article VII</td>
</tr>
<tr>
<td>G</td>
<td><strong>Certificate of insurance or other financial security in respect of civil liability for bunker oil pollution damage</strong></td>
<td>Certificate attesting that insurance or other financial security is in force in accordance with the provisions of this Convention shall be issued to each ship of greater than 1,000 GT after the appropriate authority of a State Party has determined that the requirements of article 7, paragraph 1</td>
<td>Bunker Convention 2001, article 7</td>
</tr>
<tr>
<td>Code</td>
<td>Description</td>
<td>Related Regulations/Resolutions</td>
<td>Form</td>
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<tr>
<td>H</td>
<td>Certificate of insurance or other financial security in respect of civil liability for oil pollution damage</td>
<td>CLC 1992, article VII</td>
<td>Certificate</td>
</tr>
<tr>
<td>I</td>
<td>Enhanced survey report file</td>
<td>SOLAS 1974, regulation XI-1/2; resolution A.744(18)</td>
<td>FORM</td>
</tr>
<tr>
<td>L</td>
<td>Record of oil discharge monitoring and control system for the last ballast voyage</td>
<td>MARPOL Annex I, regulation 31</td>
<td>Form (*)</td>
</tr>
<tr>
<td>M</td>
<td>Oil Discharge Monitoring and Control (ODMC) Operational Manual</td>
<td>MARPOL Annex I, regulation 31; resolution A.496(XII); resolution A.586(14); resolution MEPC.108(49)</td>
<td>Manual</td>
</tr>
<tr>
<td>Column</td>
<td>Description</td>
<td>Relevance</td>
<td>Source</td>
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| **N** | **Cargo Information**  
The shipper shall provide the master or his representative with appropriate information, confirmed in writing, on the cargo, in advance of loading. In bulk carriers, the density of the cargo shall be provided in the above information. | SOLAS 1974, regulations VI/2 and XII/10; MSC/Circ.663 | FORM Third parts |
| **O** | **Ship Structure Access Manual**  
This regulation applies to oil tankers of 500 gross tonnage and over and bulk carriers, as defined in regulation IX/1, of 20,000 gross tonnage and over, constructed on or after 1 January 2006. A ship's means of access to carry out overall and close-up inspections and thickness measurements shall be described in a Ship structure access manual approved by the Administration, an updated copy of which shall be kept on board. | SOLAS 1974, regulation II-1/3-6 | Manual |
| **P** | **Bulk Carrier Booklet**  
To enable the master to prevent excessive stress in the ship's structure, the ship loading and unloading solid bulk cargoes shall be provided with a booklet referred to in SOLAS regulation VI/7.2. The booklet shall be endorsed by the Administration or on its behalf to indicate that SOLAS regulations XII/4, 5, 6 and 7, as appropriate, are complied with. As an alternative to a separate booklet, the required information may be contained in the intact stability booklet. | SOLAS 1974, regulations VI/7 and XII/8; Code of Practice for the Safe Loading and Unloading of Bulk Carriers (BLU Code) | Manual |
| **Q** | **Crude Oil Washing Operation and Equipment Manual (COW Manual)**  
Every oil tanker operating with crude oil washing systems shall be provided with an Operations and Equipment Manual detailing the system and equipment and specifying operational procedures. Such a Manual shall be to the satisfaction of the Administration and shall contain all the information set out in the specifications referred to in regulation 35 of Annex I of MARPOL. | MARPOL Annex I, regulation 35; resolution MEPC.81(43) | Manual |
| **R** | **Condition Assessment Scheme (CAS) Statement of Compliance, CAS Final Report and Review Record**  
A Statement of Compliance shall be issued by the Administration to every oil tanker which has been surveyed in accordance with the requirements of the Condition Assessment Scheme (CAS) and found to be in compliance with these requirements. In addition, a copy of the CAS Final Report which was reviewed by the Administration for the issue of the Statement of Compliance and a copy of the relevant Review Record shall be placed on board to accompany the Statement of Compliance. | MARPOL Annex I, regulations 20 and 21; resolution MEPC.94(46); resolution MEPC.99(48); resolution MEPC.112(50); resolution MEPC.131(53); resolution MEPC.155(55) | FORM Third parts |
| **S** | **Subdivision and stability information**  
Every oil tanker to which regulation 28 of Annex I of MARPOL applies shall be provided in an approved form with information relative to loading and distribution of cargo necessary to ensure compliance with the provisions of this regulation and data on the ability of the ship to comply with damage stability criteria as determined by this regulation. | MARPOL Annex I, regulation 28 | Certificate |
<table>
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<tr>
<th>Section</th>
<th>Description</th>
<th>Reference</th>
<th>Type</th>
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</table>
| T | STS Operation Plan and Records of STS Operations  
Any oil tanker involved in STS operations shall carry on board a plan prescribing how to conduct STS operations (STS operations Plan) not later than the date of the first annual, intermediate or renewal survey of the ship to be carried out on or after 1 January 2011. Each oil tanker’s STS operations plan shall be approved by the Administration. The STS operations plan shall be written in the working language of the ship.  
Records of STS operations shall be retained on board for three years and be readily available for inspection. | MARPOL Annex I, regulation 41 | Plan + FORM Third parts |
| U | VOC Management Plan  
A tanker carrying crude oil, to which MARPOL Annex VI, regulation 15.1 applies, shall have on board and implement a VOC Management Plan. | MARPOL Annex VI, regulation 15.6 | FORM Third parts |
| 4 | In addition to the certificates listed in sections 1 and 3 above, where appropriate, any ship carrying noxious liquid chemical substances in bulk shall carry: |  |  |
| A | International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk (NLS Certificate)  
An international pollution prevention certificate for the carriage of noxious liquid substances in bulk (NLS Certificate) shall be issued, after survey in accordance with the provisions of regulation 8 of Annex II of MARPOL, to any ship carrying noxious liquid substances in bulk and which is engaged in voyages to ports or terminals under the jurisdiction of other Parties to MARPOL. In respect of chemical tankers, the Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk and the International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk, issued under the provisions of the Bulk Chemical Code and International Bulk Chemical Code, respectively, shall have the same force and receive the same recognition as the NLS Certificate. | MARPOL Annex II, regulation 8 | Certificate |
| B | Cargo record book  
Ships carrying noxious liquid substances in bulk shall be provided with a Cargo Record Book, whether as part of the ship’s official log book or otherwise, in the form specified in appendix II to Annex II. | MARPOL Annex II, regulation 15.2 | ELB (*) |
| C | Procedures and Arrangements Manual (P & A Manual)  
Every ship certified to carry noxious liquid substances in bulk shall have on board a Procedures and Arrangements Manual approved by the Administration. | MARPOL Annex II, regulation 14; resolution MEPC.18(22) | Manual |
| D | Shipboard Marine Pollution Emergency Plan for Noxious Liquid Substances  
Every ship of 150 gross tonnage and above certified to carry noxious liquid substances in bulk shall carry on board a shipboard marine pollution emergency plan for noxious liquid substances approved by the Administration. | MARPOL Annex II, regulation 17 | Plan |
| 5 | In addition to the certificates listed in sections 1 and 3 above, where applicable, any chemical tanker shall |  |  |
### Certificates of Fitness for the Carriage of Dangerous Chemicals in Bulk

A certificate called a **Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk**, the model form of which is set out in the appendix to the Bulk Chemical Code, should be issued after an initial or periodical survey to a chemical tanker engaged in international voyages which complies with the relevant requirements of the Code.  
*Note: The Code is mandatory under Annex II of MARPOL for chemical tankers constructed before 1 July 1986.*

<table>
<thead>
<tr>
<th>Certificate</th>
<th>Code Section</th>
<th>Note</th>
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<tbody>
<tr>
<td>Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk</td>
<td>BCH Code, section 1.6</td>
<td></td>
</tr>
<tr>
<td>Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk</td>
<td>BCH Code, as modified by resolution MSC.18(58), section 1.6</td>
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</table>

### International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk

A certificate called an **International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk**, the model form of which is set out in the appendix to the International Bulk Chemical Code, should be issued after an initial or periodical survey to a chemical tanker engaged in international voyages, which complies with the relevant requirements of the Code.  
*Note: The Code is mandatory under both chapter VII of SOLAS 1974 and Annex II of MARPOL for chemical tankers constructed on or after 1 July 1986.*

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<tr>
<th>Certificate</th>
<th>Code Section</th>
<th>Note</th>
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<tbody>
<tr>
<td>International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk</td>
<td>IBC Code, section 1.5</td>
<td></td>
</tr>
<tr>
<td>International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk</td>
<td>IBC Code as modified by resolutions MSC.16(58) and MEPC.40(29), section 1.5</td>
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</table>

### In addition to the certificates listed in sections 1 and 3 above, where applicable, any gas carrier shall carry:

#### Certificate of Fitness for the Carriage of Liquefied Gases in Bulk

A certificate called a **Certificate of Fitness for the Carriage of Liquefied Gases in Bulk**, the model form of which is set out in the appendix to the Gas Carrier Code, should be issued after an initial or periodical survey to a gas carrier which complies with the relevant requirements of the Code.  
*Note: The Code is mandatory under both chapter VII of SOLAS 1974 and Annex II of MARPOL for chemical tankers constructed on or after 1 July 1986.*

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<tr>
<th>Certificate</th>
<th>Code Section</th>
<th>Note</th>
</tr>
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<tbody>
<tr>
<td>Certificate of Fitness for the Carriage of Liquefied Gases in Bulk</td>
<td>GC Code, section 1.6</td>
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</tr>
<tr>
<td>Certificate of Fitness for the Carriage of Liquefied Gases in Bulk</td>
<td>GC Code, as modified by resolution MSC.17(58), section 1.5</td>
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</table>

### In addition to the certificates listed in sections 1, 2 or 3 above, where applicable, any high-speed craft shall carry:

#### High-Speed Craft Safety Certificate

A certificate called a **High-Speed Craft Safety Certificate** shall be issued after completion of an initial or renewal survey to a craft which complies with the requirements of the 1994 HSC Code or the 2000 HSC Code, as appropriate.

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<tr>
<th>Certificate</th>
<th>Code Section</th>
<th>Note</th>
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<tbody>
<tr>
<td>High-Speed Craft Safety Certificate</td>
<td>SOLAS 1974, regulation X/3; 1994 HSC Code, section 1.8; 2000 HSC Code, section 1.8</td>
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### Permit to Operate High-Speed Craft

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<tr>
<th>Certificate</th>
<th>Code Section</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permit to Operate High-Speed Craft</td>
<td>1994 HSC Code,</td>
<td></td>
</tr>
<tr>
<td>Section</td>
<td>Description</td>
<td>Certificate</td>
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<tr>
<td>8</td>
<td><strong>In addition to the certificates listed in sections 1, and 2 or 3 above, where applicable, any ship carrying dangerous goods shall carry:</strong> Document of compliance with the special requirements for ships carrying dangerous goods The Administration shall provide the ship with an appropriate document as evidence of compliance of construction and equipment with the requirements of regulation II-2/19 of SOLAS 1974. Certification for dangerous goods, except solid dangerous goods in bulk, is not required for those cargoes specified as class 6.2 and 7 and dangerous goods in limited quantities.</td>
<td>SOLAS 1974, regulation II-2/19.4 Certificate</td>
</tr>
<tr>
<td>9</td>
<td><strong>In addition to the certificates listed in sections 1, and 2 or 3 above, where applicable, any ship carrying dangerous goods in packaged form shall carry:</strong> Dangerous goods manifest or stowage plan Each ship carrying dangerous goods in packaged form shall have a special list or manifest setting forth, in accordance with the classification set out in the IMDG Code, the dangerous goods on board and the location thereof. Each ship carrying dangerous goods in solid form in bulk shall have a list or manifest setting forth the dangerous goods on board and the location thereof. A detailed stowage plan, which identifies by class and sets out the location of all dangerous goods on board, may be used in place of such a special list or manifest. A copy of one of these documents shall be made available before departure to the person or organization designated by the port State authority.</td>
<td>SOLAS 1974, regulations VII/4.5 and VII/7-2; MARPOL Annex III, regulation 4 Plan</td>
</tr>
<tr>
<td>10</td>
<td><strong>In addition to the certificates listed in sections 1, and 2 or 3 above, where applicable, any ship carrying INF cargo shall carry:</strong> International Certificate of Fitness for the Carriage of INF Cargo A ship carrying INF cargo shall comply with the requirements of the International Code for the Safe Carriage of Packaged Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Wastes on Board Ships (INF Code) in addition to any other applicable requirements of the SOLAS regulations and shall be surveyed and be provided with the International Certificate of Fitness for the Carriage of INF Cargo.</td>
<td>SOLAS 1974, regulation VII/16; INF Code (resolution MSC.88(71)), paragraph 1.3 Certificate</td>
</tr>
<tr>
<td>11</td>
<td><strong>In addition to the certificates listed in sections 1, and 2 or 3 above, where applicable, any Nuclear Ship shall carry:</strong> A Nuclear Cargo Ship Safety Certificate or Nuclear Passenger Ship Safety Certificate, in place of the Cargo Ship Safety Certificate or Passenger Ship Safety Certificate, as appropriate.</td>
<td>SOLAS 1974, regulation VIII/10 Certificate</td>
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Every Nuclear powered ship shall be issued with the certificate required by SOLAS chapter VIII.

**Other certificates and documents which are not mandatory**

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<tr>
<td><strong>12</strong></td>
<td><strong>Special purpose ships</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Special Purpose Ship Safety Certificate</strong></td>
</tr>
<tr>
<td></td>
<td>In addition to SOLAS certificates as specified in paragraph 7 of the Preamble of the Code of Safety for Special Purpose Ships, a Special Purpose Ship Safety Certificate should be issued after survey in accordance with the provisions of paragraph 1.6 of the Code for Special Purpose Ships. The duration and validity of the certificate should be governed by the respective provisions for cargo ships in SOLAS 1974. If a certificate is issued for a special purpose ship of less than 500 gross tonnage, this certificate should indicate to what extent relaxations in accordance with 1.2 were accepted.</td>
</tr>
<tr>
<td></td>
<td>Resolution A.534(13), as amended by MSC/Circ.739; 2008 SPS Code (resolution MSC.266(84)), SOLAS 1974, regulation I/12; 1988 SOLAS Protocol, regulation I/12</td>
</tr>
<tr>
<td></td>
<td><strong>Certificate</strong></td>
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<tr>
<td><strong>13</strong></td>
<td><strong>Offshore support vessels</strong></td>
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<tr>
<td></td>
<td><strong>Offshore Supply Vessel Document of Compliance</strong></td>
</tr>
<tr>
<td></td>
<td>The Document of Compliance should be issued after satisfied that the vessel complies with the provisions of the Guidelines for the design and construction of Offshore Supply Vessels, 2006.</td>
</tr>
<tr>
<td></td>
<td>Resolution MSC.235(82)</td>
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<tr>
<td></td>
<td><strong>Certificate</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Certificate of Fitness for Offshore Support Vessels</strong></td>
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<tr>
<td></td>
<td>When carrying such cargoes, offshore support vessels should carry a Certificate of Fitness issued under the &quot;Guidelines for the Transport and Handling of Limited Amounts of Hazardous and Noxious Liquid Substances in Bulk on Offshore Support Vessels&quot;. If an offshore support vessel carries only noxious liquid substances, a suitably endorsed International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk may be issued instead of the above Certificate of Fitness.</td>
</tr>
<tr>
<td></td>
<td>Resolution A.673(16); MARPOL Annex II, regulation 13(4)</td>
</tr>
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<td></td>
<td><strong>Certificate</strong></td>
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<tr>
<td><strong>14</strong></td>
<td><strong>Diving systems</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Diving System Safety Certificate</strong></td>
</tr>
<tr>
<td></td>
<td>A certificate should be issued either by the Administration or any person or organization duly authorized by it after survey or inspection to a diving system which complies with the requirements of the Code of Safety for Diving Systems. In every case, the Administration should assume full responsibility for the certificate.</td>
</tr>
<tr>
<td></td>
<td>Resolution A.536(13), section 1.6</td>
</tr>
<tr>
<td></td>
<td><strong>Certificate</strong></td>
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<tr>
<td><strong>15</strong></td>
<td><strong>Passenger submersible craft</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Safety Compliance Certificate for Passenger Submersible Craft</strong></td>
</tr>
<tr>
<td></td>
<td>Applicable to submersible craft adapted to accommodate passengers and intended for underwater excursions with the pressure in the passenger compartment at or near one atmosphere. A Design and Construction Document issued by the Administration should be attached to the Safety Compliance Certificate.</td>
</tr>
<tr>
<td></td>
<td>MSC/Circ.981, as amended by MSC/Circ.1125</td>
</tr>
<tr>
<td></td>
<td><strong>Certificate</strong></td>
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<tr>
<td><strong>16</strong></td>
<td><strong>Dynamically supported craft</strong></td>
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<tr>
<td>17 Mobile offshore drilling units</td>
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</tr>
<tr>
<td><strong>Dynamically Supported Craft Construction and Equipment Certificate</strong>&lt;br&gt;To be issued after survey carried out in accordance with paragraph 1.5.1(a) of the Code of Safety for Dynamically Supported Craft.</td>
<td>Resolution A.373(X), section 1.6</td>
</tr>
<tr>
<td><strong>Mobile Offshore Drilling Unit Safety Certificate</strong>&lt;br&gt;To be issued after survey carried out in accordance with the provisions of the Code for the Construction and Equipment of Mobile Offshore Drilling Units, 1979, or, for units constructed on or after 1 May 1991, the Code for the Construction and Equipment of Drilling Units, 1989.</td>
<td>Resolution A.414(XI), section 1.6; resolution A.649(16), section 1.6; resolution A.649(16), as modified by resolution MSC.38(63), section 1.6; 2009 MODU Code (resolution A.1023(26))</td>
</tr>
</tbody>
</table>

| 18 Wing-In-Ground (WIG) Craft |  |
|--------------------------------|--|---|
| **Wing-in–ground Craft Safety Certificate**<br>A certificate called a WIG Craft Safety Certificate should be issued after completion of an initial or renewal survey to a craft, which complies with the provisions of the Interim Guidelines for WIG craft. | MSC/Circ.1054, section 9 | Certificate |
| **Permit to Operate WIG Craft**<br>A permit to operate should be issued by the Administration to certify compliance with the provisions of the Interim Guidelines for WIG craft. | MSC/Circ.1054, section 10 | FORM “be issued by the Administration” |

<table>
<thead>
<tr>
<th>19 Noise levels</th>
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<tbody>
<tr>
<td><strong>Noise Survey Report</strong>&lt;br&gt;Applicable to existing ships to which SOLAS II-1/3-12 does not apply.&lt;br&gt;A noise survey report should be made for each ship in accordance with the Code on Noise Levels on Board Ships.</td>
<td>Resolution A.468(XII), section 4.3</td>
</tr>
</tbody>
</table>
M13 - e-Certificates

definition

(Appendix 10)

30 APRIL 2016
Resolution A.916(22)

Adopted on 29 November 2001
(Agenda item 9)

GUIDELINES FOR THE RECORDING OF EVENTS RELATED TO NAVIGATION

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety,

RECALLING ALSO the provisions of regulation V/28 of the International Convention for the Safety of Life at Sea, 1974, as amended, requiring all ships engaged on international voyages to keep on board a record of navigational activities and incidents which are of importance to safety of navigation and which must contain sufficient detail to restore a complete record of the voyage, taking into account the recommendations adopted by the Organization,

HAVING CONSIDERED the recommendations made by the Maritime Safety Committee at its seventy-third session and by the Sub-Committee on Safety of Navigation at its forty-seventh session,

1. ADOPTS the Guidelines for the recording of events related to navigation set out in the Annex to the present resolution;

2. INVITES Governments concerned to take into account these Guidelines when implementing SOLAS regulation V/28;

3. REQUESTS the Maritime Safety Committee to keep the Guidelines under review and to amend them as appropriate.
ANNEX

GUIDELINES FOR THE RECORDING OF EVENTS RELATED TO NAVIGATION

Regulation V/28 of the 1974 SOLAS Convention, as amended, requires all ships engaged on international voyages to keep on board a record of navigational activities and incidents which are of importance to safety of navigation and which must contain sufficient detail to restore a complete record of the voyage, taking into account the recommendations adopted by the Organization.

This resolution aims at providing guidance for the recording of such events:

1. **Recording of information related to navigation**

In addition to national requirements, it is recommended that the following events and items, as appropriate, be among those recorded:

.1 before commencing the voyage

Details of all data relating to the general condition of the ship should be acknowledged and recorded, such as manning and provisioning, cargo aboard, draught, result of stability/stress checks when conducted, inspections of controls, the steering gear and navigational and radiocommunication equipment.

.2 during the voyage

Details related to the voyage should be recorded, such as courses steered and distances sailed, position fixings, weather and sea conditions, changes to the voyage plan, details of pilots' embarkation/disembarkation, and entry into areas covered by, and compliance with, ship routeing or reporting systems.

.3 on special events

Details on special events should be recorded, such as death and injuries among passengers and crew and passengers, malfunctions of shipboard equipment and aids to navigation, potentially hazardous situations, emergencies and distress messages received.

.4 when the ship is at anchor or in a port

Details on operational or administrative matters and details related to the safety and security of the ship should be recorded.

2. **Method of recording**

SOLAS regulation V/28 requires that, if the records of navigational activities are not maintained in the ship's log-book, they should be maintained in another form approved by the Administration. Methods of recording should be permanent and may be handwritten, electronic or mechanical.
3 Non-duplication

In general, information on the events and items specified in paragraph 1, which are adequately recorded in a special-purpose log, need not be duplicated in the ship's log book.

4 Preservation of records

In order to be able to restore a complete record of the voyage, records should be maintained as follows:

.1 each page of the ship's log-book should have a page number printed on it, and handwritten records which need correction should not be erased or removed but should be rewritten after crossing out the incorrect version;

.2 the times used in automatic and permanent recording facilities should be synchronized by using a common clock;

.3 electronically or mechanically input records should be protected by means to prevent them from being deleted, destroyed or overwritten; and

.4 irrespective of the method of recording, ships should keep records for as long as the Administration concerned requires, provided the fixed period is not less than one year.

_______________
M13- e-Certificates definition (APPENDIX 11)

30 APRIL 2016
ELB- Assessment of e-log book acceptance by Administrations (E-Log book approval)
CONTENTS

Introduction – Scope of this document

Common elements for ELB approval

Supporting documents

• 1_Malta Maritime Authority Approval’s specific requirements
• 2_Danish Maritime Authority Approval’s specific requirements
• 3_Norwegian Maritime Directorate Approval’s specific requirements
• 4_UK Maritime and Coastguard Agency Approval’s specific requirements
• 5_Swedish Maritime Safety Inspectorate Approval’s specific requirements
The document focuses on the acceptance and approval of the E-log Book, as conceived in Anna and in STM Validation, by Malta, Danish, UK, Norwegian and Swedish Competent Administrations.
Common elements for ELB approval
Common elements for ELB approval

The acceptance of the Electronic log books as full Replacement for paper log books from the competent Administrations considered subordinate to the following common requirements:

• The work station on the bridge where the log book is to be maintained shall comply with the IMO Guidelines on Ergonomic Criteria for Bridge Equipment and Layout”;

• The presentation of the logbook shall comply with the requirements of MSC/Circ.982(5.3.4);

• Lightning of display and keyboard shall follow the regulations in in MSC/Circ.982/5.3.6
Common elements for ELB approval

Additionally, all the Administrations require that the following documentation shall be carried on board and be presented upon request during port state control or other authorized vessel inspections:

• Declaration from Marine IT Company or the installation contractor or the producer that the system is installed according to current regulations, is performance tested and found in full functioning order;

• Declaration from the owner that the officers on board has received training in accordance with STCW-95 rule 1/14.1.4
Supporting documents
1_Malta Maritime Authority Approval’s specific requirements

Electronic log books are accepted for use on Maltese registered ships as full replacement for paper log books provided the following are complied with:

- the work station on the bridge where the log book is to be maintained shall comply with the IMO "Guidelines on Ergonomic Criteria for Bridge Equipment and Layout" contained in MSC/Circ.982;

- the presentation of the logbook shall comply with the requirements of Resolution MSC.86 (70) and MSC/Circ.982(5.3.4);

- lighting of the display and keyboard shall comply with the requirements of MSC/Circ.982(5.3.6);

- the electronic log book provides for entry of data required by Section 191 of the Merchant Shipping Act 1973, as amended. Alternatively, the Maltese Official Log Book is to be maintained in conjunction with the electronic log book.

- updates relative to the system's basic functionality or security shall be available at all times.

The Company's Safety Management System shall include procedures addressing:

- regular back up of data at the Company's offices. Back-up shall be carried out at least on a daily basis unless prevailing circumstances dictate otherwise;

- retention of back-up data at the Company's offices. Data shall be retained for a period of not less than three years;

- immediate availability and access to data by the Administration, upon request.

The following documentation shall be carried on board the ship at all times and be readily available for inspection upon request:

- a declaration from the electronic logbook producer or the installation company that the system has been installed according to current regulations, performance tested and found to be in full functioning order

- a declaration from the Owners that the officers on board have received training in accordance with STCW-95 Regulation I/14.1.4
2_Danish Maritime Authority Approval’s specific requirements
Acceptance of Fleetmaster® Electronic Logbook on Danish Vessels

With reference to “Bekendtgørelse nr. 720 af 4. september 2002 om skibsbøger og tilsynsbøger §3.3” the Danish Maritime Authority hereby accepts the Fleetmaster® Electronic Logbook for use on board Danish flagged Vessels when the requirements below are fulfilled in each case:

1. The workstation on the bridge where the logbook is available shall be designed in accordance with the principles given in ISO standard 8468 and MSC/Circ. 982.
2. Presentation of the logbook shall follow the regulations in Resolution MSC. 86 (70) and MSC/Circ. 982/5.3.4.
3. Lighting of display and keyboard shall follow the regulations in ISO-8468 7 6.3.4 or MSC/Circ. 982/5.3.6.
4. If technically feasible, all data entered into the Fleetmaster® electronic logbook system shall automatically be copied onto the ships VDR if the ship is so equipped.

The following documentation shall be carried on board and be presented upon request during port state control or other authorized vessel inspections:

1. Declaration from Maritime IT Company AS or the installation contractor, that the system is installed according to current regulations, is performance tested and found in full functioning order.
2. Declaration from the owner that the officers on board has received training in accordance with STCW-95 regulation I/14.1.4, and that routines for safekeeping of the logbook in accordance with Danish regulations\(^1\) for ships logbooks is implemented in the ships ISM system.

Yours sincerely,

Erik I. Tvedt
Ship Surveyor
Tel. direct +45 39 17 45 02
Fax direct +45 39 17 44 20
E-mail eit@dma.dk

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\(^1\) Order. No. 720 of 4th September 2002 on "Skibsbøger og tilsynsbøg".
3_Norwegian Maritime Directorate Approval’s specific requirements
Kongsberg Maritime
Maritime IT company AS
P. O. box 251
N- 3192 Horten
Norway

Dear Sirs,

Acceptance of Fleetmaster® electronic logbook on Norwegian vessels

The Fleetmaster® electronic logbook is accepted for use on Norwegian flagged vessels when the assumptions listed below are fulfilled.

- The workstation on the bridge where the logbook is available shall be designed in accordance with the principles given in ISO standard 8468 and MSC/Circ.982.
- Presentation of the logbook shall follow the regulations in Resolution MSC.86 (70) and MSC/Circ.982 / 5.3.4.
- Lightning of display and keyboard shall follow the regulations in ISO-8468 7 6.3.4 or MSC/Circ.982 / 5.3.6.

The following documentation shall be carried on board and be presented upon request during port state control or other authorized vessel inspections:

- Declaration from Maritime IT company AS or the installation contractor, that the system is installed according to current regulations, is performance tested and found in full functioning order.
- Declaration from the owner that the officers on board has received training in accordance with STCW-95 rule 1/14.1.4, and that routines for safekeeping of the logbook in accordance with Norwegians rules for ships logbooks is implemented in the ships ISM system.

Reference is also made to the formal acceptance in our letter dated 2002-11.04 for closer details.

Yours faithfully

Rune Teisrud
Director general for shipping and navigation

Per Magne Indreide
Director of department
4_UK Maritime and Coastguard Agency Approval’s specific requirements
Dear Bjarne

Electronic Log Books – Certificate of Inspection and Tests

1. This is to certify that a specimen of Fleetmaster Electronic Log Book manufactured by Kongsberg Marine IT Company AS of Horten, Norway has been examined and tested. On behalf of the Secretary of State, the Maritime and Coastguard Agency is satisfied that the specimen examined is acceptable for the purpose of complying with the requirements of SOLAS V/28 provided that the conditions in the following schedule are fulfilled and the items remain satisfactory in service.

2. Except as referred to in the conditions, this Certificate does not apply to equipment which has been varied or modified from the specimen tested. The manufacturer must submit modified equipment for consideration by the Agency.

SCHEDULE OF CONDITIONS

1. The design of the equipment and software, including future updates, should be such as to enable recording of the information required in the Annex to the SOLAS Convention 1974, Chapter V, Regulation 28 and the Guidelines for the Recording of Events Related to Navigation in Assembly Resolution A.916(22).

2. New software versions will be produced and issued in accordance with development routines according to ISO 9002 for the work process. All changes to software will be documented and tested prior to release so that traceability is maintained within software releases.

3. MCA will be informed of releases and changes when these impact upon the “basic” functionality or security of the system, so that MCA are continuously up to date on the status of compliance.
4. Shipboard equipment used to operate the software shall be in accordance with those parts of MSC Circular 891 of 21 December 1998 that are relevant for application to electronic logbooks.

5. Advice given during training of ships' navigating officers as operators of the equipment should remind them that any automatic input of position information from a GPS is supplementary to other observations. Recording of given positions through reckoning and observations such as visual and radar observations should be recorded during a watch, so as to ensure that the logbook does not solely depend upon GPS positions.

6. It must be possible to reconstruct the vessel's track throughout the voyage with navigational records retained for not less than 12 months.

7. Any bridge work station where the log book is situated shall comply with the principles of the IMO Guidelines on Ergonomic Criteria for Bridge Equipment and Layout contained in MSC Circular 982 of 20 December 2000 and ISO 8468.

8. Lighting of display and keyboard shall follow the standards contained in ISO 8468 para 6.3.4 or MSC Circular 982 para 5.3.6 of 20 December 2000.

9. The following documentation shall be carried on board and presented upon request to authorised officials during statutory survey or inspection:

   .1 A declaration from a relevant person that the system is installed according to current UK regulations and its performance tested and found in full working order.

   .2 A declaration from the owner that the officers on board have received training in accordance with STCW-95 rule 1/14.1.4.

Yours faithfully

[Signature]

Captain Paul Wilkins
Communication and Innovation
5_Swedish Maritime Safety Inspectorate Approval’s specific requirements
Dear Sirs,

Acceptance of Fleetmaster® electronic logbook on Swedish vessels

The Fleetmaster® electronic logbook is accepted for use on Swedish flagged vessels when the assumptions listed below are fulfilled:

- The workstation on the bridge where the logbook is available shall be designed in accordance with the principles given in MSC/Circ. 982.

- Presentation of the logbook shall follow the regulations in Resolution MSC.86 (70) and MSC/Circ. 9825.3.4.

- Lightning of display and keyboard shall follow the regulations in MSC/Circ. 9825.3.6.

The following documentation shall be carried on board and be presented upon request during port state control or other authorized vessel inspections:

- Declaration from Marine IT Company AS or the installation contractor that the system is installed according to current regulations, is performance tested and found in full functioning order.

- Declaration from the owner that the officers on board has received training in accordance with STCW-95 rule I/14.1.4 and that routines for safekeeping of the logbook in accordance with Swedish rules for ship logbooks is implemented in the ships ISM system.

Yours faithfully,

[Signature]

Sten Anderson
Head of staff
M13 - e-Certificates definition (Appendix 12)

30 APRIL 2016
MEPC 66/9
6 February 2015

MARINE ENVIRONMENT PROTECTION COMMITTEE
68th session
Agenda item 9

USE OF ELECTRONIC RECORD BOOKS
Report of the Correspondence Group on the Use of electronic record books under MARPOL
Submitted by Australia

SUMMARY

Executive summary: This document summarizes the work of the correspondence group re-established at MEPC 66 on the Use of electronic record books under MARPOL, including the conclusions of the group and outstanding issues for further discussion. In addition, this document presents the draft Guidance for the use of electronic record books under MARPOL; proposed amendments to Procedures for port State control, 2011 (resolution A.1052(27)) to facilitate the use of electronic record books under MARPOL; and draft unified interpretations to MARPOL to permit the use of an electronic record book for consideration.

Strategic direction: 8
High-level action: 8.0.3
Planned output: 8.0.3.1
Action to be taken: Paragraph 24
Related documents: MEPC 65/7/1, MEPC 65/22; MEPC 66/7, MEPC 66/21 and FAL 39/WP.6

1 MEPC 66 re-established the Correspondence Group on the Use of electronic record books under MARPOL under the coordination of Australia in April 2014. The following Member States participated in the work of the correspondence group:

ANTIGUA AND BARBUDA LIBERIA
AUSTRALIA MARSHALL ISLANDS
CANADA NETHERLANDS
DENMARK RUSSIAN FEDERATION
FINLAND SINGAPORE
GERMANY SPAIN
INDIA SWEDEN
IRELAND UNITED KINGDOM
JAPAN UNITED STATES

https://edocs.imo.org/Final Documents/English/MEPC 68-9 (E).doc
as did the following non-governmental organizations:

INTERNATIONAL CHAMBER OF SHIPPING (ICS)
CRUISE LINES INTERNATIONAL ASSOCIATION (CLIA)
THE NAUTICAL INSTITUTE

2 The work of the correspondence group was guided by the terms of reference established in paragraph 7.5 of document MEPC 66/21:

.1 finalize the draft guidance for the use of electronic record books under MARPOL, on the basis of the annex to document MEPC 66/7 and taking into account the ongoing work of the FAL Committee in this respect;

.2 consider and prepare any necessary amendments and/or unified interpretations of annexes of MARPOL, as appropriate, in order to allow for the use of electronic record books;

.3 consider the need for any consequential amendments to the Procedures for port State control, 2011 (resolution A.1052(27)); and

.4 submit a written report to MEPC 68.

Work undertaken by the correspondence group

3 In accordance with the terms of reference, the correspondence group was able to finalize the draft Guidance for the use of electronic record books under MARPOL for consideration by the Committee. This draft guidance has been developed to provide standardized information for Administrations on accepting an electronic record book as an alternative to the hard copy record books required under MARPOL. The development of this guidance document also took into consideration the work currently being undertaken by the FAL Committee on electronic access to certificates and documents. The draft guidance document is set out in annex 1.

4 In addition, after much discussion, the correspondence group determined that amendments to the Procedures for port State control, 2011 (resolution A.1052(27)) to facilitate the use of electronic record books under MARPOL would be beneficial. As such, these amendments were prepared and are set out in annex 2.

5 The correspondence group also considered the most appropriate mechanism to allow for the use of electronic record books under MARPOL. The group considered both unified interpretations to each of the relevant MARPOL Annexes, as well as amendments to MARPOL. While unified interpretations were prepared by the group, a number of members considered amendments to MARPOL to be the most appropriate mechanism, noting that the use of unified interpretations should only be considered as a short-term solution. The draft unified interpretations are set out in annex 3.

6 During these discussions, the group began work on drafting amendments to MARPOL which can be drawn upon if these amendments were to be considered in the future as a longer-term mechanism for allowing the use of electronic record books.

Conclusions of the correspondence group

7 The correspondence group members took a number of opportunities to contribute to the drafting of the guidance document, proposed amendments to the Procedures for port State control, 2011 and the mechanism to implement the use of electronic record books, and to discuss issues raised during this intersessional period.
8 The majority of these issues were able to be concluded by the group in the time available. Issues requiring further consideration and direction by the Committee are set out below in paragraphs 20 to 23.

9 In finalizing the guidance document, a member of the group noted the importance of effective communications to convey and understand the expectations of all involved in the use of electronic records books. In particular, the expectations of seafarers in managing the electronic record book and the information that needs to be conveyed to an Administration, both flag and port State, when using these systems. It is suggested that this be taken into consideration by Administrations that approve the use of electronic recording systems or those that will receive them during regulatory surveys or inspections.

10 To ensure that an Administration has the required information from a ship that has installed an electronic record book, the guidance document provides a sample declaration to be issued by the flag State that provides approval for the use of a system and confirms its alignment with MARPOL. One member of the group suggested that this approval from the flag State should be in the form of a certificate rather than a declaration. However, after consideration by the group it was agreed that a declaration was more appropriate for a non-mandatory measure and as such, this was prepared as an appendix to the guidance document. In addition, it was determined that reference to the MEPC resolution presenting current amendments to MARPOL and to which the electronic record book was consistent with, be included in the declaration to ensure that during inspections the currency of the record book could be determined.

11 It was also proposed by a member of the group that the guidance document could suggest that if an electronic record book is installed on board a ship, information on the use of this system should be included in manuals or plans required under the relevant Annexes of MARPOL. However, as the majority of the group did not consider this a necessary inclusion, this information was not included in the text of the document.

12 It was also discussed by the group that the term "authorized person" should accompany the term master throughout the guidance document to recognize that certain actions can be undertaken by an "authorized person" as per relevant MARPOL requirements. However, after considerable deliberation, the group agreed that this reference was unnecessary, and as such this term was not included in the text presented in annex 1.

13 The work of the FAL Committee on electronic access to certificates and documents was also considered by the group, with particular emphasis on the work the Committee had progressed in relation to digital signatures. FAL recognized that different methods of electronic signatures were available to authenticate certificates; and the use of electronic documents authenticated with electronic signatures was an existing technology currently used and accepted worldwide by different organizations and institutions, such as banks and financial companies.

14 FAL 39, in its considerations of this issue as presented in document FAL 39/WP.6, determined that if electronic signatures were used, the development of standards for acceptance of electronic signatures at a national level should be considered. In addition, it was also determined that the security of an Administration's means of creating and issuing electronic certificates could be viewed as sufficient authentication.

15 In line with this determination, the group drafted text to reflect the outcomes of FAL 39 which places the responsibility of ensuring adequate security, in relation to digital signatures, with the flag State Administration responsible for approving the use of an electronic record book for a ship.
In line with the discussions on electronic signatures, the group also considered the potential need for a port State control officer or surveyor authorized by the Administration to enter an endorsement in the electronic record book as per instructions in part 4 of the Procedures for port State control, 2011. The group agreed that text be included in section 4 of the guidance document and amendments prepared for appendix 4, part 4, sections 5.7 to 5.9 of the Procedures for port State control, 2011 to address this issue.

The group also considered issues such as the portability of an electronic record book once installed on a ship (e.g. use of the electronic record book on a portable device) and considerations such as alternative sources of power, to ensure that the system is continuously available. The group agreed that issues such as portability and the specifics of alternative power sources should be a business decision of the shipowner and, as such, not included in the guidance document. However, recognizing the importance of being able to present the electronic record book for assessment during regulatory surveys or inspections, irrespective of the on-board power supply at the time, the group agreed to include generic guidance on the need to consider the ship's power and accessibility of the system. The group noted that this information complemented the information provided in section 6 of the guidance, relating to the implications of not being able to present the electronic record book at the time of regulatory surveys or inspections.

In addition, the group also considered the need for guidance on the verification of entries in an electronic record book. It was suggested that a maximum period of time for the verification to occur should be identified, however there were concerns that, as this was not prescribed in the regulations of MARPOL, this should not be prescribed in the guidance document for an electronic system. It was recognized that for the purposes of ensuring enforcement, the guidance document should emphasize that verification of all entries should occur prior to arrival in port and inspection in order to ensure compliance with MARPOL. As such, the group agreed to provide text in section 4 of the guidance document to address this.

The correspondence group, in assessing the need for amendments to the Procedures for port State control, 2011 also suggested that further consideration be given to permitting the record book of engine parameters to be presented as an electronic record book and consider any subsequent amendments to the NOx Technical Code, 2008, to allow this. In addition the group also suggested that further consideration should be given to permitting the Cargo Gear Record Book, as required under the ILO Convention, to be presented in electronic form.

**Issues for resolution when further developing this guidance**

The status of the guidance document, and subsequent language to support this status, remains the key issue identified by the group for resolution. It was acknowledged by the group that, while the use of an electronic record book on board a ship is voluntary, it is important to ensure that the criteria used in designing and approving systems are implemented in a consistent manner. Comments received from the group identified the need for the language in the guidance to reflect both the nature of the guidance and the importance of consistent system specifications and approvals.

The correspondence group established by MEPC 65 agreed to include the term "needs to" in the draft guidance document as presented in document MEPC 66/7. While the majority of the group agreed to retain this terminology as a way forward in addressing this issue, two members of the group expressed strong reservations to the use of this terminology stating that it purported to create a mandatory requirement inappropriate for a guidance document. As such, this issue is presented to the Committee for consideration and guidance on a resolution, noting the advice provided in resolution A.911(22) on Uniform wording for referencing IMO instruments.
In recognizing that MARPOL provides specific regulations on the form of relevant record books, it was also suggested that the electronic record book may require additional flexibility and, as such, should not be limited to the form as specified in MARPOL Annexes. There was considerable support for allowing flexibility in the format of the electronic record book, however there were concerns with this flexibility not aligning with the requirements of the Convention.

To address this issue, the group agreed to make reference to complying with all MARPOL regulations when developing an electronic record book, and also agreed to request guidance from the Committee on the transition from paper to electronic recording, including the appropriate considerations that could be given to the format of an electronic record book.

**Action requested of the Committee**

The Committee is invited to consider this report and the underlying annexes and take action as appropriate, noting in particular:

.1 the work undertaken by the correspondence group in finalizing the draft guidance for the use of electronic record books under MARPOL; proposed amendments to *Procedures for port State control, 2011* to facilitate the use of electronic record books under MARPOL; and draft unified interpretations to MARPOL to allow the use of electronic record books;

.2 the conclusions of the correspondence group; and

.3 the issues for resolution when finalizing this draft guidance.

***
ANNEX 1

GUIDANCE 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 appendices to the relevant MARPOL Annexes. Traditionally the format of these record books has been in a hard copy provided 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 paper work 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 This guidance is only applicable to the use of electronic record books on board to meet the requirements of record books under MARPOL. The use of an electronic record book to record operational logs is an alternative approach 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.

2.2 This guidance does 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.

2.3 This guidance does 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.

2.4 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] [needs to] be taken into consideration by the Administration when approving the electronic record book for use.
3 DEFINITIONS

3.1 For the purposes of this guidance, 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 sea-bed 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 **Back-up:** 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 organisation 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.

.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).


.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. Off-line units are not available for immediate use on demand by the system. Off-line 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 use (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).
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 18028.2:2006).

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.

Signature: means the hand-written means of identifying the signer of a document or an electronic equivalent which is uniquely and securely linked to an individual.

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.

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] [needs to] 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] [needs to] 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 the IMO and other shipboard systems.

4.1.4 In order to comply with MARPOL requirements an electronic record book [should] [needs to] 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, also [should] [needs to] be provided.
4.2 Updates to the electronic record book

4.2.1 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] [needs to] 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 amendment.

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 implement Role Based Access Control. At a minimum, all access to the application [should] [needs to] 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] [needs to] implement Audit Logging. Audit Logging [should] [needs 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 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] [need to] 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] [needs to] secure the information against unauthorized or untraceable changes. Any change(s) to the entry by the same user or a different user [should] [needs to] 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] [needs to] 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] [need to] 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] [needs to] have an additional authentication factor to allow verification. This additional authentication factor [should] [needs to] be in the form of additional credentials supplied by the master at the time of verification.

4.3.7 The electronic record book also [should] [needs to] 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] [needs to] 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] [needs to] 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 on-going entries to be made and facilitate port State control (PSC) inspections.

4.4.2 The electronic record book [should] [needs to] have the capability to allow automatic back-up of data in the system to offline storage. Back-ups 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] [needs to] 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] [needs to] be digitally signed by the master. The properties of the digital signature [need to] appear on the off-line 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] [need to] 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] [needs to] be installed in compliance with IEC 60092 and IEC 60533 and Class Rules.

5 DECLARATION

5.1 Issuing of declaration

5.1.1 Any electronic system deemed to meet the above criteria [should] [needs to] 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 appendix A.

5.1.2 Delegating the assessment of the electronic record book against this guidance 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] [needs to] have the ability to meet the company verification/audit requirements (such as integration with the ships SMS (ISM system)). The record book also [should] [needs to] have the ability to meet all flag State and survey requirements. In addition, an electronic record book [should] [needs to] meet all control provisions as set out in the relevant Annexes of MARPOL. Such a system [should] [needs to] also meet any general requirements set out in the Procedures for port State control, 2011 (resolution A.1052(27)), 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

6.2.3 As the electronic record book will be presented using the ships’ on board 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’ on board equipment is unavailable.
6.3 Prosecution

6.3.1 To accommodate for current procedures when investigating illegal discharges under MARPOL, the electronic record book [should] [needs to] 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 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 persons' 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 A

EXAMPLE DECLARATION

DECLARATION OF MARPOL ELECTRONIC RECORD BOOK

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…………………………………………………………………

I, as the flag State representative of the above ship, 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 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 equipment at all
times.

NAME .......................................................... SIGNATURE .............................................

DATE .................................................. (dd/mm/yy)

Seal of Administration

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https://edocs.imo.org/Final Documents/English/MEPC 68-9 (E).doc
ANNEX 2

PROPOSED AMENDMENTS TO PROCEDURES FOR PORT STATE CONTROL, 2011 (RESOLUTION A.1052(27))

**Proposed text is underlined.**

1. Insert new definition:

Electronic Record Book: a device or system used to electronically record the entries for discharges, transfers and other operations as required under MARPOL Annexes.

2. Include new text in Appendix 3, Part 1, section 1.1:

On boarding and introduction to the master or responsible ship's officer, the PSCO should examine the IOPP Certificate, including the attached Record of Construction and Equipment, and the Oil Record Book. The Oil Record Book may be presented in an electronic format. A declaration from the Administration [needs to] [should] be cited in order to accept this electronic record. If a declaration cannot be provided, a hard copy record book will need to be presented for examination.

3. Include new text in Appendix 3, Part 2, section 3.8:

**copies or print out** of relevant recordings, etc., pages of Oil Record Books, logbooks, discharge.

4. Include new text in Appendix 3, Part 3, section 2.3.1:

**Copy or print out** sufficient pages of the O.R.B. – part I to cover a period of 30 days prior to the reported incident.

5. Include new text in Appendix 3, Part 3, section 2.3.2:

**Copy or print out** sufficient pages of the O.R.B. – part II (if on board) to cover a full loading/unloading/ballasting and tank cleaning cycle of the ship. Also copy the tank diagram.

6. Include new text in Appendix 4, Part 1 section 1.1:

On boarding and after introducing oneself to the master or responsible ship's officer, the PSCO should examine the Certificate of Fitness or NLS Certificate and Cargo Record Book. The Cargo Record Book may be presented in an electronic format. A declaration from the Administration [needs to] [should] be cited in order to accept this electronic record. If a declaration cannot be provided, a hard copy record book will need to be presented for examination.

7. Include new text in Appendix 4, Part 2, section 3.8:

**copies or print out** of relevant pages of the Cargo Record Book, logbooks, discharge recordings, etc.

8. Include new text in Appendix 4, Part 3, section 2.3:

**Copy or print out** sufficient pages of the CRB to cover a full loading/unloading/ballasting and tank cleaning cycle of the ship. Also copy the tank diagram.
Include new text in Appendix 4, Part 4, section 5.7:

The PSCO or the surveyor appointed or authorized by the Administration must endorse the Cargo Record Book under section J whenever an exemption under regulation 13.4 referred to under paragraph 5.6 above has been granted, or whenever a tank having unloaded category X substances has been prewashed in accordance with the P and A Manual. If the ship has implemented an electronic record book system, the shipowner may request this endorsement using a standalone form or request a copy of the surveyor's report to accompany the electronic record book entry.

Include new text in Appendix 4, Part 4, section 5.8:

Alternatively, for category X substances, regulation 13.6.1.1 of MARPOL Annex II, residual concentration should be measured by the procedures which each port State authorizes. In this case the PSCO or the surveyor authorized by the Administration must endorse in the Cargo Record Book under section K whenever the required residual concentration has been achieved. If the ship has implemented an electronic record book system, the shipowner may request this endorsement using a standalone form or request a copy of the surveyor's report to accompany the electronic record book entry.

Include new text in Appendix 4, Part 4, section 5.9:

In addition to paragraph 5.7 above, the PSCO or the surveyor authorized by the Administration shall endorse the Cargo Record Book whenever the unloading, stripping or prewash of category Y and Z substances, in accordance with the P and A Manual, has actually been witnessed. If the ship has implemented an electronic record book system, the shipowner may request this endorsement using a standalone form or request of a copy of the surveyor's report to accompany the electronic record book entry.

Include new text in section 18 of Appendix 7:

18.5 The Garbage Record Book may be presented in an electronic format. A declaration from the Administration [needs to] [should] be cited in order to accept this electronic record. If a declaration cannot be provided, a hard copy record book will need to be presented for examination.

Update the following references in Appendix 12 to reflect the outcomes of discussions from MEPC 68, as appropriate:

- 38 Oil Record Book, parts I and II (MARPOL Annex I regs.17 and 36);
- 44 Cargo Record Book (MARPOL Annex II reg.15);
- 48 Garbage Record Book (MARPOL Annex V reg.9.3);

Include in Appendix 16, section 14.9:

copies or print out of relevant pages of Oil/Cargo Record Books, logbooks, discharge recordings, etc.

***
ANNEX 3

DRAFT UNIFIED INTERPRETATION TO MARPOL ANNEXES I, II, V AND VI

Annex I

1 Use of an electronic record book

Reg. 17.1

An electronic record book\(^1\) may be used in lieu of a hard copy record book, including for all regulatory surveys and inspections, if it meets all applicable requirements for those record books required under this Annex and is approved by the Administration\(^2\).

\(^1\) Electronic Record Book means a device or system used to electronically record the required entries for discharges, transfers and other operations as required under MARPOL Annexes in lieu of a hard copy record book.

\(^2\) Refer to Guidance for the use of electronic record books under MARPOL.

Annex II

1 Use of an electronic record book

Reg. 15.1

An electronic record book\(^1\) may be used in lieu of a hard copy record book, including for all regulatory surveys and inspections, if it meets all applicable requirements for those record books required under this Annex and is approved by the Administration\(^2\).

\(^1\) Electronic Record Book means a device or system used to electronically record the required entries for discharges, transfers and other operations as required under MARPOL Annexes in lieu of a hard copy record book.

\(^2\) Refer to Guidance for the use of electronic record books under MARPOL.

Annex V

1 Use of an electronic record book

Reg. 10.3

An electronic record book\(^1\) may be used in lieu of a hard copy record book, including for all regulatory surveys and inspections, if it meets all applicable requirements for those record books required under this Annex and is approved by the Administration\(^2\).

\(^1\) Electronic Record Book means a device or system used to electronically record the required entries for discharges, transfers and other operations as required under MARPOL Annexes in lieu of a hard copy record book.

\(^2\) Refer to Guidance for the use of electronic record books under MARPOL.
Annex VI

1 Use of an electronic record book

Reg. 12.6
Reg. 14.6 An electronic record book\(^1\) may be used in lieu of a hard copy record book, including for all regulatory surveys and inspections, if it meets all applicable requirements for those record books required under this Annex and is approved by the Administration\(^2\).

\(^1\) Electronic Record Book means a device or system used to electronically record the required entries for discharges, transfers and other operations as required under MARPOL Annexes in lieu of a hard copy record book.

\(^2\) Refer to Guidance for the use of electronic record books under MARPOL.
9 USE OF ELECTRONIC RECORD BOOKS

9.1 The Committee recalled that MEPC 66 re-established the Correspondence Group on the Use of electronic record books under MARPOL and instructed it to finalize the draft Guidance currently under development in this respect. To further facilitate the use of electronic record books, the correspondence group was also instructed to consider and prepare any necessary amendments and/or unified interpretations to MARPOL; and finally to consider the need for any consequential amendments to the Procedures for Port State Control, 2011 (resolution A.1052(27)) (MEPC 66/21, paragraph 7.5).

9.2 The Committee also recalled that, due to time constraints, MEPC 68 deferred the consideration of the agenda item to this session.

9.3 The Committee had for its consideration the report of the correspondence group (MEPC 68/9, submitted by Australia) and considered the action requested of it in paragraph 24 of the report.

Guidance for the use of electronic record books under MARPOL

9.4 In considering the draft Guidance for the use of electronic record books under MARPOL, as set out in annex 1 of the report, the Committee recalled that MEPC 65 originally established the correspondence group to prepare such draft Guidance, taking into account the ongoing work of the FAL Committee on electronic access to certificates and documents. In order to finalize the Guidance, the correspondence group had highlighted in their report the following issues to be resolved by the Committee:

   .1 language to be used that most appropriately conveys the non-mandatory character of the Guidance (MEPC 68/9, paragraphs 20 to 21);

   .2 appropriate text to clarify the position of MARPOL inspection and enforcement in relation to the use electronic record books (MEPC 68/9, paragraph 6.1.2 of the draft Guidance); and

   .3 flexibility permitted in relation to the format or layout of an electronic record book (MEPC 68/9, paragraphs 22 to 23).
Language to be used

9.5 The Committee, having considered the language to be used that most appropriately conveys the non-mandatory character of the Guidance (MEPC 68/9, paragraph 20 to 21), i.e. the use of "needs to" or "should", agreed to use "should" throughout the text of the Guidance, in line with the normal practice of the Organization for non-mandatory instruments.

MARPOL inspection and enforcement

9.6 The Committee considered paragraph 6.1.2 of the draft Guidance, regarding the inclusion of or not of the sentence contained within square brackets, i.e. "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" and, having considered the matter, agreed to include the sentence in the draft Guidance.

Flexibility of format and layout

9.7 The Committee considered whether or not the format of an electronic record book, not limited to the paper form specified in MARPOL, may still be considered aligned with the Convention, as raised in paragraphs 22 and 23 of the report of the correspondence group.

9.8 Having considered the matter, the Committee agreed that, in principle, the format of an electronic record book should follow the format specified in MARPOL; however, noting the different views of delegations on the matter, agreed that further consideration of the issue was needed.

9.9 Consequently, the Committee referred consideration of the matter to PPR 4 and specifically instructed the Sub-Committee to:

.1 consider whether or not the forms of record books in MARPOL can be accommodated in electronic formats; and

.2 explore the extent of flexibility when transferring the forms of record books under MARPOL into electronic formats.

9.10 The Committee agreed accordingly to include the output "Use of electronic record books" in the biennial agenda of the PPR Sub-Committee and the provisional agenda for PPR 4.
Proposed amendments to the Procedures for port State control, 2011

9.11 The Committee considered the amendments to the *Procedures for Port State Control, 2011* (resolution A.1052(27) proposed by the correspondence group (MEPC 68/9, annex 2)), specifically in relation to the style of language to be used in paragraphs 2, 6 and 12 thereof, taking into account the decisions just taken by the Committee regarding the draft Guidance.

9.12 Having considered the matter, and following the aforementioned discussions on the Guidance, the Committee agreed to use "should" throughout the text of the proposed amendments to the *Procedures for Port State Control, 2011*. The Committee instructed PPR 4 to prepare any consequential amendments to the 2011 PSC Guidelines based on its consideration of the issue of flexibility of the format and finalize the 2011 PSC amendments as appropriate.

Draft unified interpretations to MARPOL Annexes I, II, V and VI

9.13 The Committee noted that, to facilitate the use of electronic record books, draft unified interpretations to each of the relevant MARPOL Annexes had been proposed by the correspondence group (MEPC 68/9, annex 3).

9.14 Having considered the proposed draft interpretations, the Committee, having noted that the majority of the correspondence group concurred that the proposed unified interpretations to MARPOL present a short-term solution and the most appropriate longer term mechanism for allowing the use of electronic record books would be the developments of relevant amendments to MARPOL, instructed PPR 4 to develop such draft amendments.

Consideration of permitting additional electronic record books

9.15 The Committee considered the suggestions of the correspondence group (MEPC 68/9, paragraph 19) that further consideration be given to permitting the record book of engine parameters to be presented as an electronic record book and the preparation of subsequent amendments to the NOx Technical Code, 2008, to allow this; and that consideration should also be given to permitting the Cargo Gear Record Book, required under ILO Convention No. 152, concerning *Occupational safety and health in dock work*, to be presented in electronic form.

9.16 With regard to the group's proposal to extend the application of the Guidance to the NOx Technical Code, 2008, the Committee agreed to amend paragraph 3.1 of the Guidance to also cover the NOx Technical Code, and instructed PPR 4 to take the necessary action.
9.17 With regard to the second suggestion, the Committee requested the Secretariat to inform ILO of the outcome of the discussion on the Cargo Gear Record Book.

10  IDENTIFICATION AND PROTECTION OF SPECIAL AREAS AND PSSAs

Designation of the Tubbataha Reefs Natural Park as a PSSA

10.1 The Committee considered document MEPC 69/10/1 (Philippines), proposing the designation of the marine area known as the Tubbataha Reefs Natural Park (TRNP) located between the islands of the Philippines and North Borneo as a PSSA. The Committee noted that the TRNP is an area with significant ecological, socio-economic, scientific and cultural attributes that are seriously threatened by international shipping activity in the Sulu Sea; was established and maintained by the Philippine Government since 1988; and presently encompasses an area comprised of a 97,030 ha "Core Zone" and a 350,000 ha "Buffer Zone" surrounding it. The TRNP was inscribed as a World Heritage Site in 1993 and in the Ramsar List of Wetlands of International Importance in 1999 and has been designated as a national Marine Protected Area (MPA) through the (Philippines) Republic Act 10067 since 2009.

10.2 The Committee also noted that the proposal includes the implementation of a new "Area to be Avoided" (ATBA) as the most appropriate associated protective measure (APM) to immediately reduce the risk of and/or prevent damage to the atolls and related ecosystems from international shipping activities. The proposed ATBA would apply to ships exceeding 150 GT, which will reduce the risks of collisions within or near the reef, thereby reducing the risk of impacts from marine pollution from operational and accidental discharges. It would also significantly reduce the vulnerability of the TRNP to ships' groundings resulting in the physical and chemical destruction of living benthic organisms and corals. The proposed APM would be submitted to NCSR 4 (March 2017), with a view to final approval by MSC 98 (June 2017).

10.3 In the ensuing discussion, several delegations expressed their support for the proposal and recommended that it be forwarded to the Technical Group on PSSAs for review.

10.4 Subsequently, the Committee forwarded the proposal to designate the Tubbataha Reefs Natural Park as a PSSA (MEPC 69/10/1) to the Technical Group on PSSAs, for review, with a view to assessing whether it meets the provisions of the Revised PSSA Guidelines (resolution A.982(24)).
M13 - e-Certificates

definition

(Appendix 14)

30 APRIL 2016
**ROAD MAP ELB**

Elenco log book previsti dalle normative internazionali (come da circolari IMO citate) e/o da altre normativa nazionale. La tabella contiene:

a) prima colonna l’indicazione del log book e la sua descrizione riprodotta dalle circolari IMO se ivi presente;

b) seconda o terza colonna l’indicazione rispettivamente della regola IMO che lo prevede o di altra normativa

c) quarta colonna il tipo di nave che deve disporre/esibire il log book

d) quinta e sesta colonna l’eventuale dizione italiana del log book ed i casi in cui il contenuto del LB debba essere inviato all’Amministrazione tutto od in parte in seguito ad un evento e/o come formalità di arrivo/partenza

e) settima colonna la priorità (1 = massima, 3 = minima) in termini di digitalizzazione. La priorità è stimata sulla base di una combinazione di complessità ed utilità

<table>
<thead>
<tr>
<th>LOGBOOKS</th>
<th>FAL.2/Circ.127 MEPC.1/Circ.817 MSC.1/Circ.1462</th>
<th>Altra normativa</th>
<th>Tipo nave</th>
<th>Dizione Italiana</th>
<th>Utilizzo</th>
<th>Priorità</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Onboard training and drills record</strong></td>
<td>SOLAS 1974, regulation II-2/15.2.2.5</td>
<td></td>
<td>All ships to which the referenced convention applies</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Fire drills shall be conducted and recorded in accordance with the provisions of regulations III/19.3 and III/19.5.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Records of navigational activities</strong></td>
<td>SOLAS 1974, regulations V/26 and V/28.1</td>
<td></td>
<td>All ships to which the referenced convention applies</td>
<td>Giornale Nautico P. II, P. III, P IV e P. V</td>
<td>Arrivo/partenza (A/P) e in caso di casualty e/o injury</td>
<td>1</td>
</tr>
<tr>
<td>All ships engaged on international voyages shall keep on board a record of navigational activities and incidents including drills and pre-departure tests. When such information is not maintained in the ship’s logbook, it shall be maintained in another form approved by the Administration. NB occorre registrare le attività in porto, in navigazione, in rada e inoltre le casualty e/o injuries.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Oil Record Book</strong></td>
<td>MARPOL Annex I, regulations 17 and 36</td>
<td></td>
<td>All ships to which the referenced convention applies</td>
<td>Oil Record Book</td>
<td>Talvolta in A/P</td>
<td>1</td>
</tr>
<tr>
<td>Every oil tanker of 150 gross tonnage and above and every ship of 400 gross tonnage and above other than an oil tanker shall be provided with an Oil Record Book, Part I (Machinery space operations). Every oil tanker of 150 gross tonnage and above shall also be provided with an Oil Record Book, Part II (Cargo/ballast operations).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Garbage Record Book</strong></td>
<td>MARPOL Annex V, regulation 10</td>
<td></td>
<td>All ships to which the referenced</td>
<td>Garbage Record Book</td>
<td>Produce la Waste Declaration</td>
<td>1</td>
</tr>
<tr>
<td>Every ship of 400 gross tonnage and above every ship which is certified to carry 15 persons or more engaged in</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
voyages to ports or offshore terminals under the jurisdiction of other Parties to the Convention and every fixed and floating platform engaged in exploration and exploitation of the seabed shall be provided with a Garbage Record Book.

**Ozone-depleting Substances Record Book**
Each ship subject to MARPOL Annex VI, regulation 6.1 that has rechargeable systems that contain ozone-depleting substances shall maintain an ozone-depleting substances record book.

<table>
<thead>
<tr>
<th>MARPOL Annex VI, regulation 12.6</th>
<th>All ships to which the referenced convention applies</th>
<th>Under discussion in EU (Sulphur Directive)</th>
</tr>
</thead>
</table>

**Fuel Oil Changeover Procedure and Logbook (record of fuel changeover)**
Those ships using separate fuel oils to comply with MARPOL Annex VI, regulation 14.3 and entering or leaving an emission control area shall carry a written procedure showing how the fuel oil changeover is to be done. The volume of low-sulphur fuel oils in each tank as well as the date, time and position of the ship when any fuel oil changeover operation is completed prior to the entry into an emission control area or commenced after exit from such an area shall be recorded in such logbook as prescribed by the Administration.

<table>
<thead>
<tr>
<th>MARPOL Annex VI, regulation 14.6</th>
<th>All ships to which the referenced convention applies</th>
<th>Under discussion in EU (Sulphur Directive)</th>
</tr>
</thead>
</table>

**Records of hours of rest**
Records of daily hours of rest of seafarers shall be maintained on board.

<table>
<thead>
<tr>
<th>STCW Code, section A-VIII/1; Maritime Labor Convention, 2006; Seafarers’ Hours of Work and the Manning of Ships Convention, 1996 (No.180); IMO/ILO Guidelines for the development of tables of seafarers’ shipboard working arrangements and formats of records of seafarers’ hours of work or hours of rest</th>
<th>All ships to which the referenced convention applies</th>
<th>Talvolta</th>
</tr>
</thead>
</table>

Note: The Maritime Labor Convention,
<table>
<thead>
<tr>
<th><strong>Category</strong></th>
<th><strong>Description</strong></th>
<th><strong>Regulations</strong></th>
<th><strong>Applicable Ships</strong></th>
<th><strong>Note</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bunker Delivery Note and Representative Sample</strong></td>
<td>Bunker Delivery Note and representative sample of the fuel oil delivered shall be kept on board in accordance with requirements of MARPOL Annex VI, regulations 18.6 and 18.8.1.</td>
<td>MARPOL Annex VI, regulations 18.6 and 18.8.1</td>
<td>All ships to which the referenced convention applies</td>
<td>1</td>
</tr>
<tr>
<td><strong>Record Book of Engine Parameters</strong></td>
<td>Where the Engine Parameter Check method in accordance with paragraph 6.2 of the NOx Technical Code is used to verify compliance, if any adjustments or modifications are made to an engine after its pre-certification, a full record of such adjustments or modifications shall be recorded in the engine's Record Book of Engine Parameters.</td>
<td>NOx Technical Code, paragraph 2.3.7</td>
<td>All ships to which the referenced convention applies</td>
<td>2</td>
</tr>
<tr>
<td><strong>Cargo record book</strong></td>
<td>Ships carrying noxious liquid substances in bulk shall be provided with a Cargo Record Book, whether as part of the ship's official log book or otherwise, in the form specified in appendix II to Annex II.</td>
<td>MARPOL Annex II, regulation 15.2</td>
<td>Cargo ships</td>
<td>2</td>
</tr>
<tr>
<td><strong>Dangerous goods manifest or stowage plan</strong></td>
<td>Each ship carrying dangerous goods in packaged form shall have a special list or manifest setting forth, in accordance with the classification set out in the IMDG Code, the dangerous goods on board and the location thereof. Each ship carrying dangerous goods in solid form in bulk shall have a list or manifest setting forth the dangerous goods on board and the location thereof. A detailed stowage plan, which identifies by class and sets out the location of all dangerous goods on board, may be used in place of such a special list or manifest. A copy of one of these documents shall be made available before departure to the person or organization designated by the port State authority.</td>
<td>SOLAS 1974, regulations VII/4.5 and VII/7-2; MARPOL Annex III, regulation 4</td>
<td>Any ship carrying dangerous goods in packaged form</td>
<td>Produce la FAL 7 richiesta da Direttiva 2010/65 in A/P</td>
</tr>
</tbody>
</table>

Registro Infortuni | DLGS 271 | 1 |
Scheda rilevamento infortuni | DLGS 271 | Inviare al MIT | In caso di Injury oltre 72h | 1 |
Registro Stupefacenti | 3 |
FAL 1 – General declaration | Dir 2010/65 | All ships | A/P | 2 |
FAL 2 – Cargo Manifest | Dir 2010/65 | Cargo ships | A/P | 2 |
FAL 3 - Ship store declaration | Dir 2010/65 | All ships | A/P | 2 |
<table>
<thead>
<tr>
<th>FAL 4 – Crew effects declaration</th>
<th>Dir 2010/65</th>
<th>All ships</th>
<th>A/P</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAL 5 – Passenger list</td>
<td>Dir 2010/65</td>
<td>All ships if passengers on board</td>
<td>Può essere originato dal Giornale nautico parte IV</td>
<td>A/P</td>
</tr>
<tr>
<td>FAL 6 – Crew list</td>
<td>Dir 2010/65</td>
<td>All ships</td>
<td>Può essere originato dal ruolo equipaggio</td>
<td>A/P</td>
</tr>
<tr>
<td>FAL 7 – Dangerous goods</td>
<td>Dir 2010/65</td>
<td>All ships carrying dangerous goods and/or dangerous substances</td>
<td>A/P</td>
<td>2</td>
</tr>
<tr>
<td>Waste Declaration</td>
<td>Dir 2010/65</td>
<td>All ships</td>
<td>A</td>
<td>2</td>
</tr>
<tr>
<td>Maritime Declaration of Health</td>
<td>Dir 2010/65</td>
<td>All ships</td>
<td>A</td>
<td>2</td>
</tr>
</tbody>
</table>
M13- e-Certificates definition (APPENDIX 15)

30 APRIL 2016
ELB – Electronic Logbook
CONTENTS

• Introduction – Scope of this document
• Part 1 – EXECUTIVE SUMMARY
• Part 2 - WHAT IS AN ELECTRONIC LOGBOOK?
• Part 3 – GNV – ELB
• Part 4 - Basic aspects and Macro-specific ELB
• Part 5 - GNV - paperless SMS
• Conclusion
• Annex
The document aims to examine the problem of on-board ELB in a process logic and that analyzes the information managed by the individual Logbooks and their use and relevance in the various moments and company analyzes.

The definition of the first EE (Energy Efficiency) objectives highlighted the need to manage all aspects of Voyage Planning & Reporting in addition to Fuel Management. The latter represents a strategic aspect in the agenda of critical issues to be addressed as the most significant from an economic point of view (global economic crisis, increased fuel costs have contributed significantly).
PART 1- EXECUTIVE SUMMARY

The logbook became the formal document recording the progress and management of a ship. The name is derived from the 'log', an instrument used to estimate the speed of the ship [1]. Its purpose is to allow the skipper to put information in chronological fashion, in the form of short text messages, and to allow others to reconstruct the main aspects of the trip’s history.

The electronic logbook allows for information to be captured automatically, via sensors or other electronic instruments, and stored in digital format of time-stamped messages. The information can be retrieved in electronic form, as file, Web interface or screen shot. Today there are very few “Electronic Logbook” system designed for vessel and the maritime business. No standard(s) are defined to embrace the comprehensive report regime that traditional paper logbooks cover today.
PART 2 - WHAT IS AN ELECTRONIC LOGBOOK?

“Electronic Logbook” is defined within the maritime world, many systems could be called an Electronic Logbook. In SOLAS Ch. V.28 opens for electronic logging by writing: “All ships engaged on international voyages shall keep on board a record of navigation. When such information is not maintained in the ship’s log-book, it shall be maintained in another form approved by the Administration”.

RECORDING AND REPORTING REQUIREMENTS

The basis of all recording information on board of vessels is the IMO International Convention SOLAS (Safety Of Life At Seas) [2]. Safety provision for all types of vessels can be found in it. Since 2002 also special provisions for maritime security were adopted, the AIS (Automatic Identification System) was the result of this regulation.

Provisions for the safety of navigation are dealt with in chapter V. Regulation V/28 of the 1974 SOLAS Convention, as amended, requires all ships engaged on international voyages to keep on board a record of navigational activities and incidents which are of importance to safety of navigation and which must contain sufficient detail to restore a complete record of the voyage, taking into account the recommendations adopted by the Organization.
PART 2 - WHAT IS AN ELECTRONIC LOGBOOK?

INVESTIGATING ACCIDENTS

Investigators of maritime accidents require a great number of information mostly inserted in the various logbooks in order to clarify the conditions and impact of the accident. The full list can be found in the annex (http://www.maiif.net/guidelines.htm). The main challenge of investigators is to extract and read the data stored in an electronic logbook system given the great variety of electronic providers and systems in the market. The state of the art in electronic logbooks and reports

TYPE LOGBOOKS

1. Deck Logbook
2. Engine Logbook
3. Oil Record Logbook
4. Radio Logbook
5. Dynamic Positioning Logbook

Simplification of the work on board and user friendliness are important prerequisites for a successful electronic logbook. Functional input display The methodology for inserting information into the system should allow officers to work even in harsh sea conditions or in crisis situations.
PART 2 - WHAT IS AN ELECTRONIC LOGBOOK?

A great deal of the work on board of future vessels will be computerized. Electronic logbooks will be a big part of such computerization. Electronic logbooks offer a great deal of new opportunities.

They are far more than just the digitization of the paper logbooks. Some of their benefits are:

- Automation, many reports can become automatic
- Simplification as the system can take over some of the skipper’s reporting obligations
- Better information quality
- Better legibility of data, as hand writings often difficult to read.
- Coupling to other information or decision support tools etc.

Most of the vessel’s reporting obligations are standardized formatted documents that can be easily dealt with by the system in an automatic fashion. Similarly merchant and passengers ships can automatically submit to the fleet manager status reports of various machinery parts or reports about arrivals to ports, unloading operations etc.

**IMPROVING ON BOARD SAFETY AND DECISION MAKING**

Electronic logbook entries can be far more than just stand alone data records. The dynamic use and in situ combination of the data is essential for the vessel’s safety.
PART 3 – GNV – ELB

The concept of ELB The registration.
It consists of a series of common information (date, time, ship status, etc.) and a series of specific information acquired through forms (see below); The register. Aggregates the information recorded for a particular purpose.

The Form
With the term Form we mean either a video "panel" presented by the system or an eDocument, used to enter the requested information, if the panel provides it, and / or provide information about the process. In any case, the Form provides for the insertion of "reference" information, which can be used for the classification and research of the Form.

The form can be an eDocument that is exported and imported after compilation (Detachable Form). This allows the electronic form to be filled in even without Wifi connectivity and therefore everywhere. The only prerequisite is a Tablet suitable for the format on which to load the eDoc.

Each form can be defined in the following ways:
• Programming.
• Parametric Model.
• The user defines a dictionary and a layout of the information in the form. The ELB software automatically generates an HTML form eDocument model. The user defines an eDocument and acquires it in the system as a model.

The ELB software allows the construction of multi-part forms, combining all three modes. For example, a form defined programmatically can be enriched with information parametrically defined by the user and an eDocument.
PART 4 - BASIC ASPECTS AND MACRO-SPECIFIC ELB

ELB is considered the electronic version of a Log Book which broadly represents the entire reporting system on board the Ship. Below we will see which are the Log Books normally managed in electronic format and a macro analysis for the management of ELBs.

• **Deck Logbook**

  Is designed to record all events covered by a conventional deck logbook, such as weather and navigation events, drills and inspection events and other events meeting requirements of IMO and certain flag states.

  Standard reports are:

  • Deck Logbook report (complete report)
  • Drills and Inspection report
  • Test and Checks report
  • Daily Noon Log (SOLAS)
  • Crew History report
  • Ship Particulars

  The logbook can be configured to automatically record selected online information, such as:

  • Wind speed and direction
  • Speed, heading and distance
  • Other automatic data according to specification
The Engine Logbook is designed to record engine related events. As standard, the following features are included:

- Configuration of main and auxiliary engine
- Engine Logbook Report

It is possible to customise the logbook to accommodate requirements from different vessels and trades. In addition to logging of conventional engine events, automatic entry of selected online information can also be performed, such as:

- Main Engine data
- Auxiliary Engine data
- Running hours information
- Engine Revolutions
- Remains on board
- Tank data
- Alarm status
Oil Record Logbook is designed to keep a complete log of machinery space activities. It is supplied with standard events and reports, defined in accordance with MARPOL Annex I, but may be further configured to accommodate specific vessel requirements.

The logbook has input dialogues for the following operations:
- Ballasting or cleaning of oil fuel tanks
- Discharge of dirty ballast or cleaning water from tanks
- Disposal of oil residues / sludge
- Discharge overboard or disposal otherwise of bilge water
The Radio Logbook is designed to record events related to radio operations onboard vessels regulated by IMO, hence meeting the requirements in SOLAS Chapter IV Regulation 17. It includes functionality to register particulars of ship, details of radio personnel and records of tests and communication.

The DP Logbook is designed to record events related to Dynamic Positioning operations. It may be configured to cover all requirements for any type of vessel and operation. Reports may be tailored to fit the need from owner or other 3rd parties involved. Typically the events are grouped into the following main categories:

- Operation
- Equipment
- Position reference systems
The basic reporting logic (tracking) is implemented for EVENTS: EVENT is understood to be a phase of the Ship operation of a mainly Ordinary type. Those of an Ordinary nature are pre-defined Events that occur with ordinary recurrence (eg Boarding Crew) or recurrences at Expiration (example every 6 months or every 5000 hours / motorcycle).

Extraordinary EVENTS occur unexpectedly (they are negative events) and are managed in the processes of HO Hazardous Occurences (also high impact incidents / failures) and / or Failure (low impact on ship operations) - Corrective Maintenance (Hotel / Safety / Engine ).

In relation to the operating methods, reference is made to the previous classifications of the various ship aspect management.

The EVENT can be managed at two / more levels, and depending on the moment in which it takes place with the help or not of a management of Deadlines. It is considered NOT to handle a TWO LIST.

Each Event is managed within the period that refers primarily to SHIP, TRIP, DATE of Departure and Arrival.

Each trip is divided into sections and at a time of N (navigation), P (port). M (maneuver) on departure or on arrival.
PART 4 - BASIC ASPECTS AND MACRO-SPECIFIC ELB

SHIP ON BOARD SOFTWARE (macro-analysis):

In relation to the EVENTS during their occurrence different ACTIVITIES take place that are "compared" with different modalities and peculiarities. The EVENT + ACTIVITY pair indicates the managed ELB Type.

For each ELB Type a compilation parameter is defined which can be C = Contextual to the occurrence or P = Procrastinable.

In the first case it means that the activity must be related to the occurrence and therefore inherits all the attributes of the STATE vessel; in the second case the activity can be related later and then it does NOT inherit the STATE of the ship but this can be introduced manually at the time of registration.

Each ELB refers to a JOURNEY / TRAFFICK (trafficking for cargo ships is also useful for identifying the different stages of a journey: example load and empty transport) and to a predefined STAGE (or STATE) Travel (see Navigation, Port, Maneuver).
PART 5 - GNV - PAPERLESS SMS

Below is an analysis of SMS - Safety Management System drafted according to ISMC - International Safety Management Code (IMO Resolution A.741 18) as amended, of the GNV company - Grandi Navi Veloci S.p.A. The review n. 15 of 12-20-2010. This analysis is carried out for two purposes:

• Evaluation of the entire model of SMS management in a "paperless" perspective, but with particular attention to the management of relations between the company and RINA - Italian Naval Registry, a body delegated by the maritime authorities, to verify the conformity of the operability described in the Manual SMS with Operation & Maintenance activities carried out on board ship.

• Beyond the first purpose, an aspect that also wants to be dealt with in parallel is a first evaluation of the "information assets" present within the System (reported in the various forms / registers). This is in accordance with a re-engineering that allows, starting from the analysis of the single information processed, to evaluate the same in a logic of their "full use" and therefore in a broad sense, analyze the process that caused them, identifying the other processes / interested professional figures, and evaluate a more appropriate management that meets new requirements.

It is believed the Safety Management System, and in general the vast formal implications that it implies, is a decisive aspect in a virtuous path of e-maritime.
The ultimate goal for the EU e-Maritime initiative is:

to make maritime transport safer, more secure, more environmentally friendly, more performing and more competitive by improving knowledge and performance, facilitating networking and dealing with externalities

Where business networking, partnerships and collaboration along with differentiation and low costs are common drivers of value today

Question the importance of: a) Improving (individual and corporate) knowledge; (b) Improving performance; (c) better networking; (d) supports to deal with externalities (legal obligations that may not be seen as core business).

It is believed the Safety Management System, and in general the vast formal implications that it implies, is a decisive aspect in a virtuous path of e-maritime.

The EU e-Maritime aims to promote coherent, transparent, efficient and simplified solutions in support of consistency, interoperability and cooperation between all maritime transport stakeholders for a more competitive sector fully integrated in the European Transport System.
The aim of the report was to explore possible additional functions for electronic logbooks. Two types of on board electronic logbooks could be distinguished, those dealing with the vessel’s operations and those dealing with the vessel’s business.

Both types can improve if they are connected to sensors to allow a higher degree of automation. Their connection with other on board electronic tools will simplify the work of the skipper and will support decision making.

Connectivity to satellite communications and the use of standard web technologies will allow fast information and data exchange with other vessels and with the land. This will boost business growth and will improve maritime safety.
Annex

- IB_ELB_01  Appendice 01
- IB_ELB_02  Appendice 02
- IB_ELB_03  Appendice 03
- IB_ELB_04  Appendice 04
- 20150101ELB Tech BKGR.docx
- AnNa_ELB collector_C
- AnNa_ELB_A
- App03_06 FAL 40-WP.1 Report of Subcommittee.pdf
- Giornale delle Radio-Comunicazioni_IB_ELB_03.pdf
- Giornale nautico - Libro Primo - Inventario di Bordo_IB_ELB_03.pdf
- Giornale nautico - Libro Terzo_CA1M_IB_ELB_03.pdf
- Giornale nautico - Libro Terzo_IB_ELB_03.pdf
- Registro carico e scarico_IB_ELB_03.pdf
- Registro idrocarburi - Parte I_IB_ELB_03.pdf
- Registro idrocarburi - Parte II_IB_ELB_03.pdf
- Registro sostanze liquide nocive_IB_ELB_03.pdf
Tema b2) Gestione del trasferimento intermodale di persone e/o merci nei nodi di scambio tra “l’ultimo miglio” marino e il “primo miglio” terrestre, integrata con sistemi di sicurezza del porto, delle imbarcazioni, delle strutture e dei mezzi di movimentazione delle persone e/o merci.

**ELB – Electronic Logbook**

Autore: IB

<table>
<thead>
<tr>
<th>SOGGETTO ESECUTORE</th>
<th>CLASSIFICAZIONE DEL DOCUMENTO</th>
</tr>
</thead>
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<td>IB</td>
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**NOTE AGGIUNTIVE:**

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<th>REV.</th>
<th>DATA</th>
<th>DESCRIZIONE</th>
<th>PAGINE</th>
<th>VERIFICATO DA</th>
<th>APPROVATO DA</th>
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<td>PRIMA EMISSIONE</td>
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<td>3</td>
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</table>
INDICE

1 FINALITÀ DEL DOCUMENTO ............................................................3

2 INTRODUZIONE DEL ELB .............................................................4

2.1 WHAT IS AN ELECTRONIC LOGBOOK? .........................................4

RECORDING AND REPORTING REQUIREMENTS ....................................5

INVESTIGATING ACCIDENTS .............................................................7

KEEPING VESSELS OPERATIONAL ....................................................7

IMPROVING ON BOARD SAFETY AND DECISION MAKING ......................12

SHARING INFORMATION AND RESPONSIBILITIES ..............................13

REMOTE CHECKS ........................................................................14

SECURITY OF INFORMATION ..........................................................15

CONCLUSIONS ...........................................................................15

3 ANNEX (1) ..............................................................................16

3.1 INTRODUCTION ........................................................................16

4 ANNEX (2) - NEW OPERATIONS ....................................................22

4.1 AUTOMATIC MOORING, BERTHING, PILOTING .............................22
1 Finalità del documento

Il documento vuole esaminare la problematica dell’ELB di bordo in una logica per processi e che analizzi le informazioni gestite dai singoli Logbook ed il loro utilizzo e rilevanza nei vari momenti ed analisi aziendali. La ridondanza della rapportazione di informazioni, richieste per vari obiettivi e necessità riferentesi alle varie norme IMO (SOLAS, MARPOL, ..) o norme di altra origine, è una caratteristica tipica del settore navale in quanto deriva dalla sedimentazione di implicazioni normative e da una mancanza di razionalizzazioni cadenzate che consentano di rimuovere le criticità.


L’analisi di questi due temi dal punto di vista dei processi (tecnici e gestionali) obbliga a considerare la problematica nel suo insieme.
2 INTRODUZIONE DEL ELB

Di seguito un abstract di uno studio effettuato su ELB (EMDM - European Maritime Data Management).

IN ROSSO GLI ASPETTI CHE A FINE CAPITOLO VENGONO ANALIZZATI E COMMENTATI. IN VERDE I COMMENTI

The logbook became the formal document recording the progress and management of a ship. The name is derived from the 'log', an instrument used to estimate the speed of the ship [1]. Its purpose is to allow the skipper to put information in chronological fashion, in the form of short text messages, and to allow others to reconstruct the main aspects of the trip's history.

Further to the navigation logbook the skipper was supposed to keep track of other activities on board, such as maintenance of the ship’s instruments and machinery, medical activities, business carried out on board, the conditions of the freight etc. Over the time such logbooks became important legal documents, which the skipper had to hand in to the authorities once back to port.

The digitization of the on board logbook was introduced on a private, volunteer basis by the end of last century and is evolving fast the recent years. The European maritime authorities, who spend considerable time and resources to digitize manually written logbooks, are keen to introduce legislative requirements of electronic prepared logbooks. The electronic logbook allows for information to be captured automatically, via sensors or other electronic instruments, and stored in digital format of time-stamped messages. The information can be retrieved in electronic form, as file, Web interface or screen shot.

Today there are very few “Electronic Logbook” system designed for vessel and the maritime business. No standard(s) are defined to embrace the comprehensive report regime that traditional paper logbooks cover today. However a variety of electronic systems are available to keep a history track of almost everything that occurs on board (i.e. VDR, History stations, logger systems, etc.). Ship and cargo insurances as well as the various national and international authorities require recording and sometimes transmitting specific trip information in form of reports.

Nota:
Necessita di una approvazione ad hoc: non esiste normativa di standardizzazione
Registrazione cronologica, abbreviata e formale di eventi
Possibile Manual Entry or acquisite da automazione

2.1 WHAT IS AN ELECTRONIC LOGBOOK?

Since no general definition of the term “Electronic Logbook” is defined within the maritime world, many systems could be called an Electronic Logbook. In SOLAS Ch. V.28 opens for electronic logging by writing: “All ships engaged on international voyages shall keep on board a record of navigation. When such information is not maintained in the ship's log-book, it shall be maintained in another form approved by the Administration”.

An electronic logbook should, as its main objective, replace the traditional paper logbooks, automatic logging of various values are already covered by other systems. The Electronic logbook then becomes an official document from the vessel. When officers onboard the vessel shall sign each entry in the logbook, no data should be inserted into the electronic logbook without a human interaction, done by the person who will have his/her signature (electronic signature) attached to it. Hence all data in an electronic logbook should be manually acknowledged before insertion into the system.

Since the electronic logbook shall replace the “ship’s log-book” (SOLAS V.28) each system must be approved by the Administration, which is the flag state for the vessel.

Having the two paragraphs above in mind, as the two main requirements, an electronic logbooks system may be extended by including other functionalities to make the system more than just a replacement for
the paper log. This document aims to define additional functionalities for electronic logbooks, and hence
the term is used to encompass this whole concept.

Nota:
Necessita di “Human interaction” e “electronic signature” al fine di una sua approvazione

RECORDING AND REPORTING REQUIREMENTS

Sometimes electronic logbooks and reporting tend to be confused. An electronic logbook contains much
more data than the report can contain and has in its memory all the reports issued. However reports
could be issued containing the whole of the electronic logbook’s stored data. We could say that a report is
a snapshot of the stored data in the logbooks at a certain time and for a certain time period.

The basis of all recording information on board of vessels is the IMO International Convention SOLAS
(Safety Of Life At Seas) [2]. Safety provision for all types of vessels can be found in it. Since 2002 also
special provisions for maritime security were adopted, the AIS (Automatic Identification System) was the
result of this regulation.

Provisions for the safety of navigation are dealt with in chapter V. Regulation V/28 of the 1974 SOLAS
Convention, as amended, requires all ships engaged on international voyages to keep on board a record
of navigational activities and incidents which are of importance to safety of navigation and which must
contain sufficient detail to restore a complete record of the voyage, taking into account the
recommendations adopted by the Organization.

This resolution aims at providing guidance for the recording of such events:

1.) Recording of information related to navigation
In addition to national requirements, it is recommended that the following events and items, as
appropriate, be among those recorded:
1.1) before commencing the voyage.
Details of all data relating to the general condition of the ship should be acknowledged and recorded,
such as manning and provisioning, cargo aboard, draught, result of stability/stress checks when
conducted, inspections of controls, the steering gear and navigational and radio communication
equipment.
1.2) during the voyage
Details related to the voyage should be recorded, such as courses steered and distances sailed, position
fixings, weather and sea conditions, changes to the voyage plan, details of pilots’ embarkation/disembarkation, entry into areas covered by, and compliance with, routing schemes or
reporting systems.
1.3) on special events
Details on special events should be recorded, such as death and injuries among crew and passengers,
malfunctions of shipboard equipment and aids to navigation, potentially hazardous situations, mergences
and distress messages received.
1.4) when the ship is at anchor or in a port
Details on operational or administrative matters and details related to the safety and security of the ship
should be recorded.

2.) Method of recording
As already mentioned SOLAS regulation V/28 requires that, if the records of navigational activities are not
maintained in the ship’s log-book, they should be maintained in another form (i.e. electronic logbook)
approved by the Administration. Methods of recording should be permanent and may be handwritten,
electronic or mechanical.
3.) Non-duplication
In general, information on the events and items specified in paragraph 1, which are adequately recorded
in a special-purpose log, need not be duplicated in the ship's log book.
4.) Preservation of records
In order to be able to restore a complete record of the voyage, records should be maintained as follows:
4.1) each page of the ship's log-book should have a page number printed on it and handwritten records, which need correction, should not be erased or removed but should be rewritten after crossing out the incorrect version;
4.2) the times used in automatic and permanent recording facilities should be synchronized by using a common clock;
4.3) electronically or mechanically input records should be protected by means to prevent them from being deleted, destroyed or overwritten; and
4.4) irrespective of the method of recording, ships should keep records for as long as the Administration concerned requires, provided the fixed period is not less than one year.

The MCA (Maritime and Coastguard Agency) of the UK give guidance on recording navigational activities based on the requirements of investigation authorities in following up an incident by specifying the following records [3].

1.) Paper Navigation Charts - Providing sufficient information relating to a ship's position, course and speed has been recorded elsewhere to enable an accurate reconstruction of her passage, there is no requirement to retain such information annotated on paper charts. Following a navigational accident or incident however, the paper charts in use must be retained, and the information shown must not be altered or erased.
2.) ECDIS - The record of the previous 12 hours and of the voyage track to be preserved following a navigational accident or incident.
3.) ECS/AIS/ARPA - Voyage recording information to be preserved for as long as the system in use allows; it should not be manually deleted. Following a navigational accident or incident, every effort should be made to preserve and copy the recorded voyage data.
4.) Bridge Deck Log - To contain sufficient navigational information to reconstruct a voyage including:
   - the recording of position at regular intervals
   - alterations of course and speed
   - weather and sea conditions
   - precautions taken in restricted visibility or heavy seas
   - significant navigational events.
To be retained either onboard or ashore for at least 7 years.
5.) Engine Movement Record Book (Bell Book) - To be retained for the duration of the voyage and preserved following a navigational accident or incident.
6.) Automatic Engine/Propeller pitch/bow thruster movement record - To be retained for the duration of the voyage and preserved following a navigational accident or incident.
7.) Automatic Course Record - To be retained for the duration of the voyage and preserved following a navigational accident or incident.
8.) Navtex Messages - To be retained for the duration of the voyage and preserved following a navigational accident or incident.
9.) Passage Plan - To be preserved following a navigational accident or incident.
10.) Echo Sounder Trace - To be preserved following a navigational accident or incident.
11.) GMDSS Log Book - Retained onboard until completed then dispatched to MCA Southampton Marine Office.
12.) Chart Correction Log - To be preserved following a navigational accident or incident.
13.) Pre-sailing check lists - To be retained for duration of the passage.
14.) VDR - in accordance with IMO Guidelines

The above list shows the amount of information that has to be recorded manually or electronically on board of a vessel. But there is far more than the navigation-related data that has to be stored. The various operations or business related activities on board have also to be recorded. Other logbooks / reports deal with:

- engine oil changes
- ship pumps on/off
- electric power distribution
- alarm systems checking
- cargo changes/inspections
- cargo soundings (liquid cargo)
- oil/ballast water discharges,
- fishing operations reports, etc.
Most of the above logbooks are currently manual in hardcopy form. The skipper or related personnel have to regularly fill in the relevant sheet with the required information. This makes manual logbooks sometimes difficult to read in some cases even useless. Moreover the various sheets are scattered in various places on board of the vessel, making it impossible for one to have the overview of the whole vessel immediately when required.

INVESTIGATING ACCIDENTS

Investigators of maritime accidents require a great number of information mostly inserted in the various logbooks in order to clarify the conditions and impact of the accident. The full list can be found in the annex (http://www.maiif.net/guidelines.htm). The main challenge of investigators is to extract and read the data stored in an electronic logbook system given the great variety of electronic providers and systems in the market.

The state of the art in electronic logbooks and reports

On board of a ship the skipper has 2 functions:

• to ensure and maintain the healthy operation of the vessel itself and its crew
• to ensure his business, being transport of goods or passengers, fishing etc. runs smoothly

Next session deals with the vessel operation type logbooks, the following sections deal with the business type logbooks [5].

KEEPING VESSELS OPERATIONAL

Although there is no obligatory regulation on electronic logbooks (except the one in fisheries) at the moment, some shipping companies have been using them routinely for some time now. Providers of such logbooks offer an onboard and an on shore or office module capable of communicating with each other. A simple on board electronic logbook may have 3 modules a data collecting interface (automatic or manual), a data storage facility and a report preparation facility. However there are a number of additional functionalities that can enormously increase the value of the electronic logbook.

Nota:
La vision dello studio tiene di per sè solo conto del ELB come obiettivo ultimo il rilevamento dati / cronologico: ci si prefigge una analisi delle informazioni che tenga conto dei vari obiettivi di rilevamento delle stesse

Deck Logbook

The Deck Logbook should be designed to record all events covered by a conventional deck logbook, such as weather and navigation events, drills and inspection events and other events meeting requirements of IMO and certain flag states.

Standard reports could be:

• Deck Logbook report (complete report)  Voyage reporting & Fuel reporting
• Drills and Inspection report
• Daily Noon Log (SOLAS)
• Crew History report  La gestione del Crew è come process-owner di competenza in primis della HR management; l’operatività di bordo e il tracking delle attività per expertise, log, drills, .. impatta su processi dedicati richiesti da ISMC
• Ship Particulars  Process-owner nell’ufficio centrale dell’armatore; I modelli dati sono i più disparati vedi (allegati); solo strutturali, impiantistici, con caratteristiche carico, di Classe, …

Other selected online information could be:

• Wind speed and direction
• Speed, heading and distance
• Other automatic data according to specification

Note: Dati normalmente inseriti in VR manualmente o acquisiti da IACMS (Integrated Alarm Control Management System) e/o Navigation System in standard NMEA 0183

Engine Logbook

The Engine Logbook should be designed to record engine related events. As standard, the following features are proposed:

• Main Engine pressure and temperature → vedi di seguito
• Auxiliary engine pressure and temperature → presenti in IACMS (o meglio nell’automazione ME/AUX già da parte dei makers)
• Running hours for engines and other equipment → vedi in Engine di seguito
• Remains on board (Oil storage) → la Gestione del FO (Fuel Oil anche se in carico a Engine Dpt., viene rilevato su Voyage reporting e relazionato agli stessi da parte di Deck Dpt.)
• Engine Logbook Report → Nei Processi tecnici di gestione impianti nave vengono rilevate le informazioni necessarie: letture delle Running Hours per Plant e attività manutentiva e correttiva sugli stessi.

It is possible to customize the logbook to accommodate requirements from different vessels and trades. In addition to logging of conventional engine events, automatic entry of selected online information can also be performed, such as:

• Pressure & Temperature → come detto precedentemente le informazioni relative sono rilevate da IACMS e/o sistemi dedicati all’automazione
• Running hours → vedi sopra
• Engine Revolutions → vedi sopra
• Tank data → talvolta rilevate manualmente dopo lettura da sistemi di rilevamento su casse. Sono informazioni che è importante relazionare con consumi specifici per ME AUX Boiler (rilevati talvolta con Flowmeters)
• Alarm status → vedi sopra

Oil Record Logbook Part I

The Oil Record Book Part I should be designed to keep a complete log of machinery space activities. It is supplied with standard events and reports, defined in accordance with MARPOL Annex I. Information that can be included is:

• Ballasting or cleaning of oil fuel tanks
• Discharge of dirty ballast or cleaning water from tanks
• Disposal of oil residues / sludge
• Discharge overboard or disposal otherwise of bilge water

OIL RECORD BOOK INSTRUCTIONS OFFICE OF THE MARITIME ADMINISTRATOR PART I - MACHINERY SPACE OPERATIONS (ALL SHIPS)

GENERAL INSTRUCTIONS

(A) BALLASTING OR CLEANING OF OIL FUEL TANKS

1. Identity of tank(s) ballasted.
2. Whether cleaned since they last contained oil and, if not, type of oil previously carried.
3. Cleaning process:
   1. position of ship and time at the start and completion of cleaning.
   2. identify tank(s) in which one or another method has been employed (rinsing through, steaming, cleaning with chemicals type and quantity of chemicals used, in m3).
   3. identity of tank(s) into which cleaning water was transferred.
4. Ballasting:
   1. position of ship and time at start and end of ballasting
   2. quantity of ballast if tanks are not cleaned, in m3
(B) DISCHARGE OF DIRTY BALLAST OR CLEANING WATER FROM OIL FUEL TANKS REFERRED TO UNDER SECTION (A)

5. Identity of tank(s).
6. Position of ship at start of discharge.
7. Position of ship on completion of discharge.
8. Ship’s speed(s) during discharge.
9. Method of discharge:
   .1 Through 15 ppm equipment
   .2 To reception facilities.
10. Quantity discharged, in m³.

(C) COLLECTION AND DISPOSAL OF OIL RESIDUES (SLUDGE)

11. Collection of oil residues. Quantities of oil residues (sludge and other oil residues) retained on board. The quantity should be recorded weekly: (This means that the quantity must be recorded once a week even if the voyage lasts more than one week.)
   .1 identity of tank(s) ....................
   .2 capacity of tank(s) ..................... m³
   .3 total quantity of retention .......... m³
12. Methods of disposal of residue. State quantity of oil residues disposed of, the tank(s) emptied and the quantity of contents retained, in m³:
   .1 to reception facilities (identify port)
   .2 transferred to another (other) tank(s) (indicate tank(s) and the total content of tank(s))
   .3 incinerated (indicate total time of operation)
   .4 other method (state which).

(D) NON-AUTOMATIC DISCHARGE OVERBOARD OR DISPOSAL OTHERWISE OF BILGE WATER WHICH HAS ACCUMULATED IN MACHINERY SPACES

13. Quantity discharged or disposed of, in cubic meters.
14. Time of discharge or disposal (start and stop).
15. Method of discharge or disposal:
   .1 through 15 ppm equipment (state position at start and end)
   .2 to reception facilities (identify port)
   .3 transfer to slop tank or holding tank (indicate tank(s) state quantity transferred and the total quantity retained in tank(s) , in m³).

(E) AUTOMATIC DISCHARGE OVERBOARD OR DISPOSAL OTHERWISE OF BILGE WATER WHICH HAS ACCUMULATED IN MACHINERY SPACES

16. Time and position of ship at which the system has been put into automatic mode of operation for discharge overboard, through 15 ppm equipment.
17. Time when the system has been put into automatic mode of operation for transfer of bilge water to holding tank (identify tank).
18. Time when the system has been put into manual operation.

(F) CONDITION OF OIL DISCHARGE MONITORING AND CONTROL SYSTEM

20. Time when system has been made operational.

(G) ACCIDENTAL OR OTHER EXCEPTIONAL DISCHARGES OF OIL

22. Time of occurrence.
23. Place or position of ship at time of occurrence.
24. Approximate quantity and type of oil.
25. Circumstances of discharge or escape, the reasons therefore and general remarks.

(H) BUNKERING OF FUEL OR BULK LUBRICATING OIL
26. Bunkering:
   .1 Place of bunkering.
   .2 Time of bunkering.
   .3 Type and quantity of fuel oil and identity of tank(s) (state quantity added and total content of tank(s)).
   .4 Type and quantity of lubricating oil and identity of tank(s) (state quantity added and total content of tank(s)).

(I) ADDITIONAL OPERATIONAL PROCEDURES AND GENERAL REMARKS NOTE: A SAMPLE ENTRY IS CONTAINED IN THE BACK OF THE OIL RECORD BOOK.

Radio Logbook

The Logbook should be designed to record events related to radio operations onboard vessels regulated by IMO, hence meeting the requirements in SOLAS Chapter IV Regulation 17. It should include functionality to register particulars of ship, details of radio personnel and records of tests and communication.

The logbook should have the following features:

• Registration of radio related equipment, such as VHF’s, GMDSS station, and reserve source of power. → operatività nella gestione Asset Ship e componenti (PDM Plant data Management)
• Registration of officers with GMDSS license → operatività gestita come output della gestione “Expiring” di Deck
• Registration of GMDSS license expiry dates → operatività gestita come output della gestione “Expiring” di Deck
• Radio communication event
• Noon position event
• Port Arrival and Departure events → in Deck Voyage Reporting
• Daily, weekly and monthly test for equipment events → operatività gestita nei processi ispettivi/test di Deck
• Radio Logbook Report
• Free text search within the Radio logbook

Dynamic Positioning Logbook

The DP Logbook, is designed to record events related to Dynamic positioning operations. It may be configured to cover all requirements for any type of vessel and operation. Reports may be tailored to fit the need from the owner or other 3rd parties involved.

Typically the events are grouped into the following main categories:
• Operation → vedi sopra
• Equipment → vedi sopra
• Position reference systems → output del VDR (Vessel data Recording)

Each of these categories can in turn include groups of events or events directly. In this way the system setup is fully flexible.

CARGO VESSELS (INCLUDING OIL TANKERS)

The cargo logbook according to SOLAS regulation VI/7.8 is supposed to contain all information related to the cargo’s lifetime on board such as[6]:

• Loading/unloading operations
• Use of cranes
• Cargo stowage (which cargo in which compartments)
• Time of Cargo inspections and person in charge → operatività ispettiva la cui gestione rientra nella gestione ship
• Type and extend of Cargo damages → operatività gestita in Incident & Accident reporting
• Cargo securing controls etc. → operatività ispettiva la cui gestione rientra nella gestione ship
In case of liquid cargos the MARPOL code applies and additional information is required of the type:

- Pump operation
- Inert gas inspections
- Piping and valve controls
- Tank cleaning
- Tank insulation
- Tank refrigeration etc.

If the vessel carries grain it should follow the grain transportation the ship should comply with the International Grain Code (IMO resolution MSC.23[59]).

PASSENGER SHIPS

Passenger vessels have to continuously keep a log of the status of the water tight doors (SOLAS VDR requirement) [7]. Inspections of the safety facilities are daily and reported in the log. There are similar inspections of accommodations, fire and smoke alarm facilities etc.

Any passenger illness, accident, casualty or even convictions, marriages, births have to also be reported on the log. An electronic logbook has to provide sheets for all these cases, the details will have to be filled in by the person in charge.

Nota: processi ispettivi particolari (Hotel) e/o Incident Accident Injury reporting (anche Claim) hanno rilevanza operativa significativa e quindi gestiti in appositi strumenti

FUTURE SHIPS

The next generation of ships will have much smaller crews, a high degree of computer automation and will be multi-role.

Container capacity has expanded from some 1500 TEU (Twenty foot equivalent unit) in mid 70s to 8000 TEU today. Maersk is already building the 12000 TEU ship and the 15000 TEU is designed. The Suez and Panama channels are being modified accordingly.

A great deal of the work on board of future vessels will be computerized. Electronic logbooks will be a big part of such computerization. Electronic logbooks offer a great deal of new opportunities. They are far more than just the digitization of the paper logbooks. Some of their benefits are:

- Automation, many reports can become automatic
- Simplification as the system can take over some of the skipper’s reporting obligations
- Better information quality
- Better legibility of data, as hand writings often difficult to read.
- Coupling to other information or decision support tools etc..

Additional functionalities

While all of the above describe the various types of information that can be part of the vessel’s electronic logbook depending on the business in which it is involved, this section will describe the functionalities that an electronic logbook should additionally have in order to best serve its purpose.

EFFICIENT USE ON BOARD AND AT SHORE

Simplification of the work on board and user friendliness are important prerequisites for a successful electronic logbook. Functional input display

The methodology for inserting information into the system should allow officers to work even in harsh sea conditions or in crisis situations.

Connectivity with satellite communications
Electronic logbook software should be connected to one or more messaging systems via satellite communications so as to allow timely report submission at shore from most parts of the globe. There is a variety of satellite communication providers today and one can chose the price and coverage to better fit their purposes. In case of many daily submissions a communication channel dedicated to the electronic logbook, similar to the VMS (Vessel Monitoring System) that has its own satellite connection, would be appropriate.

**Automatic report generation**

Most of the vessel’s reporting obligations are standardized formatted documents that can be easily dealt with by the system in an automatic fashion. Similarly merchant and passengers ships can automatically submit to the fleet manager status reports of various machinery parts or reports about arrivals to ports, unloading operations etc.

Examples are:
- Daily Noon report
- Arrival / Departure report

**Web connectivity**

Using web compatible formats, XML, HTML etc. is essential for exchange of information among various partners. More and more trade transactions are made via the web, even in the most traditional of the maritime sectors.

**IMPROVING ON BOARD SAFETY AND DECISION MAKING**

Electronic logbook entries can be far more than just stand alone data records. The dynamic use and in situ combination of the data is essential for the vessel’s safety.

**Automatic logbook Cross-checking**

The software can be programmed to carry out frequent and routine cross checking, also in collaboration with the vessel’s alarm system. One failed component may have led to the problematic functioning of 2 others, or a ship black out may require the manual starting of some machinery. Some accidents would have been avoided if the watertight doors had been closed. Checking of correct report submission to the authorities would also be appropriate. Another interesting application of electronic logbooks is the automatic retrieval of historic data regarding similar situations. So this time’s behavior can be adapted to the situation.

**ISSUING WARNINGS**

In case of the system detecting some inconsistency warnings could be issued to the bridge officer. Despite skippers having a good overview of their ship and business, human errors can never be avoided. Therefore proper warnings should be set up. Further to the failing of operational components warnings could also be issued when:

- Containers are opened or
- There is a container leak or
- A sick passenger on board etc.

**REGULAR BRIDGE REPORTS**

A system status report for all critical structures could be prepared regularly to allow the bridge officer a quick estimation of the situation.

**CONDITIONAL DATA REPORTING FREQUENCY**

A good electronic logbook should take over some of the skipper’s daily work. Part of which is to know when a report has to be filled in according to some legislation. Similarly in the case of an on board crisis, the reporting frequency of most of the critical components should be increased, whilst during routine operations or navigation, the reporting frequency could be reduced.
VISUALIZATION

The work of the bridge officers could be supported if problems reported in the electronic logbook are automatically visualized spatially and not only in form of a text message. Visualization is a very powerful method to evaluate a situation and take the best decision. Electronic logbook software ideally should be coupled with GIS (Geographic Information System) and Ship CAD (Computer Aided Design) system. The GIS gives a very good idea of the vessel’s position in its immediate environment. In cases such as manoeuvring in ports, pair fisheries or the fish schools this could be very beneficial. On the other hand any failed equipment on board of the vessel could be immediately visualized in the ship’s CAD to facilitate its location by the crew and its timely fixing.

SHARING INFORMATION AND RESPONSIBILITIES

Electronic logbooks can make the ship’s database act as a data warehouse. The bridge officers may decide to send information to other parties or other parties may gain access rights to the ship’s data.

OTHER SHIPS

Other ships may be interested in the sea state conditions in which a fellow ship is in. Today ships of the same company or associate often exchange information about weather, sea state, pirates etc. In some cases a vessel may need to communicate to its neighbouring vessels a failed equipment and ask for an exchange part.

COASTAL OR FLAG STATE AUTHORITIES

A number of on-board activities or situations have to be reported to the flag or coastal state authorities. Such activities are fishing, oil discharging, going in and out of ports etc. Also in case of accidents the coastal state has to be immediately informed. However authorities often ask for volunteer communications of sightings, such as pirate vessels, illegal discharging activities etc. On the other hand reports coming from authorities such as weather reports, danger reports etc. should also be stored appropriately in the logbook software.

FLEET MANAGER

The fleet manager may want to access cargo or crew information or consult changed routes maps and voyage plans. Based on this, he may send back information on weather conditions ahead the ship.

INSURANCE COMPANY

Insurance companies may want to check the status of critical safety components such as the status of watertight doors.

MARITIME SERVICES

Port services may require certain data to compile docking and customs documentation.
REMOTE CHECKS
A great deal of checking can be carried out remotely.

REMOTE EQUIPMENT MAINTENANCE
An increasing number of manufacturers offer remote maintenance. This means that sensor data are collected, measuring various system parameters. These data are compiled together and submitted to the manufacturer who then can estimate the status of the equipment. In case of a problem the manufacturer may decide for a remote intervention or for the replacement of a broken part. Similar software upgrades can be easily carried out remotely.

REMOTE VESSEL INSPECTIONS
Often coast guards ask a number of questions before they board a vessel for inspection. The answers to such questions can be prepared electronically and sent back to the coastguard vessel.

REMOTE PILOTING
This option may be useful in case of piracy, during which the on board operations could be cut off remotely not to allow pirates to take ownership of the vessel. In case of remote piloting electronic logbook reports have to be sent automatically to allow the piloting operations.
SECURITY OF INFORMATION

SECURITY OF STORED DATA

The data collected in the electronic logbook on board of a vessel and transmitted to land can have various types of protection needs. Such data as weather data or sea bottom conditions etc. maybe free to everybody, some such as cargo information or the vessel's positions are open only to a community of users and there are some such as the catch on board which should be known only by the skipper.

The system should be able to authenticate users before they enter information. In the case of machines talking to each other, they should exchange certificates beforehand.

The three main levels of security:
1. Access of the on-board software, There are two types of access the one to enter data and that to retrieve data. This can be achieved through the use of passwords.
2. Security of data during transfer can be achieved through encryption.
3. Machine to sensor, machine to machine talking, can be achieved through certification.

SECURITY OF DATA TRANSMITTED FOR LEGAL OBLIGATIONS

The legal obligations of the skipper, or owner to submit information to the authorities can be both certified and encrypted. Although implementing the software has been straightforward, all the organisational work related to the issuing and maintenance of the certificates was considered as a too high overhead.

CONCLUSIONS

The aim of the report was to explore possible additional functions for electronic logbooks. Two types of on board electronic logbooks could be distinguished, those dealing with the vessel's operations and those dealing with the vessel's business. Both types can improve if they are connected to sensors to allow a higher degree of automation. Their connection with other on board electronic tools will simplify the work of the skipper and will support decision making. Connectivity to satellite communications and the use of standard web technologies will allow fast information and data exchange with other vessels and with the land. This will boost business growth and will improve maritime safety.

References
3 ANNEX (1)

3.1 INTRODUCTION

The contents of this section should be treated as guidelines to assist investigators co-operating in an investigation. Investigators should bear in mind the information required under the IMO marine casualties and incidents reporting system.

In following this Code, participating investigators must be guided by the requirements of the legal system of the State in which the investigation is being conducted. In particular, co-operating investigators must be guided by the requirements of national law over issues such as:

• providing formal notification of an investigation to interested parties;
• boarding ships and securing documents;
• arranging interviews with witnesses;
• the presence of legal advisers or other third parties during an interview.

1. INFORMATION GENERALLY REQUIRED IN ALL CASES

1.1 PARTICULARS OF THE SHIP

• Name, IMO number, nationality, port of registry, call sign
• Name and address of owners and operators, if applicable, also, if an overseas ship, of agents
• Type of ship
• Name and address of charterer, and type of charter
• Deadweight, net and gross tonnages, and principal dimensions
• Means of propulsion; particulars of engines
• When, where and by whom built
• Any relevant structural peculiarities
• Amount of fuel carried, and position of fuel tanks
• Radio (type, make)
• Radar (number, type, make)
• Gyro compass (make, model)
• Automatic pilot (make, model)
• Electronic positioning equipment (make, model) (GPS, Decca, etc.)
• Life-saving equipment (dates of survey/expiry)

1.2 DOCUMENTS TO BE PRODUCED

(NOTE: ANY DOCUMENTS THAT MAY HAVE RELEVANCE TO THE INVESTIGATION SHOULD BE PRODUCED. WHERE POSSIBLE ORIGINAL DOCUMENTS SHOULD BE RETAINED, OTHERWISE AUTHENTICATED AND DATED PHOTOCOPIES SHOULD BE TAKEN IN ACCORDANCE WITH 9.1.2 OF THE CODE. A NUMBER OF THESE DOCUMENTS WILL CONTAIN DETAILS SOUGHT UNDER 1.1 OF THESE GUIDELINES.)

• Ship's register
• Current statutory certificate
• ISM Code certification
• Classification society or survey authority certificates
• Official log book
• Crew list
• Crew qualifications (see also 1.4 of these Guidelines)
• Deck log book
• Port log, log abstract and cargo log book
• Engine movement book
• Engine-room log book
• Data logger print-out
• Course recorder chart
• Echo sounder chart
• Oil record book
• Soundings book
• Night order book
• Master's/Chief Engineer's Standing Orders
1.3 PARTICULARS OF VOYAGE
- Port at which voyage commenced and port at which it was to have ended, with dates
- Details of cargo
- Last port and date of departure
- Draughts (forward, aft and mid ships) and any list
- Port bound for at time of occurrence
- Any incident during the voyage that may have a material bearing on the incident, or unusual occurrence, whether or not it appears to be relevant to the incident
- Plan view of ship's layout including cargo spaces, slop tanks, bunker/fuel lube oil tanks (diagrams from IOPP Certificate)
- Details of cargo, bunkers, fresh water and ballast and consumption

1.4 PARTICULARS OF PERSONNEL INVOLVED IN INCIDENT
- Full name
- Age
- Details of injury
- Description of accident
- Person supervising activity
- First aid or other action on board
- Capacity on board
- Certificate of Competency/Licence:
  - grade;
  - date of issue;
  - issuing country/authority;
  - other Certificates of Competency held
- Time spent on vessel concerned
- Experience on similar vessels
- Experience on other types of vessels
- Experience in current capacity
- Experience in other ranks
- Number of hours spent on duty on that day and the previous days
- Number of hours sleep in the 96 hours prior to the incident
- Any other factors, on board or personal, that may have affected sleep
- Whether smoker, and if so, quantity
- Normal alcohol habit
- Alcohol consumption immediately prior to incident or in the previous 24 hours
- Whether under prescribed medication
- Any ingested non-prescribed drugs
- Records of drug and alcohol tests

1.5 PARTICULARS OF SEA STATE, WEATHER AND TIDE
- Direction and force of wind
- Direction and state of sea and swell
- Atmospheric conditions and visibility
• State and height of tide
• Direction and strength of tidal and other currents, bearing in mind local conditions

1.6 PARTICULARS OF THE INCIDENT
• Type of incident
• Date, time and place of incident
• Details of incident and of the events leading up to it and following it
• Details of the performance of relevant equipment with special regard to any malfunction
• Persons on bridge
• Persons in engine-room
• Whereabouts of the master and chief engineer
• Mode of steering (auto or manual)
• Extracts from all relevant ship and, if applicable, shore documents including details of entries in official, bridge,
  • scrap/rough and engine-room log books, data log printout, computer printouts, course and engine speed
  recorder, radar log, etc.
• Details of communications made between vessel and radio stations, SAR centers and control centers, etc., with transcript of tape recordings where available
• Details of any injuries/fatalities
• Voyage data recorder information (if fitted) for analysis

1.7 ASSISTANCE AFTER THE INCIDENT
• If assistance was summoned, what form and by what means
• If assistance was offered or given, by whom and of what nature, and whether it was effective and competent
• If assistance was offered and refused, the reason for refusal

1.8 AUTHENTICATION OF DOCUMENTS
The master should be asked to authenticate all documents and to sign all copies taken of documents as being true copies, also to authenticate relevant dates and times.

1.9 ENGINE-ROOM ORDERS
In all cases where a collision or a stranding is the subject of an investigation, and the movements of the engine are involved, the master or officer on watch and other persons in a position to speak with knowledge are to be asked whether the orders to the engine-room were promptly carried out. If there is any doubt on the matter, the investigator shall refer to it in his report.

1.10 EXTERNAL SOURCES OF INFORMATION
Investigators should consider independent corroborating information from external sources such as radar or voice recordings from vessel traffic systems, shore radar and radio surveillance systems, marine rescue co-ordination centers, coroners and medical records.

2. ADDITIONAL INFORMATION REQUIRED IN SPECIFIC CASES
2.1 FIRE/EXPLOSION (INVESTIGATORS SHOULD BEAR IN MIND THE IMO FIRE CASUALTY RECORD.)
• How was the ship alerted to the fire?
• How was the individual alerted to the fire?
• Where did it start?
• How did it start (if known)?
• What was the immediate action taken?
• Condition of fire-fighting equipment, supported by dates of survey/examination
• Extinguishers available:
  • Type available in the vicinity;
  • Types available on the ship;
• Types used
• Hoses available/used
• Pumps available/used
• Was water immediately available?
• Were vents closed off to the space?
• What was the nature of the material on fire and surrounding the fire?
• Fire retardant specification of bulkheads surrounding the fire
2.2 COLLISION
Investigators should bear in mind the IMO Damage cards and intact stability reporting format

GENERAL
• Local or other special rules for navigation
• Obstructions, if any, to maneuvering, e.g. by a third vessel, shallow or narrow waters, beacon, buoy, etc.
• Circumstances affecting visibility and audibility, e.g. state of the sun, dazzle of shore lights, strength of wind, ship-board
• Noise and whether any door or window could obstruct look-out and/or audibility
• Geographical plot
• Possibilities of interaction
• Name, IMO number, nationality and other details of other vessel

FOR EACH SHIP:
• Time, position, course and speed (and method by which established), when presence of other ship first became known
• Details of all subsequent alterations of course and speed up to collision by own ship
• Bearing, distance and heading of other ship, if sighted visually, time of sighting, and subsequent alterations
• Bearing and distance of other ship, if observed by radar, timing of observations and subsequent alterations of bearing
• If other ship was plotted and by what method (auto-plot, reflection plotter, etc.), and copy of plot, if available
• Check performance of equipment
• Course recorder
• Lights/day signals carried and operated in ship, and those seen in other ship
• Sound signals, including fog signals, made by ship and when, and those heard from other ship and when
• If a listening watch was kept on VHF radio channel 16, or other frequency, and any messages sent, received or overheard
• Number of radars carried on ship, number operational at time of casualty, together with ranges used on each radar
• Whether steering by hand or automatic
• Check that steering was operating correctly
• Details of look-out
• The parts of each ship which first came into contact and the angle between ships at that time
• Nature and extent of damage
• Compliance with statutory requirement to give name and nationality to other ship and to stand by after collision

2.3 GROUNDING
• Details of voyage plan, or evidence of voyage planning
• Last accurate position and how obtained
• Subsequent opportunities for fixing position or position lines, by celestial or terrestrial observations, GPS, radio, radar or otherwise,
• or by lines of soundings and, if not taken, why not
• Chart datum comparison to WGS datum
• Subsequent weather and tidal or other currents experienced
• Effect on compass of any magnetic cargo, electrical disturbance or local attraction
• Radar/s in use, respective ranges used, and evidence of radar performance monitoring and logging
• Charts, sailing directions and relevant notices to mariners held, if corrected to date, and if any warnings they contain had been observed
• Depth soundings taken, when and by what means
• Tank soundings taken, when and by what means
• Draught of ship before grounding and how determined
• Position of grounding and how determined
• Cause and nature of any engine or steering failure before the grounding
• Readiness of anchors, their use and effectiveness
• Nature and extent of damage
• Action taken, and movements of ship, after grounding (Note: information as in cases of foundering may also be required)

2.4 FOUNDERING
(INvestigators should bear in mind the IMO damage cards and intact stability reporting format.)
• Draught and freeboard on leaving last port and changes consequent upon consumption of stores and fuel
• Freeboard appropriate to zone and date
• Loading procedures, hull stresses
• Particulars of any alterations to hull or equipment, since survey, and by whom such alterations sanctioned
• Condition of ship, possible effects on seaworthiness
• Stability data and when determined
• Factors affecting stability, e.g. structural alterations, nature, weight, distribution and shift of any cargo and ballast, free
•表面 in tanks or of loose water in ship
• Subdivision by watertight bulkheads
• Position of, and watertight integrity of, hatches, scuttles, ports and other openings
• Number and capacity of pumps and their effectiveness; the position of suctions
• Cause and nature of water first entering ship
• Other circumstances leading up to foundering
• Measures taken to prevent foundering
• Position where ship foundered and how established
• Life-saving appliances provided and used, and any difficulties experienced in their use

2.5 POLLUTION RESULTING FROM AN INCIDENT
(INvestigators should bear in mind IMO reporting of incidental spillages of liquids, 50 tonnes or more, and reporting of information from investigation of incidents involving dangerous goods or marine pollutants in packaged form.)
• Type of pollutant.
• UN number/IMO hazard class (if applicable).
• Type of packaging (if applicable).
• Quantity on board.
• Quantity lost.
• Method of stowage and securing.
• Where stowed and quantities in each compartment/container.
• Tanks/spaces breached.
• Tanks/spaces liable to be breached.
• Action taken to prevent further loss.
• Action taken to mitigate pollution.
• Dispersant/neutralizer used, if any.
• Restricting boom used, if any.

3. SECURING OF PHYSICAL EVIDENCE
• Occasions may arise where physical evidence may be available and which will require scientific examination. Some examples are oil, paint/scale, pieces of equipment and machinery, pieces of structure.
• Before removal, such evidence should first be photographed in situ. The sample should then be photographed on a clear background before being placed in an appropriate clean container(s), glass bottle, plastic bag, tin container, etc. The container should be sealed and clearly labeled, showing contents, name of vessel, location from which the evidence was taken, the date and the name of the investigator.
For items of equipment and machinery, copies of the relevant certificates should be obtained.
• Where paint samples are being taken for identification purposes in collision cases, a sample of paint from the ship’s paint drum should also be obtained if possible.
• Advice should be sought on the correct container to use. For example, plastic bags are suitable for paint samples, but are not suitable in investigations of fires where materials may need to be tested for accelerant, in which case sealable tin cans are preferred.

4. VOYAGE DATA RECORDERS
Where information from a voyage data recorder (VDR) is available, in the event that the State conducting the investigation into a casualty or serious incident does not have appropriate facilities for readout of the VDR, it should seek and use the facilities of another State, giving consideration to the following:

1. the capabilities of the readout facility;
2. the timeliness of the availability of the facility; and
3. the location of the readout facility.

5. OTHER SOURCES OF INFORMATION
Investigators should bear in mind that other Government agencies, such as customs, quarantine and State Authorities, may have useful information relating to crew lists, the general condition of the ship, stores lists (including alcohol on board), ship certificates, etc. Port authorities and independent surveyors may also hold information of use to an investigation.
4 ANNEX (2) - NEW OPERATIONS

4.1 AUTOMATIC MOORING, BERTHING, PILOTING

A number of accidents and injuries occur during ship berthing. Berthing can be a tricky operation if the port is in a river with currents, during tides or when the waters are shallow. Attention should be given when tugging, piloting or heavy port traffic is involved. Berthing accidents such as striking berths, docks or moored ships are quite common.

A berthing logbook will improve conditions of berthing since a number of measurements can become available and recorded in the logbook automatically. The logbook can assist the master to create berthing passage plan, take currents and winds into consideration, continuously know the depth and thus the vessel’s maneuverability. It may consist in 3 main chapter “berthing passage planning”, “tugging” and “maneuverings” [1]. The minimum amount of information required for automatic berthing is listed below.

- Environmental & port conditions
  Wind speed, wind force and point of influence of wind
  Currents
  Water depth & limiting speed
  Approach channels & waterway width
  Berthing position i.e. starboard, side, among other ships.
  Traffic

- Ship’s characteristics
  Important issues to maneuvering monitoring are:
  The length to beam
  Beam to draught
  Block & prismatic coefficients
  Pivot point
  Longitudinal center of buoyancy
  Propeller & rudder position
  Bow thrusters
  Approach speed & engine revolutions

- Means of support
  Tugging vessel number and type
  Tug position and attach
  Tugs power and handling characteristics
  Thrusters and tugs
  Anchors
  Kicks ahead

- Piloting
  Piloting authorities require a good description of the ship’s characteristics in advance.
  The Berthing logbook can take over this work. ICS (International Chamber of Shipping) master/pilot exchange forms can also be completed automatically by the system. Port GIS (Geographic Information System) should become available, accompanied by weather conditions, indicating the berth as well as all information necessary to develop a berthing passage (IMO resolution A893(21). Pilots should contact the ship to arrange the boarding time and point the language etc. according to IMO resolution A889(21) and SOLAS chapter V, regulation 23.

CARGO AND CONTAINER LOADING/UNLOADING

Automation of container and cargo loading and uploading is a subject of continuous improvement in modern shipping. The faster the goods are dispatched the happier the client and the less the port costs for the shipping company. Cargo loading and unloading may lead to accidents if care is not taken during the operations and even ship damage if the stowage operations are not planned properly. Stowage plans can be prepared automatically if all relevant component of the cargo, such as weight, dimensions, phase, destination, degree of fragility, toxicity etc. are made available in a digital form. A number of software products are available for the preparation of stowage plans.
Currently there is a worldwide movement to facilitate the international trade by improving the customs services and providing one single point of good clearance for economic operators, the so called “single Window”. Both the United Nation’s economic commission for Europe and the WCO (World Customs organization) have launched initiatives in this direction. One of the main characteristics of the single window is the electronic processing from end-to-end.

Some ports develop systems to allow the terminal, shipping lines, forwarders, ship agents, customs brokers, and the Port Administration Departments including Customs, port inspection and the medical services to share information and speed up the documentation and the procedures. Such systems allow the interested parties, such as lorry drivers, to know when a ship has arrived and when the container of interest will be unloaded and in which warehouse it is placed.

The proposed electronic logbook for cargo operations will receive information about all containers or cargo on board. It will prepare import/export documentation to submit it to the “single window, and it will notify the port system when the item is unloaded. This operation can be facilitated with the use of electronic RFID transponders on the container. Reports may be officially signed and reported as a part of the electronic logbook.

ENVIRONMENTAL MONITORING

Currently the shipping industry is one of the major SOx, NOx and Carbon dioxide emitters. In 2000 EU-flagged ships also emitted almost 200 million tons of carbon dioxide. This is significantly more than emissions from EU aviation. Moreover ships are responsible for a great deal of oil pollution in the seas as well as invasion of foreign species due to ballast water discharges. The “clean ship” approach is an initiative to promote economic or incentives to improve the environmental performance of shipping [2]. The Commission’s DG Environment initiated a study on the cost of reducing maritime transport sector atmospheric emissions and results can be seen in [3]:

Monitoring facilities installed on board can measure emissions and discharges and the electronic logbooks can be used to monitor these items and report them as part of the total reports onboard.

- Atmospheric emissions
  SOx
  NOx
  CO2
  Ozone depleting substances

- Discharges
  Oil
  Chemicals (incl. cleaning materials)
  Garbage/Waste
  Sewage
  Ballast water

- Accidents
  Cargo loss

New Applications for Electronic Logbook Data

NEW CONSTRUCTIONS

The data captured in the various electronic logbooks can be used in investigating how future ships should be built and equipped so as to increase safety of navigation, efficiency of operations and reduction of fuel consumption and emissions. Skippers or shipping companies may decide on sharing part of the information stored in logbooks to ship building companies or research organizations with the aim of improving constructions. Hull monitoring data are very useful for the understanding of the stresses and strains during navigation in various sea conditions and with various types of cargo. Fiber optic systems have established themselves in the market [4]. Monitoring the material conditions such as the degree and the velocity of corrosion can help in developing better anticorrosion paints and antifouling coating.

Monitoring of emissions in parallel to the engine and the energy consumption on board can contribute in building more energy efficient and environmentally friendlier ships. Monitoring the times needed for cargo
loading can contribute to more efficient methodologies for cargo loading and unloading. Similarly monitoring of board accidents can indicate structural deficiencies or problematic regions that can be avoided in a future ship design.

TRAINING

Reproducing the real conditions in the lab is the best way to provide training to students. Nowadays simulators are used to train captains and officers and prepare them for any possible difficulty they may face on board [5]. Electronic logbook data could be fed into the simulators to reproduce the real situation. Ship captains have to take decisions often under difficult conditions, high seas, cargo loss, piracy etc. Despite this their actions have to be based on rationally taken decisions. They are also accountable for the aftermath of their decisions or even of their inactivity. The simulators can be used not only to train captains take the right decisions in difficult conditions but also to show why a certain decision may not have been the right one. Ship simulators similar to the aviation simulators are a very challenging industry that can benefit from electronic logbook data.

METEO/SEA DATA WAREHOUSE

Oceans are earth’s heat reservoirs, similarly they are the earth’s carbon dioxide reservoirs. They are responsible to a great extent for the atmospheric conditions and therefore play a big role in the global climate change. Ships travel through the oceans in various directions and can be used as measurement stations. Measurements of salinity, temperature, depth etc. can be captured by sensors, stored in the electronic logbook and communicated automatically to the various meteorological offices to be used to verify climate models. Weather conditions are monitored continuously on board of vessels and special radars can capture wave data. Therefore each vessel can act as a big data warehouse for weather/ocean/wave data. Such measurements can run automatically without disturbing the daily work of the officers. In Australia this concept is already working successfully with volunteer vessels, see web site [6].

References
Tema b2) Gestione del trasferimento intermodale di persone e/o merci nei nodi di scambio tra “l’ultimo miglio” marino e il “primo miglio” terrestre, integrata con sistemi di sicurezza del porto, delle imbarcazioni, delle strutture e dei mezzi di movimentazione delle persone e/o merci.
INDICE

1. Il concetto di ELB ........................................................................................................... 3
   1.1. La Form ....................................................................................................................... 3
       1.1.1. L’eDoc come Form ............................................................................................. 3
       1.1.2. La definizione di una Form .................................................................................. 3
       1.1.3. Storage dei dati di un eDoc .................................................................................. 4
   1.2. L’evento/azione ......................................................................................................... 4
2. Analisi ELB .......................................................................................................................... 4
   2.1. Forms correlate V&F Reporting .................................................................................. 4
   2.2. Informazioni transazioni associate ............................................................................. 5
   2.3. Eventi ........................................................................................................................... 7
1. **IL CONCETTO DI ELB**

La Registrazione. E' costituita da una serie di informazioni comuni (data, ora, stato nave, ecc.) e da una serie di informazioni specifiche acquisite mediante forms (v. seguito);
Il Registro. Aggrega le informazioni registrate per un particolare fine.

1.1. **La Form**

Con il termine Form si intende un 'pannello' video presentato dal sistema o un eDocument, utilizzato per inserire le informazioni richieste, nel caso il pannello lo preveda, e/o fornire informazioni relative al processo.

In ogni caso la Form prevede l’inserimento di informazioni di ‘referenza’, utilizzabili per la classificazione e la ricerca della Form.

1.1.1. **L’eDoc come Form**

La form può essere un eDocument che viene esportato ed importato dopo la compilazione (Detachable Form). Questo consente la compilazione del elettronica del form anche in assenza di connettività Wifi e quindi ovunque. Unico prerequisito è un Tablet idoneo al formato su cui caricare l’eDoc.

Un eDoc può essere realizzato con varie tecnologie; al momento sono in esame:
- PDF
- XForm e strumenti free (es. OpenOffice)
- Prodotti di terze parti

La caratteristica di un eDoc è la separazione del contenuto informativo dal modello (template). La tecnologia consente quindi di estrarre il contenuto informativo da un eDoc compilato o di ricrearlo disponendo del modello e delle informazioni.

L’utilizzo di un eDoc è giustificata dalle seguenti esigenze:
- Mantenere un form conforme ad un modello già approvato;
- Rendere ‘trasportabile’ il form per l’utilizzo su Tablet.

1.1.2. **La definizione di una Form**

Ogni form può essere definita con le seguenti modalità:
- Programmazione.
- Modello Parametrico. L’utente definisce un dizionario ed una disposizione delle informazioni nel form. Il software ELB genera automaticamente una form HTML
- Modello eDocument. L’utente definisce un eDocument e lo acquisisce nel sistema come modello

Il software per ELB consente la costruzione di form multipartite, combinando tutte e tre le modalità. Ad esempio una form definita programmaticamente può essere arricchita da informazioni parametricamente definite dall’utente e da un eDocument.
1.1.3. Storage dei dati di un eDoc

Lo storage di un eDoc può avvenire con le seguenti modalità:

- Separazione completa dati da modello. Le parti compilabili sono acquisite in toto. Il sistema registra quindi solo il contenuto informativo e mantiene una referenza al modello che non può quindi essere cancellato o modificato finché referenziato nell’uso.
- Acquisizione dell’eDoc nella sua totalità. Viene salvato il documento in formato elettronico originale, compilato dall’utente. Nessuna informazione viene acquisita;
- Mix di entrambe le modalità. Il documento viene salvato ed alcune informazioni vengono comunque estratte e salvate come contenuto informativo.

1.2. L’evento/azione

Le attività di registrazione dovrebbero essere effettuate in relazione ad un evento che si verifica o ad un’azione che si deve intraprendere.

I dati dovrebbero essere inseriti una sola volta.

2. ANALISI ELB

2.1. Forms correlate V&F Reporting

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<th>Nome</th>
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<td>giornale nautico parte 3.pdf</td>
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<td>V&amp;F</td>
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<td>V&amp;F</td>
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### 2.2. Informazioni transazioni associate

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<td>Cisterna rigurgito – Capacità</td>
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<td>Per i tre tipi</td>
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2.3. Eventi

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<tr>
<td>Fuel</td>
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<td>C.L. bunkeraggio, Dati imbarco bunker</td>
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<td>Voyage</td>
<td>Manovra</td>
<td>FIM partenza</td>
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</table>

Domande su bunkeraggio

Check List (v. Bunker check list per A.T.Z. Rev.3 (nuovo).doc)
Perché vengono fatte 3 check list? Negli esempi abbiamo una cl per atz, btz, mdo (Bunker check list per A.T.Z. Rev.3 (nuovo).doc, ecc.). Le operazioni sono le stesse.

La quantità in operazioni preliminari è l’ordinato?

Come mai la cisterna di rigurgito è presente in due sezioni (Op. preliminari e Trasferimento a bordo)?

Come mai tra gli esempi è presente un form che riporta solo la sezione Trasferimento a bordo?

E’ possibile determinare in quale cassa viene pompato il carburante?

E’ utile registrarla?

Dati imbarco bunker (v. DATI IMBARCO BUNKER Mn La Superba.xls)
La quantità è l’effettiva che verrà fatturata?
Corrisponde alla stessa della Bunker Delivery Note?

Altre domande

Analisi Fuel
BDM
Domande su consumi e rel. Viaggio

Domande su Consumi “Consumi e cambio di combustibile.pdf”

Ci sono informazioni riportate (cambio di carburante, PIM, FIM,..) anche in altri registri? (es. Registro nautico Parte 3)
Sono presenti due form: come mai?
Il form Palermo Genova riporta anche il riepilogo delle info per Rel. Viaggio.

La differenza contalitri esprime la quantità litri?
La conversione litri Tm come avviene?
(tabella conversione per tipo carburante IFO 380, 180, MDO e temperatura)
Come mai il contalitri MP1-2 è sempre uguale a MP3-4?

Cosa indica L.O nelle Giacenze?
Come vengono calcolati i consumi per la Relazione viaggio?

Tentativo:

Derivazione dalla lettura dei contalitri

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<tr>
<td>Tot Tm</td>
<td>20,05655</td>
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</table>
Domande su Rel. Viaggio

- Quando viene compilata?
- I dati del bunkeraggio sono in relazione con i forms relativi al bunkeraggio?
- La distanza è sempre la stessa? E’ un dato fisso della tratta, dipende da una rotta, determinata da automazione.
- La maggior parte delle informazioni sembrano essere derivate dal foglio Consumi e cambio del combustibile. E’ così?
- La velocità media è calcolata (Distanza/tempo navigazione)?
- Oltre ai consumi, ci sono informazioni riportate anche in altri registri o form? Es. condizioni meteo marine, distanza in o da Registro nautico Parte 3
- Per ogni viaggio sono disponibili le seguenti informazioni?
  - Carico in Tm
  - N. Passeggeri
MOBILITA’ SOSTENIBILE 2008

Tema b2) Gestione del trasferimento intermodale di persone e/o merci nei nodi di scambio tra “l’ultimo miglio” marino e il “primo miglio” terrestre, integrata con sistemi di sicurezza del porto, delle imbarcazioni, delle strutture e dei mezzi di movimentazione delle persone e/o merci.

Aspetti di base e Macro-specifica ELB

Autore: Maurizio Ricci

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NOTE AGGIUNTIVE:
DOCUMENTO PUBBLICO

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1 PREMESSA ...................................................................................................................................... 3
2 LOGBOOKS ELETTRONICI E OBIETTIVI ................................................................................. 4
  2.1 DECK LOGBOOK .................................................................................................................. 4
  2.2 ENGINE LOGBOOK ............................................................................................................. 4
  2.3 OIL RECORD LOGBOOK PART I .......................................................................................... 5
  2.4 RADIO LOGBOOK ................................................................................................................ 5
  2.5 DP LOGBOOK ...................................................................................................................... 5
  2.6 OPERATIONAL LOG ............................................................................................................ 6
  2.7 CUSTOMISED REPORTS ...................................................................................................... 6
  2.8 OBJECTIVES ....................................................................................................................... 6
     Improved quality - focus on tasks ............................................................................................. 6
     Routines made easier .............................................................................................................. 6
     Reduced cost .......................................................................................................................... 6
     Efficient ship operations ...................................................................................................... 7
3 SCENARI APPLICATIVI ............................................................................................................. 8
4 SOFTWARE A BORDO NAVE (MACRO-ANALISI): ................................................................. 10
  4.1 ANAGRAFICA GESTITE: CREW/PAX/VISITOR ................................................................... 12
5 APPENDIX: GNV - GRANDI NAVI VELOCI ................................................................. 13
6 ALLEGATI ...................................................................................................................................... 14
1 PREMESSA

Si considera per ELB la versione elettronica di un Log Book che in senso ampio rappresenta tutto il sistema di reporting a bordo Nave.

Di seguito vedremo quali sono i Log Book normalmente gestiti in formato elettronico ed una macro analisi per la gestione degli ELB.
2 LOGBOOKS ELETTRONICI E OBIETTIVI

2.1 Deck Logbook

The Deck Logbook is designed to record all events covered by an conventional deck logbook, such as weather and navigation events, drills and inspection events and other events meeting requirements of IMO and certain flag states.

Standard reports are:

- Deck Logbook report (complete report)
- Drills and Inspection report
- Test and Checks report
- Daily Noon Log (SOLAS)
- Crew History report
- Ship Particulars

The logbook can be configured to automatically record selected online information, such as:

- Wind speed and direction
- Speed, heading and distance
- Other automatic data according to specification

Logbook data may be provided in customised reports to owner’s specifications. Such additional reports can be:

- Weather Reports
- Speed and Distance reports
- Reports on 3rd parties request

Optional features and reports may be supplied. The database is accessible through the ODBC interface.

2.2 Engine Logbook

The Engine Logbook is designed to record engine related events. As standard, the following features are included:

- Configuration of main and auxiliary engine
- Engine Logbook Report

For example it is possible to customise the logbook to accommodate requirements from different vessels and trades. In addition to logging of conventional engine events, automatic entry of selected online information can also be performed, such as:

- Main Engine data
- Auxiliary Engine data
- Running hours information
- Engine Revolutions
- Remains on board
- Tank data
- Alarm status

The logbook may be interfaced to automation systems for direct access to tag values.
2.3 Oil Record Logbook Part I

The Oil Record Book Part I is designed to keep a complete log of machinery space activities. It is supplied with standard events and reports, defined in accordance with MARPOL Annex I, but may be further configured to accommodate specific vessel requirements.

The logbook has input dialogues for the following operations:

- Ballasting or cleaning of oil fuel tanks
- Discharge of dirty ballast or cleaning water from tanks
- Disposal of oil residues / sludge
- Discharge overboard or disposal otherwise of bilge water

2.4 Radio Logbook

The Radio Logbook is designed to record events related to radio operations onboard vessels regulated by IMO, hence meeting the requirements in SOLAS Chapter IV Regulation 17. It includes functionality to register particulars of ship, details of radio personnel and records of tests and communication.

The logbook has the following features:

- Registration of radio related equipment, such as VHF’s, GMDSS station, and reserve source of power.
- Registration of officers with GMDSS license
- Registration of GMDSS license expiry dates
- Radio communication event
- Noon position event
- Port Arrival and Departure events
- Daily, weekly and monthly test of equipment events
- Radio Logbook Report
- Free text search within the Radio logbook

The logbook is delivered with a standard configuration, normally as an add-on to the Deck Logbook.

2.5 DP Logbook

The DP Logbook is designed to record events related to Dynamic Positioning operations. It may be configured to cover all requirements for any type of vessel and operation. Reports may be tailored to fit the need from owner or other 3rd parties involved.

Typically the events are grouped into the following main categories:

- Operation
- Equipment
- Position reference systems

Each of these categories can in turn include groups of events or events directly. In this way the system setup is fully flexibility.

Other typical event collections are:

- Entry / Departure Safety zones
- Redundancy
• Checklists
• ROV/AUV operations
• Crane operations
• HPR/HiPAP operations
• Taut wire systems

The logbook is delivered with a basis of DP events. Dependent on the equipment and the operation of the vessel, events are added after a specification agreed with the customer before installation.

2.6 **Operational Log**

The Operational Log is designed to record events related to vessel operation, for instance performance, cargo handling and maritime operations. The Operational Log will typically need some customisation to customer's requirement and trade.

2.7 **Customised reports**

It can develop specially designed reports for each customer, based on the customer's internal demands, the type of operation and 3rd party requirements. The customised reports may include any combination of listing of events, sums and calculations, conditions and variances. Data can be presented using bar graphs, pie charts, histograms or other graphic methods. As a result of collaboration between Kongsberg and one of our customers, we developed the first electronic logbook for a cement vessel. This logbook is based on the and is specially designed for cement vessel operation by employing complex calculations and conditions.

2.8 **Objectives**

Below the list of the objectives:

**Improved quality - focus on tasks**

• Reduced workload for officers on watch
• Efficient and trouble-free logging
• More efficient information exchange

**Routines made easier**

• One time entry of data, single point of storage
• Simplified reporting routines
• Automatic logging of available technical data
• Data available in ship owner's office

**Reduced cost**

• Reduced communication cost
• Time saving data collecting and reporting
Efficient ship operations

- Reporting to shore and third parties
- Data analysis tools for more efficient vessel operations
- Online data archive for decisions support
- Data export to other systems
- Provides evidence in case of disputes

The Electronic Logbooks are designed to replace the traditional paper logbooks. It supports event based recording of data related to navigation, engine watch, port calls and other operational activities. The system is configurable to meet individual requirements.

It is designed to meet specific reporting requirements from both IMO, SOLAS and flag states. It provides ship’s officers with an easy way to log all activities onboard according to the requirements from different recipients. The system has the possibility to combine manual data input with automatic recordings from the vessel’s instruments.

It is interfaced to a GPS for position and time reference as a minimum. Other systems, such as navigation and automation may be interfaced on request.

Example: Onboard modules

- Deck Logbook - records navigational events related to the voyage and operations onboard.
- Engine Logbook - records engine events related to the engine and machinery operation.
- Oil Record Book Part I - records events related to oil and dirty water as required by IMO’s MARPOL convention.
- Radio Logbook - records events relevant to radio traffic as required by IMO and the flag states.
- Dynamic Positioning (DP) Logbook - manually records operations related to DP operations.
- Operational Log - records events related to vessel operation.

Office modules

- Fleet Browser - provides owner’s office with access to logbook reports from all vessels in the fleet. Reports from selected vessels can be displayed and forwarded internally or externally.
- Ship Tracking - optional plug-in that displays the position and track for all fleet vessels in electronic charts.

Reports

It includes a number of standard reports from the different modules, such as the Full Deck Logbook report and the Daily Noon report. Reports can be made and customised on request. The ODBC interface is available for reports created by the customer, typically using MS Excel, MS Access or other desktop tools.

Data is shared between the different electronic logbooks. This results in efficient logging and one time entry of data.

The logbooks are connected to the position history. This makes insertion of position data quick and correct.

All reports can be opened by Adobe’s Acrobat Reader. Standard features supported are save to file, print report, send as e-mail, search in reports and copy & paste into new documents.

User interface

It design is based on a hierarchical button panel, making the user interface well arranged and easy to adapt and customise. Some of the modules include pulldown menus for adding customised events to the logbook.

Flag acceptance

The Electronic Logbook must be accepted by Maritime Administrations.
3 SCENARI APPLICATIVI

Occorre distinguere i LOG BOOKs tradizionalmente gestiti in forma cartacea in quanto su Registri approvati con pre-timbro Capitaneria Porto (e ancora oggi così gestiti, vedi Giornale Nautico Parte III, Daily Noon Report, Garbage report, Oil REC PART I, ..), dai LOG BOOKs già gestiti in forma elettronica, spesso come “output” di gestioni per processi.

Di seguito, considerando una evoluzione di questi in formato Elettronico (completamente sostitutivo).

Una prima classificazione è tra differenti ELB sulla base delle diverse informazioni gestite ed il ruolo delle stesse:

1. ELB che vengono sostituiti da “output” di “Complete Processes Management” siano essi .PDF o file strutturati (Xml, sdf, txt, ..): ciò relativamente a processi “complessi” e/o con alta priorità che in un tempo breve (max qualche mese) vengono così gestiti. Rientrano in questo caso quelli “sostituiti” da gestioni tradizionali InfoSHIP quali: Manutenzione Engine Dpt., Stock & Purchasing cycle materiali spare parts e consumables. Consumables: a riguardo tutte le classi a parte Fuel Oil, Lub Oil, Chimica in quanto la gestione ha alto impatto MARPOL e quindi vedi punto 2.

Le gestioni tradizionali di InfoSHIP implicano un alto numero di risorse coinvolte, e ciclicità dei passaggi delle informazioni tra bordo e terra, ma poiché “fondamentali” per la gestione economico-tecnica nave vengono considerati ad alta priorità.

2. ELB che vengono sostituiti da “output” di “Complete Processes Management” siano essi .PDF o file strutturati (Xml, sdf, txt, ..): ciò relativamente a processi “semplici” con alta priorità che in un tempo breve (max qualche mese) vengono così gestiti. Rientrano in questo caso Voyage & Fuel management che da punto di vista software è il prerequisito per gestione ELB, e aspetti MARPOL (MARine POLlution), Crew Management sotto aspetto delle attività SMS in cui coinvolto). Non implicano un alto numero di persone coinvolte, spesso già gestite in xls, non risentono di necessità di ciclicità tra bordo e terra (se non ricezione Fuel, il resto è monodirezionale Nave - Terra).

FOCUS MARPOL: In questa parte rientrano le gestioni relative a Annex MARPOL

Annex I - OIL REC Part I e PI

• Fuel Oil & LUB OIL: hanno la stessa gestione sia a livello di ciclo (acquisto, consumo, reporting su Voyage) che a livello di ELB reporting

Annex II - Noxious Liquid Substances carried in Bulk (solo per chimicire)

Annex III - Harmful Substances carried in Packaged Form (IFTDGN): processo nasce a terra

Annex IV – Sewage

Gestione di due fasi:

• scarico a mare secondo modalità autorizzate: da valutare un ELB se esiste LB. In generale in presenza di navi con impianti di depurazione non necessaria gestione “sewage”

• Reporting del conferito a terra in caso di presenza di impianti di trattamento paerziale delle “sewage”

Annex V - Garbage

• GARBAGE: vengono gestiti per compilare GARBAGE REPORT secondo modalità definita per CLASSI (1-6): necessita anche la creazione automatica di un WASDIS (Waste Disposal) in xml per invio a porti sbarco. Vedi GM (Garbage Management Manual – ABS)

• RIFIUTI PERICOLOSI: chimica, ...
Annex VI - Air Pollution

- **EMISSIONI** (attualmente il Registro Campioni Fuel con evidenza dei tenori di Zolfo ecc. sostituisce Emission LB sino a che non sarà obbligatoria il monitoring delle emissioni on-line)

Tali ELB hanno la peculiarità particolare di essere gestiti quasi sempre come Registri Cartacei e su modelli approvati dalle varie MA (Maritime Authority). Una caratteristica costante, che si ritiene sia importante gestire, è l'identificazione dei Soggetti (che opera fisicamente): il primo che registra la transazione e il secondo che inserisce l'approvazione (da valutare se uno o due livelli – vedi dopo).


In tal caso vengono gestiti (per rispondere a SMS) con la soluzione 4 da subito e poi successivamente con una soluzione “Complete Processes Management”

A questo riguardo, la quasi generalità dei FORM, è di tipo formale, se ne mantiene la presenza e si valuta solo se gestire anche la tipologia di Form a più transazioni (vedi form a registro dove per ogni riga c’è un giorno di un mese in cui viene effettuata una attività ad esempio di inspection)

4. **ELB che vengono gestiti con una soluzione “ad hoc”** che risolve aspetti di “Digital Signature”, HASH, e compliant a CAD 2010, ma che per determinati Eventi/Attività rappresenta la soluzione “ottimale” finale.
4 SOFTWARE A BORDO NAVE (MACRO-ANALISI):

La logica base di reporting (rilevamento) viene implementata per EVENTI

EVENTO: si intende per EVENTO un fase dell’operatività Nave di tipo principalmente Ordinario. Quelli di natura Ordinaria sono Eventi pre-definiti che accadono con ricorrenza ordinaria (esempio Imbarco Crew) o ricorrenze a Scadenza (esempio ogni 6 mesi o ogni 5000 ore/moto).

Gli EVENTI Straordinari accadono inattesi (sono eventi negativi) e sono gestiti nei processi di HO Hazardous Occurences (anche incidenti / failure ad alto impatto) e/o Failure (a basso impatto sull’operatività nave) – Manutenzione Correttiva (Hotel/Safety/Engine) ..

In relazione alle modalità operative si fa riferimento alle classificazioni precedentemente operate aspetti nave.

L’EVENTO può essere gestito a due / più livelli, e a seconda del momento in cui avviene con ausilio o meno di una gestione delle Scadenze. Si ritiene di NON gestire una DUE LIST.

Ogni Evento viene gestito all’interno del periodo che si riferisce in primis a NAVE, VIAGGIO, DATA Partenza e Arrivo. Ogni Viaggio viene suddiviso in Tratte e in un momento di N (Navigazione), P(Porto), M(Manovra) MP in Partenza o MA in Arrivo

<table>
<thead>
<tr>
<th>EVENTO</th>
<th>ATTIVITA</th>
<th>Navigazione</th>
<th>Porto</th>
<th>Manovra (A/P)</th>
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<tbody>
<tr>
<td>Imbarco marittimo</td>
<td>Training 1 …</td>
<td>X</td>
<td>X</td>
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<td>Familiarization ..</td>
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<td>Sbarco marittimo</td>
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<td>Schede valutazione</td>
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<tr>
<td>Carico pax/auto</td>
<td>…. X</td>
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<tr>
<td>Imbarco pax PMR</td>
<td>Mobilità Ridotta</td>
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<tr>
<td>Incident</td>
<td>Near Missing</td>
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</tbody>
</table>

In relazione agli EVENTI durante il loro accadimento avvengono diverse ATTIVITA’ che vengono “rapportate” con diverse modalità e peculiarità. La coppia EVENTO+ATTIVITA’ indica il Tipo ELB gestito.

Per ogni Tipo ELB viene definito un parametro di compilazione che può essere C=Contestuale all’accadimento o P=Procrastinabile. Nel primo caso significa che l’attività deve essere rapportata contestualmente all’accadimento e quindi eredita tutti gli attributi di STATO nave; nel secondo caso l’attività può essere rapportata in un secondo tempo a posteriori e quindi NON eredita lo STATO della nave ma questo può essere introdotto manualmente al momento della registrazione.

Gli ELB possono essere parametrici (sempre per Tipo LogBook) e in tal caso devono essere presenti campi multipli parametrici anche di tipo Numerico qualora sia necessario produrre delle statistiche. Per la variabilità del tema dei LB si ritiene che la soluzione “parametrica” spesso sia la più consona, ma qualora esistano delle gestioni “collegate” e/o “output” di gestioni collegate stesse, la soluzione a campi
fissi è la più adatta e semplice come nel caso delle gestioni riconducibili a MARPOL (vedi punto 2 del capitolo precedente) e come nell’OIL REC PART I o II dove vengono gestiti variabili che impattano su gestione del Fuel quali giacenze casse e scarichi e carichi delle singole casse.

NB: gestione dei campi parametrici attraverso
1. FORM (PDF senza salvare campi su struttura database ma solo il Form compilato)
2. FORM (PDF salvando campi in struttura XML oltre il Form compilato)
3. WEBFORM: WEBFORM XML che salva in struttura XML
4. PDF : File PDF Allegato

Ogni ELB è riferito a un VIAGGIO/TRATTA (la tratta anche per navi cargo è utile per identificare le diverse fasi di un viaggio: esempio trasporto carico e vuoto) e a una FASE (o STATO) predefinita Viaggio (vedi Navigazione, Porto, Manovra)

1. ATTIVITÀ OPERATIVE: Logbook per attività operative nave, nelle quali sono coinvolti persone (tutte queste attività sono effettuate dall’uomo, a parte quelle che derivano da “Log” di Automazione in quanto vengono da questo rilevate) e per la maggior parte rientranano nelle normali attività di bordo.

Avvengono a EVENTO ordinario ricorrente (Arrivi Porto – Scarico/carico, Navigazione – ingresso / uscita Aree SECA, …). Talune attività possono essere anche a Scadenza.

Rientrano in questo gruppo ad esempio:
- Operational generici (operazioni di carico/scarico, o in generale ciò che non rientra nei successivi…)
- Radio LB utilizzo del GMDSS; non le ispezioni che possono rientrare nella parte di Safety Equipment Management Inspection

2. ATTIVITÀ connesse alla gestione del CREW (anche Pax o Visitor di bordo): ELB relativi ad attività sul crew/pax/visitor (C P V) sono caratterizzati:
- da una gestione in cui partecipano più soggetti contemporaneamente, anche eterogenei (C P V) e con diversi ruoli: ad esempio (n) Partecipanti, (1 normalmente) Formatore, 1 Responsabile (Master, CE) che APPROVANO la transazione e da quel momento diventa DEFINITIVA (quindi trasmissibile a terra e/o modificabile mediante gestione automatica di annullamento logico della transazione e reinserimento).
- La fase di APPROVAZIONE (1 livello .. da valutare se 2 CE e Master a ruota) vale per TUTTE le transazioni di ELB
- avvengono ad Evento ricorrente (quasi sempre ad Imbarco); ma possono essere anche a scadenza ma comunque gestite ad EVENTO
- di massima sono relative a specifici temi (Antincendio, PMR Persone mobilità Ridotta, SMS, …) e fanno parte delle seguenti Categorie:
  - Drills (cumulative con più persone anche miste C P V)
  - Training (cumulative con più persone anche miste C P V): nel training può essere interessante gestire aspetti di Verifica dell’Apprendimento e Valutazione del livello soddisfazione del Partecipante (prima fase sui ipotizza di NON gestire tale aspetto).
- Familiarizzazione (cumulative con più persone anche miste C P V)

IPOTESI STRUTTURA RECORD ELB base:

- ID Transazione
- Data / ora registrazione – Id Utente nominale
- Data / ora accadimento (uguale a precedente per Tipo ELB = Contestuali)
- Data / ora approvazione Livelli 1-2-.. – Id Utente nominale
- ID Viaggio/Tratta (da ciò eredita NAVE, Latitudine/Longitudine … e Momento Nave (Porto, Navigazione, Manovra partenza e Manovra arrivo) se Tipo ELB = Contestuale
- EVENTO/ATTIVITA’ vedi tabella precedente (identifica ELB)
- ID Crew che registra (nel caso di formazione/drills/famil. erogata in primis è l’utente Formatore e/o Responsabile dell’attività)
- Campo MEMO descrittivo
- ID Crew APPROVATORE (Master o CE)
- Data / Ora Approvazione (Questi campi e l’ID Approvatore possono essere ripetuti per due Livelli APPROVAZIONE se necessari)
- HASH: identificazione univoca della transazione e degli allegati (protezione alla modifica)
- ALTRI CAMPI FISSI utili per ogni gestione o in inserimento manuale o ereditati da definirsi anche sulla base di una semplice parametrizzazione legata a EVENTO / ATTIVITA’ (da valutare)
- (n) ID Crew registrato da rilevamento in automatico (RFID) con Data/Ora registrazione per singoli partecipanti al corso o alla attività collegiale (GESTIONE AD HOC in seguito ad apertura fase precedente)

Il LOG relativamente alle informazioni: Data / Ora / ID Crew-Pax .. / EVENTO-ATTIVITÀ / Ruolo – Allievo o Formatore … deve “alimentare” la Storia professionale del singolo soggetto che deve venire anche alimentata, ad esempio, da:

- attività di Manutenzione (Engine / Safety / anche in InfoSHIP moduli specifici) e quindi rende necessario un allineamento delle anagrafiche gestite)  
- altre attività sempre presenti in InfoSHIP (oltre Manutenzione in senso lato, quali particolari Approvvigionamenti ecc. o tutto ciò che può concorrere alla “crescita” professionale)

### 4.1 Anagrafica gestite: CREW/PAX/VISITOR

In generale può essere la stessa anagrafica nella quale gestire sia CREW che PAX o VISITOR, anche se con campi condizionati differenti.

Per Anagrafica Crew (Visitor nel caso in cui operatore Terzo viene coinvolto su attività bordo in modo ricorrente come un Crew interno) l’owner del processo di creazione/update della stessa anagrafica è il software di Crew Management di terra.

Per Anagrafica Pax e Visitor (casuale) l’owner del processo di creazione/update della stessa anagrafica è il software di Ticketing e Pax Management e/o il bordo dentro tale applicativo.

A bordo queste informazioni, per gli scopi suddetti, vengono gestite con attributi di “sola lettura” – (a parte eventuali campi da definirsi puntualmente). La visibilità dei dati deve essere presente anche a bordo:

Campi (da definirsi) e oltre a dati anagrafici:
- Professionali (corsi esterni)
- Storia lavorativa extra compagnia
- Storia lavorativa in compagnia (sbarchi / imbarchi, rank e position)
- Certificati e scadenze
- Corsi e scadenze (sono legati a certificati/attestati emessi, vedi precedente)
- Note di Merito/Richiami
- Professionale (vedi sopra): si alimenta la storia Training, Famil., Drills, e attività operativa … da altre gestioni.

**NB:** nella vita lavorativa di bordo, la modalità, in cui avvengono spesso le attività di formazione/drill/famil., è in affiancamento e quindi rientrano nella tipologia del “Training on the Job” e quindi al fine di non renderle vane dal punto di vista della “formalizzazione” (logica SCTW 95) devono essere debitamente tracciate.
5 APPENDIX: GNV - GRANDI Navi VELOCI

Riferimenti a capitoli Manuali SMS dove citati i Voyage reporting / Fuel reporting e Fuel/LubOil remain on board

Da aggiungere:

- 12.2.2 VI - Giornale Nautico (Tre), Giornale Macchina oltre al form "Pianificazione Viaggio"
- 12.2.16 Stoccaggio, riscaldamento ... fuel: le operazioni vengono registrate da qualche parte?
- 12.3.2 Registro idrocarburi parte I (Marpol Annex I)
- 12.3.3 Eventuali registri Merci pericolose (in colli) (Marpol Annex III) e/o IMO FAL Form 7 (Dangerous Goods o UN/EDIFACT IFTDGN)
- 12.3.4 Liquami (Marpol Annex IV): a parte Certificato ISPP, vengono registrate queste operazioni di discarica?
- 12.3.5 Rifiuti Solidi (Marpol Annex V): registro Rifiuti e/o form xls
- 12.3.6.1 e 6.2: Gas Dannosi Ozono e Emissioni NOx (Marpol Annex VI): registri / registro modifiche e/o form xls. A questo riguardo vengono per caso rilevati se non in continuo, a scadenza le emissioni in aria? con che strumento?
- 12.3.6.3 Emissioni SOx: registro IAPP (carico/scarico dei campioni) (XLS), oltre copia del BDN (bunker delivery note) e Giornale Nautico Generale e di Contabilità oltre Giornale Macchina dove vengono riportati operazioni di cambio combustibile (data ora posizione) .. altri form (xls) esistono?
- **12.3.6.4 Provvedimenti addizionali:** che strumenti (form/dati) si utilizzano per espletare punti 1-2-3-4? E’ un aspetto sostanziale di una certa rilevanza ... merita un approfondimento in relazione a Cruscotti implementabili...
- 12.3.7 Movimentazione e discarica zavorra : vengono compilati qualche form per censire questa attività? nel manuale non ne sono riportati di ufficiali
- 12.3.8 - Precauzioni durante rifornimento ...: anche qui vengono compilati qualche form per censire questa attività, oltre quello di Lista Controllo Operazioni Bunkeraggio (se possibile una copia compilata)? nel manuale non sono riportati altri form ufficiali
  - Ballast Water (Tnk Log activities)
  - Seawage Water (Tnk Log activities)

Per ognuno poi è importante conoscere:

1) se vengono utilizzati poi i dati a terra per statistiche ? e se affermativo con che periodicità li inviano da bordo e in che modo vengono trattati i dati a terra .. ?

2) chi effettua a bordo la compilazione sostanziale e chi la deve approvare (DM, C.te, ..) ? - ciò in quanto se "elettronici" necessita gestire separatamente inserimento e approvazione

NB: Tabelle Prodotti (DANGERous GOODS / GARBAGE & LOCATION) da valutare se sono da gestire con un semplice magazzino di carico / scarico o è sufficiente rilevare la locazione a bordo)
6 ALLEGATI

PROCESS_ANALYSIS_ALL1_IB_EL_B_03.docx
Da Logbook a ELB ship lettera approvazione_ALL2_IB_ELB_03.docx
Giornale delle Radio-Comunicazioni.pdf
Giornale nautico - Libro Primo - Inventario di Bordo_IB_ELB_03.pdf
Giornale nautico - Libro Terzo_IB_ELB_03.pdf
Giornale nautico - Libro Terzo_CAIM_IB_ELB_03.pdf
Registro carico e scarico_IB_ELB_03.pdf
Registro idrocarburi - Parte I_IB_ELB_03.pdf
Registro idrocarburi - Parte II_IB_ELB_03.pdf
Registro sostanze liquide nocive_IB_ELB_03.pdf
Registro trasporto sostanze liquide nocive alla rinfusa_IB_ELB_03.pdf
SIS-TEMA
SISTEMA INTEGRATO SICURO TERRA-MARE

MOBILITA’ SOSTENIBILE 2008

Tema b2) Gestione del trasferimento intermodale di persone e/o merci nei nodi di scambio tra “l’ultimo miglio” marino e il “primo miglio” terrestre, integrata con sistemi di sicurezza del porto, delle imbarcazioni, delle strutture e dei mezzi di movimentazione delle persone e/o merci.

GNV - paperless SMS

Autore: IB

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NOTE AGGIUNTIVE:

DOCUMENTO PUBBLICO

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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1 PREMESSA.............................................................................................................................................4

2 E-MARITIME...........................................................................................................................................5
   2.1 E-MARITIME APPLICATIONS (SOLUTIONS) ..................................................................................6
      2.1.1 The EU e-Maritime Components..............................................................................................6
   2.2 THE E-MARITIME STRATEGIC FRAMEWORK...........................................................................6
      2.2.1 Initial description of e-Maritime applications ...........................................................................7
      2.2.2 Proposed measures ..................................................................................................................8

3 RE-ENGINEERING PROCESSI.................................................................................................................9

4 DOCUMENTAZIONE SMS.........................................................................................................................13
   4.1 ELENCO DEI MODULI DEL SISTEMA SMS AGGIORNAMENTO 30 LUGLIO 2010........................13
   4.2 REGISTRI GESTIONALI..................................................................................................................17
   4.3 CORRISPONDENZA, VERBALI E COMUNICAZIONI VARIE ..........................................................20
   4.4 LETTERE CIRCOLARI....................................................................................................................22
   4.5 RAPPORTI DI VIAGGIO..................................................................................................................22

5 ANALISI DEI FORM/REGISTRI E PRIMA VALUTAZIONE DEL PATRIMONIO INFORMATIVO...23
   5.1 PREMESSA METODOLOGICA .........................................................................................................23
   5.2 VALUTAZIONE MODELLI e RE-ENGINEERING .........................................................................24
   5.3 ALLEGATO: QUADRO FIRME SECONDO ORDINAMENTO DEL CODICE AMMINISTRAZIONE DIGITALE ITALIANO IN VIGORE ..................................................................................................................27
   5.4 FILES SPECIFICI DELLA NAVE.......................................................................................................28
   5.5 MODULISTICA ADDESTRAMENTO ...............................................................................................29
      5.5.1 MOD.5 Addestramento Personale Chiave – Ufficiali di coperta (Add_Chiave_Cop.doc) ..............29
      5.5.2 MOD.6 Addestramento Personale Chiave – Ufficiali di macchina (Add_Chiave_Mach.doc) .........29
      5.5.3 MOD. 7 Familiarizzazione all’imbarco (Add_Sic_1.doc).................................................................29
      5.5.4 MOD.8 Addestramento entro 15 giorni dall’imbarco (Add_Sic_2.doc) .........................................29
      5.5.5 MOD.9 Motivazione SMS (Add_SMS.doc) ..................................................................................29
      5.5.6 MOD.10 Addestramento vari (Add_video.doc) ...........................................................................29
      5.5.7 MOD.11 Questionario per l’addestramento Uff.le di coperta (Quest_Cop.doc) .........................29
      5.5.8 MOD.12 Questionario per l’addestramento Uff.le commissario (Quest_HTL.doc) ..................29
      5.5.9 MOD.13 Questionario per l’addestramento Uff.le di macchina (Quest_Mach.doc) .................29
      5.5.10 MOD.14 Registro delle esercitazioni Sopep (Registro delle esercitazioni SOPE Plan.doc) ...29
      5.5.11 MOD.F1 ADD_PRM_1: LA GESTIONE DELLE PERSONE A MOBILITÀ RIDOTTA (PMR) ...30
      5.5.12 MOD.F2 ADD_STAFF : FAMILIARIZZAZIONE PERSONALE STAFF NON A RUOLO EQUIPAGGIO 30
      5.5.13 MOD.F3 PMR ATTESTATO......................................................................................................30
      5.5.14 MOD.F4 PMR ELEMENTI DI FORMAZIONE : ELEMENTI DI FORMAZIONE PER L’ACCOGLIENZA ASSISTENZA DELLE PMR ................................................................................30
   5.6 MODULISTICA GESTIONALI – BORDO ..........................................................................................31
      5.6.1 MOD.15 COMITATO DI SICUREZZA (Comitato di sicurezza.doc) ..............................................31
      5.6.2 MOD.16 ELENCO RACCoglitori (Elenco Raccoglitori.doc) ......................................................31
      5.6.3 MOD.17 ISPEZIONE SANITARIA (Ispezione Sanitaria Nave Passeggeri.doc) ......................31
      5.6.4 MOD.18 RAPPORTO DI INCIDENTE (Rapporto di non conformità-A4.doc) .........................31
      5.6.5 MOD.19 SCHEDA DI VALUTAZIONE DEL PERSONALE NAVIGANTE (Scheda di valutazione Uff-Sott-Com..doc) ........................................................................................................31
      5.6.6 MOD.20 VERBALE PASSAGGIO CONSENGE TRA COMANDANTI (Verbale consegne comandanti.doc) ..........................................................................................................................31
      5.6.7 MOD.21 REVISIONE DELLA POLITICA DEL COMANDANTE (Revisione della politica Com.te.doc) 31
      5.6.8 MOD.22 VERBALE PASSAGGIO CONSENGE TRA UFFICIALI R.T. (Verbale consegne Marconista.doc) ..........................................................................................................................31
      5.6.9 MOD.23 VERBALE PASSAGGIO CONSENGE TRA DIRETTORI (Verbale Passaggio consegne DM.doc) 31
      5.6.10 MOD.F5 SCHEDA VALUTAZIONE COMUNI ..........................................................................31
      5.6.11 MOD.F6 MASTER REVIEW ....................................................................................................31
      5.6.12 MOD.F7 SCHEDA DI VALUTAZIONE .....................................................................................31

6  MODULISTICA GESTIONALI – UFFICIO ...............................................................................................32
   5.7.1 MOD.24 ISPEZIONE SICUREZZA – LISTA DI CONTROLLO (Ispezione sicurezza.doc) ............32
   5.7.2 MOD.25 ISPEZIONE TECNICA – LISTA DI CONTROLLO (Ispezione tecnica.doc) ..................32
   5.7.3 MOD.26 AUDIT - N/C – AUDIT INTERNO – 1a pagina (Rapporto di NC durante audit cover.doc) ...32
5.7.4 MOD.27 AUDIT - N/C – AUDIT INTERNO – 2a pagina (Rapporto di NC durante audit.doc) ....................................................... 32
5.7.5 MOD.28 AUDIT LISTA DI CONTROLLO NAVE (Verbale Audit interno navi.doc) .......................................................... 32
5.7.6 MOD.29 AUDIT – LISTA DI CONTROLLO UFFICIO (Verbale Audit Interno Uffici.doc) ..................................................... 32
5.7.7 MOD.F8 VERBALE AUDIT CREW MANNING ...................................................................................................................... 32
5.8 MODULISTICA MANUTENZIONE........................................................................................................................................... 32
5.8.1 MOD.30 Registro delle ispezioni e prove dell’impianto di automazione (Impianti di automazione Navi 2-4 motori.doc) .................................................................................................................................. 32
5.8.2 MOD.31 Inventario mezzi di rizzaggio (Inventario mezzi di rizzaggio.xls) ........................................................................ 32
5.8.3 MOD.32 Ispezioni Portelloni (Registro Ispezioni rampe) .................................................................................................. 32
5.8.4 MOD.33 Lista di controllo Ispettore Cabine (Lista di controllo Ispezione Cabine.doc) ......................................................... 32
5.8.5 MOD.34 Registro delle ispezioni e delle prove dei macchinari e degli impianti (Macchinari ed impianti navi 2-4 motori.doc) .................................................................................................................... 32
5.8.6 MOD.35 Richieste di Intervento (Modulo Rich Interventi.doc) .......................................................................................... 33
5.8.7 MOD.36 Protezione Catodica (Protezione Catodica.xls) .................................................................................................... 33
5.8.8 MOD.37 Riassunto dei lavori mensili eseguiti dal personale di coperta (Rapporto Lavori Mensili - GNV.doc) ........................................................................................................................................ 33
5.8.9 MOD.38 Inventario Piture (Rapporto mensile piture.xls) .................................................................................................... 33
5.8.10 MOD. 39 Registro dei controlli dei documenti, dispositivi e macchinari (Registri ispezioni apparecchiature, dispositivi, macchinari.doc) ...................................................................................... 33
5.8.11 MOD.40 REGISTRO DELLE BATTERIE (Registro delle Batterie.doc) ........................................................................ 33
5.8.12 MOD.41 RICHIESTA RICAMBI (se non in Amos) (Richiesta Pezzi di ricambio.doc) ......................................................... 33
5.8.13 MOD.42 TAIL SHAFT MONITORING SYSTEM (Rilevamento Condizioni Albero Portaelica (TMS GNV).doc) ......................................................................................................................................... 33
5.8.14 MOD.43 ISPEZIONE CAVI ORMEEGIO/RAULMPE (Status cavi di ormeggio.xls) .............................................................. 33
5.8.15 MOD. 44 Registro delle visite alle strutture e compartimenti (Struttura e compartimenti - nomeNave.doc) ........................................................................................................................................ 33
5.8.16 MOD.45 VERBALE CARENAGGIO (Verbale Carenaggio.doc) ......................................................................................... 33
5.8.17 MOD.F9 STATINO BATTERIE BEGHELLI AGGIORNATO ................................................................................................. 33
5.8.18 MOD.F10 VERIFICHE E CONTROLLI GENERATORE DI EMERGENZA (VERIFICHE E CONTROLLI GENERATORE EMERGENZA.doc) .................................................................................. 34
5.8.19 MOD.F11 CECK LIST ISPEZIONI PERIODICHE MEZZI DI SALVATAGGIO ............................................................ 34
5.8.20 MOD.F12 SCHEDE DI MANUTENZIONE .......................................................................................................................... 34
5.9 MODULISTICA OPERATIVO.................................................................................................................................................. 35
5.9.1 MOD.46 Lista di controllo per bunkeraggio (Bunker check list.doc) .................................................................................. 35
5.9.2 MOD.47 Lista di controllo prima dell’arrivo - Ponte (Check List arrivo - ponte.doc) ................................................................. 35
5.9.3 MOD.48 Lista di controllo della partenza – Ponte (Check list di partenza – ponte.doc) ......................................................... 35
5.9.4 MOD.49 Lista di controllo per operazioni con elicotteri (Lista di controllo per operazioni con elicotteri in overing.doc) .................................................................................................................................. 35
5.9.5 MOD.50 Manleva per passeggeri ammalati (Manleva per passeggeri ammalati.doc) ............................................................ 35
5.9.6 MOD.51 Permesso di lavoro prese mare (Permessi di lavoro prese mare.doc) ................................................................. 35
5.9.7 MOD.52 Permesso di lavoro Spazi chiusi, a caldo, altezza (Permessi di lavoro.doc) ............................................................. 35
5.9.8 MOD.53 Permesso di lavoro – Subacquei (Permesso Lavori Subacquei.doc) ......................................................................... 35
5.9.9 MOD.54 Pianificazione del viaggio (Pianificazione del viaggio.doc) .................................................................................. 35
5.9.10 MOD. F13 BRIDGE CHECK LIST .................................................................................................................................. 35
5.10 MODULISTICA REGISTRI IAPP ............................................................................................................................................ 36
5.10.1 MOD.F14 REGISTRO DEI CAMPIONI DI COMBUSTIBILE <nave> .......................................................................................... 36
5.11 MODULISTICA REGISTRO ANTINCENDIO......................................................................................................................... 37
5.11.1 MOD.F15 REGISTRO DELLA MANUTENZIONE ED ISPEZIONE DEI MEZZI ANTINCENDIO ................................................... 37
5.12 SCHEMA DI RIEPILOGO....................................................................................................................................................... 38
1 PREMESSA


Tale analisi viene effettuata con due finalità:

1. Valutazione dell’intero modello di gestione del SMS in ottica “paperless”, ma con particolare attenzione alla gestione dei rapporti tra compagnia e RINA – Registro Italiano Navale, ente delegato dalle autorità marittime, alla verifica della conformità dell’operaività descritta nel Manuale SMS con le attività di Operation & Maintenance effettuate a bordo nave. Il RINA espleta la sua attività di controllo attraverso un Audit annuale che consiste in una verifica “formale” documentale “a campione” analizzando i vari form/registri utilizzati dalla compagnia per “registrare” gli eventi e le informazioni relative. L’Audit in sintesi rigurda due aspetti:

   A. verificare la conformità “formale” di quanto risultante sui form (siano essi compilati manualmente, compilati con strumenti di Office automation e sotto-firmati, o risultanti da reporting da vari Sistemi Informativi transazionali – Ship Inspection Reporting),

   B. oltre ad una attività di controllo “sostanziale” atta a verificare l’adeguatezza “effettiva” di quanto riportato (ad esempio ciò può consistere in verifiche attraverso colloqui con il personale marittimo / ispezioni sul campo in relazione ai vari aspetti)

2. Oltre la prima finalità, un aspetto che si vuole anche trattare parallelamente è una prima valutazione del “patrimonio informativo” presente all’interno del Sistema (rapportato nei vari form/registri). Ciò in logica di un re-engineering che consenta, partendo dall’analisi delle singole informazioni trattate, valutare le stesse in una logica di loro “pieno utilizzo” e quindi in senso ampio, analizzare il processo che le ha provocate, identificando gli altri processi / figure professionali interessati, e ne valutare una gestione più appropriata che risponda a nuovi requisiti. La rivisitazione dei processi relativi può essere un percorso “in atto”, “prospettico e previsto” o “prospettico non previsto”, dal quale ci si attende una eliminazione delle inefficienze spesso con impatti molto significativi (ri-digitazioni e ridondanza informativa, deficienze nel “share information” e nel “lesson learned” principali criticità organizzative e con significative conseguenze o effetti potenziali/reali negativi):

   A. “in atto”: sono già in corso modifiche di processo conseguenti o risultanti da una introduzione di nuovi Sistemi Informativi o riviatisone degli esistenti

   B. “prospettico”: il percorso è o meno già pianificato e dall’analisi si vuole evidenziarne anche l’importanza e quindi la conseguente priorità implementativa.

Per ambedue gli aspetti suddetti dobbiamo fare una doverosa puntualizzazione sui Form: che cosa rappresentano e come possono essere gestiti, anche in considerazione che gli enti verificatori (Registri Classifica in primis ma anche le Autorità Marittime) comunque spesso considerano la gestione “elettronica” delle informazioni un standard “de-facto” che in progress potrà diventare “de-jure” e quindi ratificato dalle norme.

L’IMO International Maritime Organization in primis con le FAL Committee 36 e 37 del 2011, per fare un esempio attuale, continua un percorso verso la gestione elettronica dei documenti FAL FORM e in particolare verso una gestione "strutturata" degli stessi (Standard UN/EDIFACT), oltre a un trattamento elettronico dei “Certificati” nave attraverso l’utilizzo di CEDA – Certificate Electronic Document Authority.
Lo stesso percorso è in atto nella EU con la Direttiva 65/2010 che indica nel 2015 l’anno di entrata in vigore in Europa dell’obbligatorietà di acquisire, da parte dei porti, lo ship reporting in formato elettronico e quindi tutti i porti e tutti gli stati della EU dovranno essere dotati di EPC – Electronic Port Clearance.

Non possiamo però solo considerare gli aspetti di obbligatorietà dello ship reporting (FAL FORM) richiesti da norme IMO FAL ed EU Directive, ma in generale i vari aspetti di reporting in senso ampio, richiesti alle navi attraverso la gestione del ISMC e quindi dei vari aspetti di gestione per rispondere alle normative IMO SOLAS (Safety Of Life At Sea), MARPOL (Marine Pollution), IMO SCTW (Standard Crew Training …), …

2 E-MARITIME

Con queste premesse si ritiene l’efficientamento del Safety Management System, e in generale delle vaste implicazioni formali che implica, sia un aspetto determinante in un percorso virtuoso di e-maritime:

**e-maritime per la Comunità Europea in che cosa consiste? Di seguito un abstract della EU su obiettivi e significati:**

The purpose of this note is to present the EU eMaritime objectives and guide prospective projects to align their work-programmes and to contribute to its implementation.

The “Mantra”

**e-Maritime is the use of advanced information technologies**\(^1\) for working and doing business in the maritime transport sector.

However, its aim is not to promote ICT. The EU e-Maritime will evolve to:

- A FrameWork (FW), which will ensure the necessary interoperability and support the necessary developments (including updates and maintenance) and

- a set of e-Maritime applications (web based services), systems and tools to exchange and support existing practises and operations in the maritime transport sector.

**The ultimate goal for the EU e-Maritime initiative is:**

to make maritime transport safer, more secure, more environmentally friendly, more performing and more competitive by improving knowledge and performance, facilitating networking\(^2\) and dealing with externalities\(^3\)

**A concise statement on the values eMaritime envisages in its broadest scope reads as follows:**

The EU e-Maritime aims to promote coherent, transparent, efficient and simplified solutions in support of consistency, interoperability and cooperation between all maritime transport stakeholders for a more competitive sector fully integrated in the European Transport System.

---

\(^1\) However, its primary aim is not to promote ICT

\(^2\) Where business networking, partnerships and collaboration along with differentiation and low costs are common drivers of value today

\(^3\) Question the importance of: (a) Improving (individual and corporate) knowledge; (b) Improving performance; (c) better networking; (d) supports to deal with externalities (legal obligations that may not be seen as core business)
2.1 e-Maritime Applications (solutions)

The e-Maritime applications are structured around the following six application domains within which the potential benefits of e-Maritime will be demonstrated in real life situations involving administrations and business across Europe. These are:

1. Simplification of administrative formalities (Including Customs)
2. Upgraded maritime shore-based installations and coastal marine infrastructures
3. Enhanced Ship Operations
4. Enhanced Port/Terminal Operations
5. Integration of shipping with passenger and logistics services
6. Applications improving life at sea and promoting seafaring

The above e-Maritime application domains create a focus on specific stakeholders needs and facilitate building on interoperability related standards and solutions already produced in these sectors.

2.1.1 The EU e-Maritime Components
process, system, technical, information and data, human factors and change management). It will enable the ‘standard’ information exchanges between stakeholders and supporting systems to be understood in readiness for developing e-Maritime applications.

A stakeholder-oriented approach will be adopted for the development of the e-Maritime Strategic Framework, thus engaging the European maritime industry in deciding the e-Maritime application’s requirements and priorities.

2.2.1 Initial description of e-Maritime applications

1. **Simplification of administrative formalities; implementation of the ESW (European Single Window) with DEM (data exchange mechanism) (including integration with e-Customs)**
   a. Provision of a reference process model for the management of ship formalities by businesses and administrations (aligned to ongoing e-Customs developments)
   b. Provision of a ‘standard’ data model for ship formalities and standard messages for submitting information by businesses and responding by authorities
   c. Provision of web services to support the management of ship formalities in line with the above models.
   d. Provision of a data exchange mechanism which will allow a transparent integration of multiple autonomous databases

2. **Define e-Maritime standards** to ensure seamless and effortless exchange of information between stakeholders. This will include specifications for a common minimum level of functionalities and performance standards; specifications and standards for a common data exchange environment. Interoperability with existing systems, in particular those ruled by EU legislation (SSN) needs to be ensured

3. **Upgraded maritime shore-based installations and coastal maritime infrastructures** for the collection and dissemination of traffic, ship and cargo data facilitating EU and national administrations to collaborate in safety, security and environmental risk management in support of proactive or remedial operations

4. **Enhanced Ship operations**
   a. e-Navigation services supporting the IMO e-Navigation initiative. Specific areas for investigation include:
      i. integration of information from navigation systems to ship management applications
      ii. remote monitoring and repair for navigation equipment
      iii. communication components linking ship to shore via the most appropriate service
   b. e-maintenance services for remote monitoring of ship engines and equipment, technical support and for co-operation between ship operators with classification societies and manufacturers particularly in improving emissions performance.
   c. e-rules addressing the modelling and delivery of rules in electronic format to the various e-Maritime stakeholders.
   d. e-Certificates addressing the potential of ship certificates in a standardised electronic format
   e. e-compliance for ship reporting and inspections management in conjunction ‘simplification of administrative formalities’
   f. Fleet and ship routing and scheduling e-services with improved proactive planning of operations
   g. e-Commerce support services for the purchasing of shipping related materials
h. consultancy e-services ranging from port agencies, to vessel IT support, to crew management and provision of surveyors and loss adjusters.

5. Enhanced Port/Terminal Operations

j. Improved interoperability of Port Community Systems particularly with National Single Windows and e-Maritime ship services
k. Integrated systems for monitoring and management of traffic in and around ports
l. Resource management e-services for optimisation of movements of equipment, containers, cargo and passengers
m. Inspections coordination e-services
n. Application services supporting integrated port security management
o. Application services facilitating collection, management and reporting of maritime transport statistics

6. Integration of shipping with passenger and logistics services

p. integration with e-Freight
q. integration with e-Travel

7. Applications improving life at sea and promoting seafaring

r. Communication, infotainment and e-Health services for the well-being of persons at sea
s. e-Learning and e-training for career development both at sea and in land

2.2.2 Proposed measures

1. Guidance, information and support on interoperable e-Maritime systems
2. Actions to define e-Maritime standards
3. Measures to require the implementation of the ESW with DEM
4. Supports to stakeholders in implementing the necessary e-Maritime ICT infrastructure
5. Research and take-up actions to support the intelligent use of data
6. Actions to optimise traffic inside and around ports

3 RE-ENGINEERING PROCESSI

In questa ottica progettiamo il re-engineering del percorso partendo da una prima innovazione che vuole ottimizzare, attraverso non solo un revisione organizzativa interna alla compagnia, ma anche una revisione esterna alla compagnia, relativamente ad un processo critico come gli Audit annuali e ai rapporti conseguenti con l’Ente di Classifica.

La gestione del SMS di per sé a bordo della nave ha un effetto molto impattante in quanto copre, pressoché, tutte le attività di SHIP Operation & Maintenance.

Durante la visita annuale di Audit c’è una verifica “formale” e quindi prettamente documentale che interessa un’ampia parte della fase di Audit e che si ritiene possa rientrare in un processo di revisione con significativi vantaggi per ambedue le parti: sia la compagnia che l’ente di classifica.

Aspetti / fasi da revisionare:

1. Digitalizzazione delle informazioni:

SMS è ancora un sistema, spesso, in gran parte cartaceo. Le informazioni gestite nei vari modelli di Form possono essere così classificati:

A. **Modello di Form** a check-list che devono essere compilate manualmente e vengono archiviate in cartaceo in faldoni e che spesso sono allegate al Giornale Nautico (altri registri). Non vengono firmati in quanto viene firmato il Registro.

B. **Modello di Form** a check list ad eventi (da compilarsi al verificarsi dell’evento, esempio arrivo nave in porto) che vengono firmati e datati manualmente ed archiviate in cartaceo all’interno di faldoni.

C. **Form** (.doc o .xls) debitamente compilati che vengono spesso **firmati e datati manualmente** e quindi archiviati in cartaceo in faldoni, ma anche archiviate in formato elettronico in formato .pdf.

D. **Modello di form** come “Output di Sistemi Informativi” archiviati in .pdf

L’archiviazione elettronica dei modelli A e B passa quindi da una scannerizzazione e conseguente codifica appropriata degli stessi. I modelli C risentono della stessa criticità del modello B in quanto benché elettronici, poiché devono venire firmati manualmente, sono anche archiviati in modalità cartacea.

Il modello D viene ormai formalmente e sostanzialmente “accettato” in quanto la “firma elettronica” viene considerata implicitamente attribuita attraverso la possibilità di ottenere il report stesso, all’interno di un Sistema Informativo transazionale in cui l’accesso e l’operatività relativa – permessi – vengono debitamente definiti, documentati e controllati.

La digitalizzazione di per sé porta dei vantaggi competitivi che questo documento non ritiene di rilevare ma facilmente reperibili nella produzione letteraria a riguardo. Questi vantaggi vengono notevolmente amplificati quando alla digitalizzazione viene associata una gestione “sostitutiva” del cartaceo.

Da queste prime considerazioni si può affermare:

- Nei casi dei modelli A B e C in una prima fase si può anche effettuare una doppia gestione (cartacea e elettronica) ma occorre “superare” il problema della firma manuale con: o una firma elettronica o con una modifica nella gestione degli stessi modelli verso un modello D.

Per la firma elettronica si fa riferimento a documento allegato di DigitPA normato anche dal Codice dell’Amministrazione Digitale di recente emissione.
L'archiviazione elettronica deve anche avvenire, sia a bordo nave (dove quasi tutti i modelli vengono generati) che anche a terra presso la direzione tecnica. Ciò necessita di una gestione dell'allineamento controllata delle due archiviazioni.

L'archiviazione elettronica deve comunque essere "completa" e totalmente sostitutiva (di tutti i moduli cartacei). Questo aspetto è un pre-requisito verso una "gestione digitale sostitutiva" che possa avere un riconoscimento dalle autorità di verifica (in primis enti di classifica).

- La struttura di archiviazione avviene per:

   **Nave\Anno\attività (manutenzione, operativo, ..)\ Forms sia a bordo nave che a terra.**

   La gestione convenne sia ridondante (effettuata sia a bordo che a terra) ciò per ovviare a eventuali contestazioni degli organi di controllo, di gronte l'eventuale verificarsi di mancanze/deficienze nei servizi di collegamento satellitare tra bordo /terra.

2. **Implementazione della SHIP or Shipowner Single Window:**

   Completata la fase 1 di "digitalizzazione delle informazioni" e auspicando anche la gestione "sostitutiva" del cartaceo, si può iniziare il passo successivo che è la "messa a disposizione" dell'insieme di tutto il patrimonio informativo all'ente di verifica (Società di Classifica RINA).

   Lo strumento operativo è la **Single Window** (in particolare dello Shipowner) che consiste in:

   "**Single Window is defined as a facility that allows parties involved in trade and transport to lodge standardized information and documents with a single entry point to fulfill all import, export, and transit-related regulatory requirements. If information is electronic, then individual data elements should only be submitted once.**"

   Questa definizione è stata per primo normata e definita da UN/CEFACT con una **RECOMMENDATION AND GUIDELINES ON ESTABLISHING A SINGLE WINDOW** - to enhance the efficient exchange of information between trade and government.

   In seguito a questa prima guidelines i rapport tra stakeholders pubblici e private hanno subito un significativo cambiamento e questa innovazione è diventata uno standard riconosciuto da tutti gli organismi / stati: in primis WTO, WCO, e ultimamente anche recepita ne settore dello shipping con le IMO rules (FAL Committee 36 e 37), ...

   L'applicazione della SWin in ambito Maritime esteso è una peculiarità dell’innovazione del progetto SIS-Tema e in particolare di Paperless. L’utilizzo “esteso” è stato anche portato in un progetto EU Miele dove la stessa tecnologia vuole essere utilizzata come framework in varie situazioni e scenari operativi (si fa riferimento MIELE Deliverables).
SHIPOWNER SINGLE WINDOW

ICT SYSTEMS
Cargo Management
Legacy Systems
Human Resources Management
Asset Management

FILES
e-CERTIFICATE
e-DOCUMENT
e-MESSAGE
e-FORM

FILES REPOSITORY - Address Book
WORKFLOW - Distribution rules
DMS - Search rules
Redirect automated function to others SWin

ShipOwner SWin

SO SWin

Port SWin
National SWin
Port Community Systems PCS
Classification Societies SWin CSW
L'ambiente di SWS (Single Window System) dell’armatore GNV sarà un ambiente che risponderà a questi requisiti: protetto, controllato, riservato, legalmente riconosciuto, …
Si fa riferimento a riguardo ai documenti specifici su Single Window System.
L’ambiente SWS GNV viene utilizzato per due obiettivi (ambienti) e quindi ne dovrà essere debitamente controllato l’accesso e i permessi di operatività dei vari utenti terzi.
**Primo** ambiente è SMS oggetto del presente documento con utenti terzi appartenenti a stakeholder RINA e **secondo** ambiente FAL Form (I fase) per distribuzione/messa a disposizione FAL Form Passenger & Crew (?) List con utenti relativamente a funzioni di CBP (Control Border Protection) dei vari porti dove le navi GNV fanno scalo (oggetto di caso uso specifico vedi documento dedicato di progetto).

**MESSA a DISPOSIZIONE:**
in prossimità (ad esempio un mese prima) della scadenza prestabilita di audit annuale del SMS una debita funzione consente di “migrare” e “codificare” all’interno dell’ambiente SWS del SMS GNV tutto il patrimonio informativo della compagnia relativamente al SMS.

**Codifica → DMS BPM →**
4 DOCUMENTAZIONE SMS

Di seguito l’analisi del SMS di GNV. L’analisi comprende sia una valutazione degli aspetti formali di gestione dei form che una valutazione delle caratteristiche sostanziali del patrimonio informativo gestito all’interno degli stessi. L’insieme dei modelli di form sono riportati in 4.1.

4.1 ELENCO DEI MODULI DEL SISTEMA SMS AGGIORNAMENTO 30 LUGLIO 2010

I MODULI CENSITI: sotto presente tabella troviamo elenco dei form non censiti ma presenti come form nel materiale fornito

FIRMA: colonna che identifica i Form sui quali necessita approrre Firma e Data (quindi da archiviare cartacei)

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<td>39</td>
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<td>Registri ispezioni apparecchiature, dispositivi, macchinari.doc</td>
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<td>52</td>
<td>Permesso di lavoro Spaziosi chiusi, a caldo, altezza</td>
<td>Permesso di lavoro.doc</td>
<td>Operativo</td>
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<td>53</td>
<td>Permesso di lavoro - Subacquei</td>
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<td>Operativo</td>
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</table>

Note: Modulo Nr. 44 Rev. 04 / La Superba – La Suprema
NB: NON SONO COMPRESI NELL'ELENCO MODULI PRECEDENTE, MA PRESENTI COME FORM NELLA DIRECTORY:

MODULISTICA ADDESTRAMENTO PERSONALE - BORDO
MOD.F1 ADD_PRM_1: LA GESTIONE DELLE PERSONE A MOBILITÀ RIDOTTA (PMR)
MOD.F2 ADD_STAFF: FAMILIARIZZAZIONE PERSONALE STAFF NON A RUOLO EQUIPAGGIO
MOD.F3 PMR ATTESTATO
MOD.F4 PMR ELEMENTI DI FORMAZIONE: ELEMENTI DI FORMAZIONE PER L'ACCOGLIENZA E ASSISTENZA DELLE PRM

MODULISTICA GESTIONALI – BORDO:
MOD.F5 SCHEDA VALUTAZIONE COMUNI
MOD.F6 MASTER REVIEW
MOD.F7 SCHEDA DI VALUTAZIONE

MODULISTICA GESTIONALI – UFFICIO:
MOD.F8 VERBALE AUDIT CREW MANNING

MODULISTICA MANUTENZIONE
MOD.F9 STATINO BATTERIE BEGHELLI AGGIORNATO (MODELLO 40 REGISTRO BATTERIE????)
MOD.F10 VERIFICHE E CONTROLLI GENERATORE DI EMERGENZA
MOD.F11 CECK LIST ISPEZIONI PERIODICHE MEZZI DI SALVATAGGIO
  0 PAG.INIZ.
  0 PAG.INIZ.SPL-MAJ
  00
  1 LISTA DI CONTROLLO
  2 CECK LIST RUOLO APPELLO
  3 CECK LIST LUCI EMERGENZA
  4 CECK LIST SIST COMUNICAZ
  5 CECK LIST GRU E VERRICELLI
  6 CECK LIST STAZIONI IMBARCO
  7 CECK DOTAZIONI LANCE
  8 CECK ISP.LIFE.BOAT, R, FRB
  9 CECK ZATTERE
  9a CECK ZATTERE
  10 CHECK CINTURE SALV.TUTE ANULARE

Programma SIS-TEMA  Page 15 of 39
10 CHECK CINTURE SALV.TUTE ANULARI
11 CECK PONTE DI COMANDO
12 CECK EPIRB E RADIOLINE

ORE MOTO (**sono presenti in elenco**)
ORE MOTO <nome nave> <data> **per certe navi che contiene sia MP che DG**

Per Suprema/Superba i file sono distinti per MP e DG
ORE MOTO_DD_GG <nome nave> <data>
ORE MOTO_M.P. <nome nave> <data>

MOD. F12 SCHEDE DI MANUTENZIONE (**non presente**)
4.2 REGISTRI GESTIONALI

Il manuale del SMS richiede che le operazioni eseguite per la sicurezza dell’equipaggio o della nave e per la prevenzione dell’inquinamento siano registrate in supporti cartacei (quali registri o quaderni o raccoglitori) o computerizzati come di seguito specificato.

<table>
<thead>
<tr>
<th>DOCUMENTI DEL SMS</th>
<th>UFFICI</th>
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| Addestramento dell’equipaggio all’imbarco | X | 5.3.2.1 | MOD 5 Addestramento Personale Chiave – Ufficiali di coperta (Add_Chiave_Cop.doc)  
MOD 6 Addestramento Personale Chiave – Ufficiali di macchina (Add_Chiave_Macch.doc)  
MOD 7 Addestramento – Familiarizzazione all’imbarco (Add_Sic_1.doc)  
MOD 8 Addestramento entro 15 giorni dall’imbarco (Add_Sic_2.doc)  
MOD 10 Addestramenti vari (Add_video.doc)  
MOD 11 Questionario per l’addestramento Uff.le di coperta (Quest_Cop.doc)  
MOD 12 Questionario per l’addestramento Uff.le commissario (Quest_HTL.doc)  
MOD 13 Questionario per l’addestramento Uff.le di macchina (Quest_Macch.doc)  
MOD F1 LA GESTIONE DELLE PERSONE A MOBILITÀ RIDOTTA (PMR) (add_PRM_1)  
MOD F2 FAMILIARIZZAZIONE PERSONALE STAFF NON A RUOLO EQUIPAGGIO (add_Staff.doc)  
MOD F3 ATTESTATO  
MOD F4 ELEMENTI DI FORMAZIONE PER L’ACCOGLIENZA E ASSISTENZA DELLE PMR (PMR elementi di formazione.doc) |
| Addestramento e motivazione dell’equipaggio sul SMS | X | 5.3.2.1 | MOD 9 Addestramento - Motivazione SMS (Add_SMS.doc) |
| Manutenzione dei macchinari | X | 7.2.1 | MOD 30 Registro delle ispezioni e prove dell’impianto di automazione (Impianti Di automazione Navi 2-4 motori.doc)  
MOD 31 Inventario mezzi di rizzaggio (Inventario mezzi di rizzaggio.xls)  
MOD 32 Ispezione Portelloni ( Registro ispezioni rampe) (Ispezione Portelloni)  
MOD 33 Lista di controllo Ispezione Cabine (Lista di controllo Ispezione Cabine.doc)  
MOD 34 Registro delle ispezioni e delle prove dei macchinari e degli impianti (Macchinari ed impianti navi 2-4 motori.doc)  
MOD 35 Richieste di intervento ( Modulo Rich_Interventi.doc)  
MOD 36 Protezione Catodica ( Protezione Catodica.xls)  
MOD 37 Riassunto dei lavori mensili eseguiti dal personale di coperta (Rapporto Lavori Mensili – GNV.doc)  
MOD 38 Inventario Pitture (Rapporto mensile pitture.xls)  
MOD 39 Registro dei controlli dei documenti, dispositivi e macchinari (Registri ispezioni... |
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<td>Esercitazioni antinquinamento</td>
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<td>Ordini del Direttore di Macchina permanenti e notturni</td>
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<td>Deviazioni bussola</td>
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<td>Sondaggio stive, intercapepedini ed altri compartimenti della nave</td>
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<td>Controlli relativi al carico</td>
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<td>Registro visite igienico sanitarie</td>
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**NB: MANCANO IN ELENCO**
riferimento ad altri registri del cap. 12.3 tra cui:

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<td>12.3.2 REGISTRO IDROCARBURI , PARTE I (MARPOL ANNEX I)</td>
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<td>MOD.F17</td>
<td>12.3.5 REGISTRO RIFIUTI SOLID (MARPOL ANNEX V)</td>
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<td>MOD.F18</td>
<td>12.3.6 SOSTANZE DANNOSE (ANNEX VI)</td>
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<td>12.3.6.1 REGITRO SOSTANZE CHE RIDUCONO L'OZONO:</td>
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<td>12.3.6.2 EMISSIONI DI NOX – REGISTRO DELLE MODIFICHE, ..</td>
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<td>MOD.F21</td>
<td>12.3.6.3 EMISSIONI SOX - USO COMBUSTIBILE registro dei campioni (*)</td>
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4.3 Corrispondenza, verbali e comunicazioni varie

Gli uffici di terra, i Comandanti ed i Direttori di Macchina devono conservare in appositi raccoglitori da conservare presso i rispettivi archivi di terra e di bordo, tutta la corrispondenza, i verbali e le comunicazioni varie attinenti il SMS, previste dal presente manuale. Tale documentazione deve essere conservata per almeno tre anni prima di essere eliminata.
Sono previsti i seguenti raccoglitori:

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<th>DOCUMENTI DEL SMS</th>
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<td>Deleghe da parte del Direttore di Macchina</td>
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<td>- MOD.15 COMITATO DI SICUREZZA (Comitato di sicurezza.doc)</td>
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<td>5.3.3</td>
<td>MOD.7 Addestramento - Familiarizzazione all’imbarco (Add_Sic_1.doc)</td>
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<td>Passaggio di consegne tra Comandanti</td>
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<td>5.3.3</td>
<td>- MOD.20 VERBALE PASSAGGIO CONSEGNE TRA COMANDANTI (Verbale consegne comandanti.doc) - ALLEGATO AL VERBALE DI CONSEGNA COMANDO NAVE (Master reviw.doc)</td>
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<td>5.3.3</td>
<td>- MOD.23 VERBALE PASSAGGIO CONSEGNE TRA DIRETTORI (Verbale Passaggio consegne DM.doc)</td>
</tr>
<tr>
<td>Note caratteristiche/certificazioni del personale di bordo</td>
<td>X</td>
<td>5.3.4</td>
<td>-</td>
</tr>
<tr>
<td>Richieste di rispetti e provviste di magazzino</td>
<td>X</td>
<td>7.3.1 e 7.4</td>
<td>- MOD.41 RICHIESTA RICAMBI (se non in Amos) (Richiesta Pezzi di ricambio.doc)</td>
</tr>
<tr>
<td>Richieste per la farmacia e l’ospedale</td>
<td>X</td>
<td>12.9.1.4</td>
<td>-</td>
</tr>
<tr>
<td>Analisi di combustibili ed olii</td>
<td>X</td>
<td>7.5</td>
<td>12.3.6.3 EMISSIONI SOX - USO COMBUSTIBILE registro dei campioni (*)</td>
</tr>
<tr>
<td>Ispezioni nave della Compagnia</td>
<td>X</td>
<td>9.5. e 9.5.2</td>
<td>- MOD.17 Ispezione sanitaria (Ispezione Sanitaria Nave Passeggeri.doc) - MOD. 25 ispezione tecnica - Lista di controllo (Ispezione tecnica.doc)</td>
</tr>
<tr>
<td>Ispezioni relative alla sicurezza della Compagnia</td>
<td>X</td>
<td>9.5. e 9.5.3</td>
<td>- MOD.24 Ispezione sicurezza – lista di controllo (ispezione sicurezza.doc)</td>
</tr>
<tr>
<td>Rapporto d’incidente, situazione pericolose, non conformità, suggerimenti, analisi,azioni correttive e/o preventive</td>
<td>X</td>
<td>10.1</td>
<td>- MOD.18 Rapporto di incidente (Rapporto di non conformità-a4.doc)</td>
</tr>
<tr>
<td>Scambi di informazioni tra Comandante e Pilota</td>
<td>X</td>
<td>12.2.8</td>
<td></td>
</tr>
<tr>
<td>Scambi di informazioni tra Comandante e Pilota</td>
<td>X</td>
<td>12.2.8</td>
<td></td>
</tr>
</tbody>
</table>
| Rapporti di azioni correttive per eliminazione di non conformità (uffici e navi) | X | X | 16.1 | - MOD. 26 Audit - N/C – Audit interno – 1a pagina (Rapporto di NC durante audit cover.doc)  
- MOD. 27 Audit - N/C – Audit interno – 2a pagina (Rapporto di NC durante audit.doc) |
| Permessi di ingresso in spazi chiusi e permessi di lavoro | X | 12.9.4 | - MOD. 52 Permesso di lavoro Spazi chiusi, a caldo, altezza (Permessi di lavoro.doc)  
- MOD. 53 Permesso di lavoro – Subacquei (Permesso Lavori Subacquei.doc)  
- MOD. 51 Permesso di lavoro prese mare (Permessi di lavoro prese mare.doc) |
| Rapporti di audit interni della Compagnia (uffici e navi) | X | X | 16.1 | - MOD. 29 Verbale audit interno ufficiali  
- MOD. 28 Verbale audit interno – navi  
- MOD. Rapporto di verifica interna |
| Comunicazioni alla Autorità certificante | X | 16.2 |
| Verbali delle riunioni per la revisione della politica della Società | X | 16.3 | - MOD. 21 Revisione della Politica del Comandante (Revisione della politica Com.te.doc) |
4.4 **LETTERE CIRCOLARI**

4.5 **RAPPORTI DI VIAGGIO**

Alla fine di ogni viaggio oppure con scadenza mensile per le navi che effettuano viaggi di breve durata, il Comando di bordo invierà alla Compagnia rapporti contenenti dati relativi alle prestazioni della nave e dei macchinari principali, ai consumi ed al carico.

**Esempi di rapporti:** (ne mancano? vedi rapporto consumi oli lub e combustibili – Modulo 4)

- MOD.F22 1. Prestazione Motori Principali
- MOD.F23 2. Prestazioni Diesel Generatori
- MOD.F24 3. Ore moto Motori Principali (vedi sopra)
- MOD.F25 4. Ore moto Diesel Generatori (vedi sopra)
- MOD.F26 5. Rapporto mensile del carico
- MOD.F27 6. Registrazioni operazioni carico/scarico
- MOD.F28 7. Rapporto isolamenti motori elettrici
- MOD.F29 8. Lavori giornalieri sez. Coperta
- MOD.F30 9. Lavori giornalieri sez. Macchina
- MOD.F31 10. Lavori giornalieri impianto elettrico
- MOD.F32 11. Rimanenze oli lubrificanti e combustibili
- MOD.F33 12. Movimenti equipaggio

Altri rapporti vengono compilati dal bordo ed inviati alla Compagnia in particolari circostanze (es. dopo un bacino, note lavori, ecc.).

I rapporti che in generale vengono compilati su moduli prestampati sono conservati in appositi archivi di bordo e degli uffici di destinazione.
5 **ANALISI DEI FORM/REGISTRI E PRIMA VALUTAZIONE DEL PATRIMONIO INFORMATIVO:**

A questo riguardo, tenendo in debito conto della natura e scopo delle informazioni gestite all'interno di ogni singolo Modello (così di seguito denominati i form/registri/check list/..), ne viene valutato altresì un re-engineering degli stessi contenuti e delle modalità di gestione.

5.1 **PREMESSA METODOLOGICA**

Aspetto fondamentale è quello di recepire completamente tutte le “corrette” modalità operative attuali, risolvendo il principale difetto originario che risiede nella parzialità delle gestioni e, quindi, nella frammentazione delle informazioni, e nella mancanza di integrazione tra i processi.

Di seguito definiamo cosa significa “**Gestire i processi**, con impatto informativo, in modo efficiente/efficace (intendendo, per processo, la matrice funzione/attività)?”

Significa utilizzare uno strumento software che consenta alla singola funzione di **supportare** la propria attività nel migliore dei modi, cioè vale a dire negli aspetti di:

- **pianificazione** e controllo (quando scade l’attività e cosa c’è da fare…)
- gestione del “tracking log” delle attività eseguite (when / who / what / where / why)
- definizione delle **Responsabilità** (Process Owner) e del workflow delle gestioni (applicazione delle **Policy**): oltre la responsabilità valutare le singole operatività e la diffusione informativa.
- valutazione adeguatamente la registrazione delle informazioni cioè se queste hanno una valenza “informativa/formativa” per se stessi e per gli altri e, quindi, utili anche come strumento di comunicazione (Tracciare e rendere disponibile a tutti informazioni oggettive evitando che restino solo patrimonio personale di alcuni); rispondere alle Best Practice - **Lesson Learned e Shared Information**
- Supportare l’attività di Change Management (fattore di criticità altissimo): spesso è solo overload informativo …
- Valutazione se la registrazione delle informazioni, apparentemente, non di propria competenza, in realtà risultino determinanti per altre funzioni (per esempio registrazione del Crew coinvolto a livello nominale per tracciare le expertise dello stesso è poi richiesto da SCTW95 e quindi da gestirsi nel Crew Management)
- registrazione eventi, e quindi informazioni strutturate, necessari per ottenere “**misure**” di processo e per effettuare analisi oggettive (Trend, Pareto, Event Characteristics) a supporto del “Continuous Improvement”
- gestione delle informazioni a seconda delle finalità e quindi **Strutturate se utili per l’analisi statistica e Testuali se esclusivamente con utilità solo informative**

I Processi informativi efficienti rispondono a quanto sopra e qualora possibile sono gestiti all’interno di un sistema di gestione per processi. Questo oltre portare efficienza di per sé, consente di supportare la riqualifica delle persone diventando uno strumento operativo di lavoro (ciò vale per tutte le funzioni coinvolte). Inoltre risponde ad una necessità crescente che richiede di applicare metodologie (sistematiche e strutturate) e basate su dati (informazioni/misure) “oggettivi” quindi significativi puntuali e strutturati.
La soluzione in questo modo, rispecchia completamente le linee guida di ISPE, TMSA (varie Best-Practice), in particolare affronterà ed assolvere ad indicazioni normalmente non contemplate nei Sistemi complessi di Asset Management.

1. La gestione per processi “mappa” un evento nelle modalità descritte analiticamente in una POI (Procedura Operativa Integrata)
2. Eventi devono essere rapportati quando accadono (real time)
3. Ogni funzione organizzativa che “insiste” su un processo ha una sua operatività e facendo in modo che “chi opera .. registra” e quindi non incorra in errori di interpretazione...
4. Tutte le transazioni devono essere soggette a “tracking” (what, who, when, why, where)
5. Le informazioni devono essere registrate in base alla finalità testuali – formazione/in-formazione o strutturate → analisi Statistica

In questo modo i dati divengono significative informazioni (KPI di processo e SLA). Il tutto tendendo alla copertura del 100% dei Processi e degli eventi da tracciare.

Tale prerogativa è stata anche normata da una legge degli Stati Uniti, la SOX (Sarbanes-Oxley), la quale impone che la gestione operativa sia per processi e le informazioni gestite dai relativi sistemi siano certe, esatte, tempestive e trasparenti. Sono quindi elementi essenziali a garanzia della conformità tra i processi organizzativi realmente gestiti e i sistemi a supporto della loro gestione:

- la sicurezza e l’integrità del dato,
- la reperibilità e la condivisione delle informazioni,
- la tempestività di input (dati inseriti immediatamente e non a posteriori)
- la storia delle transazioni (WHO, WHAT, WHEN) e dei dati

5.2 VALUTAZIONE MODelli e RE-ENGINEERING

- SITUAZIONE ATTUALE: i modelli, come prima descritto, possono essere di tipo

  A. **Modello di Form** a check-list che devono essere compilate manualmente e vengono archiviate in cartaceo in faldoni (spesso sono allocate al Giornale Nautico o ad altri registri)

  B. **Modello di Form a check list ad eventi** (da compilarsi al verificarsi dell’evento, esempio arrivo nave in porto) che vengono firmati e datati manualmente ed archiviate in cartaceo all’interno di faldoni.

  C. **Form (doc o.xls)** debitamente compilati che vengono spesso firmati e dati manualmente e quindi archiviati in cartaceo in faldoni, ma anche archiviate in formato elettronico in formato .pdf.

  D. **Modello** di form come “Output di Sistemi Informativi” archiviati in .pdf

- **De questa prima classificazione occorre superare la firma manuale e la datazione.** Questo può avvenire attraverso una gestione di **firma elettronica**, considerando il quadro normativo in vigore in Italia. A questo deve essere associata una gestione della “marca digitale” che consente di assicurare la garanzia di accessi e modifiche esterne alla base dati. Inoltre la problematica, in quanto ……….

- Sulla base anche di queste considerazioni si vuole ora valutare il patrimonio informativo dei Modelli e di conseguenza la loro modalità di gestione attuale ed la eventuale gestione ottimale. In questo senso si valuta se un Modello contiene informazioni tali per cui sia necessaria una gestione in formato strutturato delle informazioni stesse (nel caso in cui vengono utilizzate per calcoli, statistiche, …) – **Tipologia S** – e quindi in un formato **parametrico** per rispondere a differenti visioni delle compagnie.

Qualora ciò non fosse necessario, il Modello è di **tipo D** (documentale) quindi gestito tramite un form anche attraverso MS Word o MS Excel o Webform. In questa modalità si riesce a accelerare il re-engineering in
quanto si mantengono i form esistenti, non si appesantisce la gestione informatica con una attività di parametrizzazione della base dati significativa, ma poi non necessaria.

Si prende come riferimento la piattaforma software InfoSHIP che in progress, ha teso alla continua copertura dei processi di Maintenace & Operation nave, costantemente osservando lo sviluppo delle norme, delle best practices per classi navi, le tendenze in atto sia normative che derivanti da esigenze commerciali del settore.

La rivistazione dei form e delle informazioni quindi parte dalla loro primaria classificazione per scopo dell’utilizzo:

- Addestramento
- Gestionali – Bordo
- Gestionali – Ufficio
- Manutenzione
- Operativo

E li riclassifica in una logica per processi gestionali più standard ed analitica, riferendosi altresì alle coperture delle piattaforme applicative di bordo e terra.

- **Processi: principale o secondari (supporto agli altri processi)**
  - **sotto processi:**

- Crew management:
  - formazione/addestramento
  - familiarizzazione
  - training on the job
  - drills e esercitazioni
  - imbarco/sbarco
  - note di merito/demerito

- Maintenance: copre tutta la gestione dei processi manutenzione nave per tutti gli impianti/macchinari/equipment a qualsiasi servizio dedicati (navigazione, propulsione, carico/scarico, accomodation, safety, security, enviroment, ..)
  - Planned maintenance: gestione manutenzione pianificata area Engine
  - Planned maintenance area Safety: insieme delle inspection/drill a cadenza calendaria effettuata su tutti i Safety Equipment e anche outfitting (giubetti salvataggio, ..)
  - Corrective maintenance: gestione della manutenzione su guasto da lieve failure a grandi avarie per area di appartenenza con peculiarità per impianto
  - Preventive maintenance: gestione manutenzione preventiva in seguito a degradi operativi e/o Condition Based Maintenance

- Purchasing & warehousing: compende tutti i processi di acquisto spare parts (ricambi), materiali consumo (siano consumi o ricambi generici) e la loro gestione di magazzino ..
  - Requisition: richieste materiali e/o servizi da parte di terzi del bordo
  - Flusso delle requisition a terra: dall’approvazione, alla quotazione all’acquisto
  - Gestione degli acquisti: dall’emissione ordini, al loro ricevimento a bordo attraverso monitoring del materiale nelle varie localizzazioni a terra (magazzini, fleetforwarder, ..)
  - Gestione del magazzino a bordo in tutte le sue fasi: evasione ordine e carico, etichettature e posizionamento, scarico per manutenzione, controlli e valutazioni
Una certa rilevanza assumono i processi di gestione **Bacino**: ciò rappresentano un evento ogni qualche esercizio, che consente di fermare la nave ed effettuare una serie di manutenzioni/lavori di revamping/refitting, numericamente significativa e di valore consistente (a seconda della nave possono andare da i 2/3 milioni euro sino a 50 o più per grandi trasformazioni).

- **Operativo**: copre insieme dei processi nave che vanno dalla navigazione nelle varie condizioni, a arrivi/partenze dai porti, alle operazioni carico, ma anche alla gestione del fuel, al reporting da norme (logbook)
  - Arrivo porto: pilota, ormeggio, rifornimenti vari, ispezioni e controlli di terze parti
  - Partenza porto: …
  - Fuel & Oil lub. management: rifornimenti di fuel a seconda della tipologia (HFO, MGO, ..), controllo/analisi del campione, carico fuel, consumi e scorte (a seconda della strumentazione bordo), fuel reporting, OIL REC Part I (Annex I): gestione delle norme a riguardo, Air emission reporting, ..
  - Garbage management: raccolta, incenerimento, smaltimento, classificazione, reporting
  - Hazardous material: classificazione e gestione del materiale classificato Hazard trasportato
  - **Audit/Control & inspection**: inseriamo in operativo la vasta gestione degli audit interni/esterni dei vari enti da Registri (SMS, Classe, ..) a Autorità marittime (PSC) in quanto rappresentano una condizione operativa **ordinaria**: planning audit, espletamento, remarks/NC No Conformities, flusso delle stesse NC sino alla loro soluzione con AC/AP (Azioni Correttive/Azioni preventive)
  - **Hazardous Occurences**: incidenti con coinvolgimento persone o meno (anche solo avarie) con gestione del flusso di risk management conseguente (secondo le norme IMO FSA formal safety assessment) con implicazioni su tutti gli aspetti: safety, environment, security, …non meno significativi aspetti relativi Health (gestione del decorso) /Insurance (indennizzi)

**Ufficio di terra**: la direzione di terra ha una funzione di governo e controllo di tutti i processi nave suddetti e quindi a seconda delle funzioni di delega attribuite al bordo opera in sinergia e compelmentarietà con i bordi. Ciò comporta una gestione dei processi molto spinta con criticità dovute alla localizzazione, al change management, alla lingua , molto significative.
### 5.3 ALLEGATO: quadro firme secondo ordinamento del Codice Ammnistrazione Digitale italiano in vigore

<table>
<thead>
<tr>
<th>Nuovo ordinamento</th>
<th>Tipi di firma</th>
<th>Caratteristiche qualificanti poste dalle norme</th>
<th>Garanzie assolte</th>
<th>Valore giuridico</th>
<th>Bacino d’utenza</th>
<th>Provvedimenti normativi necessari</th>
</tr>
</thead>
<tbody>
<tr>
<td>D.Lgs 235/2010</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N 1</td>
<td>Firma elettronica</td>
<td>No, No, No, No, No, No, No, No, No, No, No</td>
<td>- Liberamente valutabile in giudizio</td>
<td>- Art. 2702 c.c. con inversione onere della prova</td>
<td>Privati</td>
<td>DPCM per individuarne le fattispecie</td>
</tr>
<tr>
<td>N 2</td>
<td>Firma elettronica avanzata</td>
<td>No, No, No, No, Si, Si</td>
<td>- Art. 2702 c.c. con inversione onere della prova</td>
<td>Privati Pubblici</td>
<td>Privati Pubblici Pubblici</td>
<td>DPCM per chiarire che è costituita dalla firma digitale “vecchio ordinamento”</td>
</tr>
<tr>
<td>N 3</td>
<td>Firma elettronica qualificata</td>
<td>No, Si, Si, Si- Certificata, Si</td>
<td>- Art. 2702 c.c. con inversione onere della prova</td>
<td>- Art. 1350 c.c. p.ti da 1 a 12</td>
<td>Privati</td>
<td>DPCM per individuarne le fattispecie</td>
</tr>
<tr>
<td>N 4</td>
<td>Firma digitale</td>
<td>Si, No, Si, Si- Certificata, Si</td>
<td>- Art. 2702 c.c. con inversione onere della prova</td>
<td>- Art. 1350 c.c. p.ti da 1 a 12</td>
<td>Privati</td>
<td>DPCM per individuarne le fattispecie</td>
</tr>
</tbody>
</table>

**Identificazione**: elementi che, liberamente valutati in giudizio, possono garantire l’identità del firmatario.

**Identificazione Certificata**: garanzia fornita da una terza parte fidata circa l’identità del firmatario.

**Immodificabilità del documento**: garanzia di poter rilevare successive modifiche.

**SSCD**: Secure Signature Creation Device, trattasi del dispositivo di generazione della firma (smartcard, token USB, HSM) la cui conformità ai criteri di sicurezza prescritti dalla Direttiva europea 1999/93/CE è certificata dal preposto organismo.

**HSM**: Hardware Secure Module, sono dispositivi di firma, ad alta affidabilità, capaci di ospitare migliaia di chiavi per la crittografia asimmetrica.
5.4 FILES SPECIFICI DELLA NAVE

1. © Ore Moto GG.EE  File specifico della Nave  N/A  N/A
2. © Ore Moto MP  File specifico della Nave  N/A  N/A
3. © Rapporto Cloro  File specifico della Nave  N/A  N/A
4. © Rapporto Consumo oli lubrificati  File specifico della Nave  N/A  N/A

(MODULISTICA MANUTENZIONE )

ORE MOTO (sono presenti in elenco)
ORE MOTO <nome nave><data> per certe navi contiene sia MP che DG

Per Suprema/Superba i file sono distinti per MP e DG
ORE MOTO_DD_GG <nome nave> <data>
ORE MOTO_M.P. <nome nave> <data>

NOTE:
i form 1-2 sono form che possono evolvere Modello 4 Tipologia S che si ottengono come output (se richiesto in quanto durante audit è sufficiente la visualizzazione degli stessi dati in una query su applicativo software dove si vuol valutare l’adeguato upgrade) da sistema informativo di Gestione Maintenance & Operation Nave.
Il form 3 possono rientrare in Modello 4 Tipologia D in quanto non necessario utilizzare variabili gestite
Il form 4 sono un Modello 4 Tipologia S e sono “il core” della gestione del fuel management & reporting secondo norme legge - Logbook.
5.5 MODULISTICA ADDESTRAMENTO

5.5.1 MOD.5 Addestramento Personale Chiave – Ufficiali di coperta (Add_Chiave_Cop.doc):
ISTRUZIONI PER UFFICIALI E PERSONE CHIAVE. UFFICIALI DI COPERTA – ISTRUZIONI ALL’IMBARCO

5.5.2 MOD.6 Addestramento Personale Chiave – Ufficiali di macchina (Add_Chiave_Macch.doc)
ISTRUZIONI PER UFFICIALI E PERSONE CHIAVE. UFFICIALI DI MACCHINA CAPI GUARDIA ISTRUZIONI ALL’IMBARCO

NOTE:
i form 5-6 sono attualmente form di Modello B che certificano/attestano un momento formativo secondo un elenco temi, vengono firmati da marittimo che ha partecipato al corso e controfirmati da Comandante (oltre datati). Possono evolvere, analizzando il contenuto che è tipicamente un attestato con check-list, verso un Modello D con un allegato di Tipologia D.

5.5.3 MOD. 7 Familiarizzazione all’imbarco (Add_Sic_1.doc)

5.5.4 MOD.8 Addestramento entro 15 giorni dall’imbarco (Add_Sic_2.doc)
REGISTRO DELL’ADDESTRAMENTO ED ISTRUZIONE A BORDO SUI MEZZI DI SALVATAGGIO E ANTINCENDIO

5.5.5 MOD.9 Motivazione SMS (Add_SMS.doc)
L’ADDESTRAMENTO E MOTIVAZIONE DELL’EQUIPAGGIO SUL SAFETY MANAGEMENT SYSTEM (SMS)

5.5.6 MOD.10 Addestramento vari (Add_video.doc)

5.5.7 MOD.11 Questionario per l’addestramento Uff.le di coperta (Quest_Cop.doc)

5.5.8 MOD.12 Questionario per l’addestramento Uff.le commissario (Quest_HTL.doc)

5.5.9 MOD.13 Questionario per l’addestramento Uff.le di macchina (Quest_Macch.doc)

5.5.10 MOD.14 Registro delle esercitazioni Sopep (Registro delle esercitazioni SOPE Plan.doc)
5.5.11 MOD.F1 ADD_PRM_1: LA GESTIONE DELLE PERSONE A MOBILITÀ RIDOTTA (PMR)

5.5.12 MOD.F2 ADD_STAFF : FAMILIARIZZAZIONE PERSONALE STAFF NON A RUOLO EQUIPAGGIO

5.5.13 MOD.F3 PMR ATTESTATO

5.5.14 MOD.F4 PMR ELEMENTI DI FORMAZIONE : ELEMENTI DI FORMAZIONE PER L'ACCOGLIENZAE ASSISTENZA DELLE PRM

NOTE:
I form suddetti siano Modelli B o C (se a forma di Registro quindi con più righe ..) hanno l'obiettivo di formalizzare una avvenuta formazione/familiarizzazione/… e a seconda dell'importanza o altro riportano oltre i dati identificativi del marittimo che ha usifruito della formazione, anche gli stessi del ufficiale che ha erogato la formazione. Talvolta ci sono riportati anche i dati del comandante quale “garante” del processo avvenuto.

Dati di massima: Nome Imbarcato, Grado, Addestramento completato, Libretto nr., Firma del Marittimo, Firma Ufficiale responsabile …

L'analisi del contenuto informativo suggerisce che tali form possono evolvere, essendo tipicamente tutti con valore di attestato (sia a registro che riporta più eventi che a evento singolo, con memo/check-list), verso un Modello D con un allegato di Tipologia D. Un'attenta analisi del processo ci dice che l'identificazione del marittimo e dell'ufficiale (o comunque dell'erogatore e dell'usufruttore della formazione) ha una rilevanza non solo nell'attestare l'effettuazione dell'attività prevista ma anche nella “storia” professionale “curriculum” gestita, da Crew management, per SCTW95 (Standard Crew Training .. rules IMO)
5.6 MODULISTIC GESTIONALI – BORDO

5.6.1 MOD.15 COMITATO DI SICUREZZA (Comitato di sicurezza.doc)

5.6.2 MOD.16 ELENCO RACCOGLITORI (Elenco Raccoglitori.doc)

5.6.3 MOD.17 ISPEZIONE SANITARIA (Ispezione Sanitaria Nave Passeggeri.doc)

5.6.4 MOD.18 RAPPORTO DI INCIDENTE (Rapporto di non conformità-A4.doc)

5.6.5 MOD.19 SCHEDA DI VALUTAZIONE DEL PERSONALE NAVIGANTE (Scheda di valutazione Uff-Sott-Com..doc)

5.6.6 MOD.20 VERBALE PASSAGGIO CONSEGNE TRA COMANDANTI (Verbale consegne comandanti.doc)

5.6.7 MOD.21 REVISIONE DELLA POLITICA DEL COMANDANTE (Revisione della politica Com.te.doc)

5.6.8 MOD.22 VERBALE PASSAGGIO CONSEGNE TRA UFFICIALI R.T. (Verbale consegne Marconista.doc)

5.6.9 MOD.23 VERBALE PASSAGGIO CONSEGNE TRA DIRETTORI (Verbale Passaggio consegne DM.doc)

5.6.10 MOD.F5 SCHEDA VALUTAZIONE COMUNI

5.6.11 MOD.F6 MASTER REVIEW

5.6.12 MOD.F7 SCHEDA DI VALUTAZIONE
5.7 **MODULISTICA GESTIONALI – UFFICIO**

5.7.1 MOD.24 **ISPEZIONE SICUREZZA – LISTA DI CONTROLLO** (Ispezione sicurezza.doc)

5.7.2 MOD.25 **ISPEZIONE TECNICA – LISTA DI CONTROLLO** (Ispezione tecnica.doc)

5.7.3 MOD.26 **AUDIT - N/C – AUDIT INTERNO – 1a pagina** (Rapporto di NC durante audit cover.doc)

5.7.4 MOD.27 **AUDIT - N/C – AUDIT INTERNO – 2a pagina** (Rapporto di NC durante audit.doc)

5.7.5 MOD.28 **AUDIT- LISTA DI CONTROLLO NAVE** (Verbale Audit interno navi.doc)

5.7.6 MOD.29 **AUDIT – LISTA DI CONTROLLO UFFICIO** (Verbale Audit Interno Uffici.doc)

5.7.7 MOD.F8 **VERBALE AUDIT CREW MANNING**

5.8 **MODULISTICA MANUTENZIONE**

5.8.1 MOD.30 **Registro delle ispezioni e prove dell’impianto di automazione (Impianti di automazione Navi 2-4 motori.doc)**

QUESTO FILE CI MANCA… NON E’ PRESENTE NEL MATERIALE CHE CI HANNO MANDATO ???

5.8.2 MOD.31 **Inventario mezzi di rizzaggio** (Inventario mezzi di rizzaggio.xls)

5.8.3 MOD.32 **Ispezioni Portelloni (Registro Ispezioni rampe)**

- ELENCO SCHEDE MANUTENZIONE RAMPE.doc
- MAINTENANCE AND FUNCTION TESTING OF RAMPS EXC-EXR.doc
- MAINTENANCE AND FUNCTION TESTING OF RAMPS MAJ-SPL-FAN.doc
- MAINTENANCE AND FUNCTION TESTING OF RAMPS SPB-SPR.doc
- MAINTENANCE AND FUNCTION TESTING OF SB AND PS RAMPS COR-AUD-TEN.doc

5.8.4 MOD.33 **Lista di controllo Ispettore Cabine** (Lista di controllo Ispezione Cabine.doc)

QUESTO FILE CI MANCA… NON E’ PRESENTE NEL MATERIALE CHE CI HANNO MANDATO ???

5.8.5 MOD.34 **Registro delle ispezioni e delle prove dei macchinari e degli impianti (Macchinari ed impianti navi 2-4 motori.doc)**
5.8.6 MOD.35 Richieste di Intervento (Modulo Rich_Interventi.doc)

5.8.7 MOD.36 Protezione Catodica (Protezione Catodica.xls)

5.8.8 MOD.37 Riassunto dei lavori mensili eseguiti dal personale di coperta (Rapporto Lavori Mensili - GNV.doc)

5.8.9 MOD.38 Inventario Pitture (Rapporto mensile pitture.xls)

5.8.10 MOD. 39 Registro dei controlli dei documenti, dispositivi e macchinari (Registri ispezioni apparecchiature, dispositivi, macchinari.doc)

5.8.11 MOD.40 REGISTRO DELLE BATTERIE (Registro delle Batterie.doc)

5.8.12 MOD.41 RICHIESTA RICAMBI (se non in Amos) (Richiesta Pezzi di ricambio.doc)

5.8.13 MOD.42 TAIL SHAFT MONITORING SYSTEM (Rilevamento Condizioni Albero Portaelica (TMS GNV).doc)

5.8.14 MOD.43 ISPEZIONE CAVI ORMEGGIO/RAMPE (Staus cavi di ormeggio.xls)

5.8.15 MOD. 44 Registro delle visite alle strutture e compartimenti (Struttura e compartimenti - nomeNave.doc)

MODELLO C TIPOLOGIA D

5.8.16 MOD.45 VERBALE CARENAGGIO (Verbale Carenaggio.doc)

MODELLO C TIPOLOGIA D

E' un form di diverse pagine con diverse tipologie di dati, commenti e rilievi cuscinetti. Alcuni dati: Porto di, bacin, entranta/usita bacin, Pescaggi, dislocamento, Stato carena e trattamento. Condizioni e dati Alette di rollio, pinne stabilizzatirci, Timoni, Assi Porta elica, Rilievi cuscinetti timoni, Ancore, etc…

5.8.17 MOD.F9 STATINO BATTERIE BEGHELLI AGGIORNATO

FORSE MOD 40 REGISTRO BATTERIE????????
5.8.18 MOD.F10 VERIFICHE E CONTROLLI GENERATORE DI EMERGENZA
(VERIFICHE E CONTROLLI GENERATORE EMERGENZA.doc)

MODELLO C CHE PUO’ EVOLVERE IN MODELLO D
Sono una serie di scadenze calendrali di cui si raccolgono data. Firma e commenti in due registri separatati. Scadenze annuali e Scadenze quindicinali.

5.8.19 MOD.F11 CECK LIST ISPEZIONI PERIODICHE MEZZI DI SALVATAGGIO

0 PAG.INIZ.
0 PAG.INIZ.SPL-MAJ
00
1 LISTA DI CONTROLLO
2 CECK LIST RUOLO APPELLO
3 CECK LIST LUCI EMERGENZA
4 CECK LIST SIST COMUNICAZ
5 CECK LIST GRU E VERRICELLI
6 CECK LIST STAZIONI IMBARCO
7 CECK DOTAZIONI LANCE
8 CECK ISP.LIFE.BOAT, R, FRB
9 CECK ZATTERE
9a CECK ZATTERE
10 CHECK CINTURE SALV.TUTE ANULARI
10 CHECK CINTURE SALV.TUTE ANULARI
11 CECK PONTE DI COMANDO
12 CECK EPIRB E RADIOLINE

MODELLO C TIPOLOGIA D CHE POSsono EVOLVERE IN MODELLO D TIPOLOGIA D.
Riepilogano vari ITEM di controllo (check list) ed ogni item viene smarcato con data e firma. Possono essere sostituiti da una gestione scadenzario SMS

5.8.20 MOD.F12 SCHEDE DI MANUTENZIONE

MODELLO C CHE PUO’ EVOLVERE IN MODELLO D TIPOLOGIA S
5.9 **MODULISTICA OPERATIVO**

5.9.1 MOD.46 Lista di controllo per bunkeraggio (Bunker check list.doc)
5.9.2 MOD.47 Lista di controllo prima dell’arrivo - Ponte (Check List arrivo - ponte.doc)
5.9.3 MOD.48 Lista di controllo prima della partenza – Ponte (Check list di partenza – ponte.doc)
5.9.4 MOD.49 Lista di controllo per operazioni con elicotteri (Lista di controllo per operazioni con elicottero in overing.doc)
5.9.5 MOD.50 Manleva per passeggeri ammalati (Manleva per passeggeri ammalati.doc)
5.9.6 MOD.51 Permesso di lavoro prese mare (Permessi di lavoro prese mare.doc)
5.9.7 MOD.52 Permesso di lavoro Spazi chiusi, a caldo, altezza (Permessi di lavoro.doc)
5.9.8 MOD.53 Permesso di lavoro – Subacquei (Permesso Lavori Subacquei.doc)

I modelli precedenti sono : MODELLI C Tipologia D

5.9.9 MOD.54 Pianificazione del viaggio (Pianificazione del viaggio.doc)

MODELLO C Tipologia S e D

Si compone in realtà di due parti una prima parte riguarda i dati di viaggio e può essere strutturata. Una seconda parte invece è di tipo documentale.

5.9.10 MOD.F13 BRIDGE CHECK LIST

Puo’ evolvere in un modello C Tipologia D

CHECK LIST delle verifiche e prove prima della partenze e prima dell’arrivo. Form senza firma

Essendo una check list con esito OK / NO puo’ essere sostituita da una check list informatica.
5.10 MODULISTICA REGISTRI IAPP

5.10.1 MOD.F14 REGISTRO DEI CAMPIONI DI COMBUSTIBILE <nave>

MODELLO C

Il presente registro permette alla nave di mantenere traccia in maniera semplice dei campioni di combustibile forni alla nave e delle relative note di consegna.

Tale registro soddisfa le seguenti esigenze richieste:
- il Comandante sviluppi e mantenga un sistema per garantire la rintracciabilità dei campioni conservati.
- il bunker deve soddisfare determinate caratteristiche.
- obbligo della nave di **conservare le note di consegna del bunker (Bunker Delivery Note – BDN)** per un periodo di almeno 3 anni e che le stesse siano prontamente accessibili per le ispezioni.
- Stabilisce le modalità di prelievo del campione. Stabilisce che il campione deve essere sigillato e firmato sia dal rappresentante del fornitore che dal Comandante o dall’Ufficiale incaricato delle operazioni di rifornimento del combustibile. Stabilisce l’obbligo di conservare il campione fino a quando il combustibile non sia stato bruciato e **comunque per un periodo di almeno 12 mesi**.
- obbligo per il fornitore a procurare una nota di consegna (Bunker Delivery Note – BDN) conforme all’Annesso VI, ed un campione rappresentativo del combustibile fornito. Il campione deve essere conservato a bordo a disposizione delle **Autorità Marittime Competenti** è potrà essere usato solamente per determinare la conformità del combustibile con l’Annesso VI – Marpol 73/78.
5.11 MODULISTICA REGISTRO ANTINCENDIO

5.11.1 MOD.F15 REGISTRO DELLA MANUTENZIONE ED ISPEZIONE DEI MEZZI ANTINCENDIO
### 5.12 SCHEMA DI RIEPILOGO

<table>
<thead>
<tr>
<th>MOD.</th>
<th>MODULO</th>
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<tbody>
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<td>© Rapporto Consumo oli lubrificati</td>
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<tr>
<td>5.</td>
<td>Addestramento Personale Chiave – Ufficiali di coperta</td>
<td>SMS</td>
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<td>6.</td>
<td>Addestramento Personale Chiave – Ufficiali di macchina</td>
<td>SMS</td>
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<tr>
<td>7.</td>
<td>Addestramento - Familiarizzazione all’imbarco</td>
<td>SMS</td>
</tr>
<tr>
<td>8.</td>
<td>Addestramento entro 15 giorni dall’imbarco</td>
<td>SMS</td>
</tr>
<tr>
<td>9.</td>
<td>Addestramento - Motivazione SMS</td>
<td>SMS</td>
</tr>
<tr>
<td>10.</td>
<td>Addestramento vari</td>
<td>SMS</td>
</tr>
<tr>
<td>11.</td>
<td>Addestramento - Questionario per l’addestramento Uff.le di coperta</td>
<td>SMS</td>
</tr>
<tr>
<td>12.</td>
<td>Addestramento - Questionario per l’addestramento Uff.le comissario</td>
<td>SMS</td>
</tr>
<tr>
<td>13.</td>
<td>Addestramento - Questionario per l’addestramento Uff.le di macchina</td>
<td>SMS</td>
</tr>
<tr>
<td>14.</td>
<td>Addestramento - Registro delle esercitazioni Sopep</td>
<td>SMS</td>
</tr>
<tr>
<td>15.</td>
<td>Comitato di sicurezza</td>
<td>SMS</td>
</tr>
<tr>
<td>16.</td>
<td>Elenco raccoglitori</td>
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<tr>
<td>17.</td>
<td>Ispezione Sanitaria</td>
<td>AUDIT</td>
</tr>
<tr>
<td>18.</td>
<td>Rapporto di incidente</td>
<td>HO</td>
</tr>
<tr>
<td>19.</td>
<td>Scheda di valutazione del personale navigante</td>
<td></td>
</tr>
<tr>
<td>20.</td>
<td>Verbale passaggio consegne tra Comandanti</td>
<td></td>
</tr>
<tr>
<td>21.</td>
<td>Revisione della Politica del Comandante</td>
<td></td>
</tr>
<tr>
<td>22.</td>
<td>Verbale passaggio consegne tra Ufficiali R.T.</td>
<td></td>
</tr>
<tr>
<td>23.</td>
<td>Verbale passaggio consegne tra Direttori</td>
<td></td>
</tr>
<tr>
<td>24.</td>
<td>Ispezione sicurezza - Lista di controllo</td>
<td>AUDIT</td>
</tr>
<tr>
<td>25.</td>
<td>Ispezione Tecnica - Lista di controllo</td>
<td>AUDIT</td>
</tr>
<tr>
<td>26.</td>
<td>Audit - N/C – Audit interno – 1a pagina</td>
<td>AUDIT</td>
</tr>
<tr>
<td>27.</td>
<td>Audit - N/C – Audit interno – 2a pagina</td>
<td>AUDIT</td>
</tr>
<tr>
<td>28.</td>
<td>Audit - Lista di controllo Nave</td>
<td>AUDIT</td>
</tr>
<tr>
<td>29.</td>
<td>Audit - Lista di controllo Ufficio</td>
<td>AUDIT</td>
</tr>
<tr>
<td>30.</td>
<td>Registro delle ispezioni e prove dell’impianto di automazione</td>
<td>PMS</td>
</tr>
<tr>
<td>31.</td>
<td>Inventario mezzi di rizzaggio</td>
<td>PMS</td>
</tr>
<tr>
<td>32.</td>
<td>Ispezione Portelloni (Registro ispezioni rampe)</td>
<td>PMS</td>
</tr>
<tr>
<td>33.</td>
<td>Lista di controllo Ispezione Cabine</td>
<td>PMS</td>
</tr>
<tr>
<td>34.</td>
<td>Registro delle ispezioni e delle prove dei macchinari e degli impianti.</td>
<td>PMS</td>
</tr>
<tr>
<td>35.</td>
<td>Richieste di intervento</td>
<td>PMS</td>
</tr>
<tr>
<td>36.</td>
<td>Protezione Catodica</td>
<td>PMS</td>
</tr>
<tr>
<td>37.</td>
<td>Riassunto dei lavori mensili eseguiti dal personale di coperta</td>
<td>PMS</td>
</tr>
<tr>
<td>38.</td>
<td>Inventario Piture</td>
<td>PMS</td>
</tr>
<tr>
<td>39.</td>
<td>Registro dei controlli dei documenti, dispositivi e macchinari</td>
<td>PMS</td>
</tr>
<tr>
<td>40.</td>
<td>Registro delle batterie</td>
<td>PMS</td>
</tr>
<tr>
<td>41.</td>
<td>Richiesta Ricambi (se non in Amos)</td>
<td>PMS</td>
</tr>
<tr>
<td>42.</td>
<td>Tail Shaft Monitoring System</td>
<td>PMS</td>
</tr>
<tr>
<td>43.</td>
<td>Ispezione cavi ormeggio/rampe</td>
<td>PMS</td>
</tr>
<tr>
<td>44.</td>
<td>Registro delle visite alle strutture e compartimenti</td>
<td>PMS</td>
</tr>
<tr>
<td>45.</td>
<td>Verbale di carenaggio</td>
<td>PMS</td>
</tr>
<tr>
<td>46.</td>
<td>Lista di controllo per bunkeraggio</td>
<td>FUEL MANAGEMENT</td>
</tr>
<tr>
<td>47.</td>
<td>Lista di controllo prima dell’arrivo - Ponte</td>
<td>SMS</td>
</tr>
<tr>
<td>48.</td>
<td>Lista di controllo prima della partenza - Ponte</td>
<td>SMS</td>
</tr>
<tr>
<td>49.</td>
<td>Lista di controllo per operazioni con elicotteri</td>
<td>SMS</td>
</tr>
<tr>
<td>N.</td>
<td>Descrizione</td>
<td>Responsabile</td>
</tr>
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<td>----</td>
<td>-----------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>50.</td>
<td>Manleva per passeggeri ammalati</td>
<td>SMS</td>
</tr>
<tr>
<td>51.</td>
<td>Permesso di lavoro prese mare</td>
<td>MANUT. SICUREZZA</td>
</tr>
<tr>
<td>52.</td>
<td>Permesso di lavoro Spazi chiusi, a caldo, altezza</td>
<td>MANUT. SICUREZZA</td>
</tr>
<tr>
<td>53.</td>
<td>Permesso di lavoro - Subacquei</td>
<td>MANUT. SICUREZZA</td>
</tr>
<tr>
<td>54.</td>
<td>Pianificazione del viaggio</td>
<td>VOYAGE REPORT MGT</td>
</tr>
<tr>
<td>F1</td>
<td>La gestione delle persone a mobilit’ ridotta (PMR)</td>
<td>SMS</td>
</tr>
<tr>
<td>F2</td>
<td>Famigliarizzazione personale staff non a ruolo equipaggio</td>
<td>SMS</td>
</tr>
<tr>
<td>F3</td>
<td>PMR Attestato</td>
<td>SMS</td>
</tr>
<tr>
<td>F4</td>
<td>Elementi di formazione per l’accoglienza e assistenza delle PRM</td>
<td>SMS</td>
</tr>
<tr>
<td>F5</td>
<td>Scheda valutazione comuni</td>
<td>CREW MANAGEMENT</td>
</tr>
<tr>
<td>F6</td>
<td>Master Review</td>
<td>CREW MANAGEMENT</td>
</tr>
<tr>
<td>F7</td>
<td>Scheda di valutazione</td>
<td>CREW MANAGEMENT</td>
</tr>
<tr>
<td>F8</td>
<td>Verbale audit crew manning</td>
<td>CREW MANAGEMENT</td>
</tr>
<tr>
<td>F9</td>
<td>Statino batterie beghelli aggiornato (MOD. 40 REGISTRO BATTERIE?)</td>
<td>PMS</td>
</tr>
<tr>
<td>F10</td>
<td>Verifiche e controlli generatore di emergenza</td>
<td>PMS</td>
</tr>
<tr>
<td>F11</td>
<td>Check list ispezioni periodiche mezzi di salvataggio</td>
<td>PMS</td>
</tr>
<tr>
<td>F12</td>
<td>Scheda di manutenzione</td>
<td></td>
</tr>
<tr>
<td>F13</td>
<td>Bridge Check list</td>
<td>MANUT</td>
</tr>
<tr>
<td>F14</td>
<td>Registro dei campioni di combustibile (*)</td>
<td>FUEL MANAGEMENT</td>
</tr>
<tr>
<td>F15</td>
<td>Registro della manutenzione ed ispezione dei mezzi antincendio</td>
<td>SAFETY</td>
</tr>
<tr>
<td>F16</td>
<td>12.3.2 Registro idrocarburi, parte I (MARPOL ANNEX I)</td>
<td>ELB</td>
</tr>
<tr>
<td>F17</td>
<td>12.3.5 Registro rifiuti solidi (MARPOL ANNEX V)</td>
<td>ELB</td>
</tr>
<tr>
<td>F18</td>
<td>12.3.6 Sostanze dannose</td>
<td>ELB</td>
</tr>
<tr>
<td>F19</td>
<td>12.3.6.1 Registro sostanze che riducono l’ozono</td>
<td>ELB</td>
</tr>
<tr>
<td>F20</td>
<td>12.3.6.2 Emissioni di NOX – Registro delle modifiche .....</td>
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</tr>
<tr>
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<td>12.3.6.3 Emissioni SOX – Uso combustibile registro dei campioni (*)</td>
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</tr>
<tr>
<td>F22</td>
<td>Prestazione Motori Principali</td>
<td>PMS</td>
</tr>
<tr>
<td>F23</td>
<td>Prestazioni Diesel Generatori</td>
<td>ELB</td>
</tr>
<tr>
<td>F24</td>
<td>Rapporto mensile del carico</td>
<td>ELB</td>
</tr>
<tr>
<td>F25</td>
<td>Registrazioni operazioni carico/scarico</td>
<td>PMS</td>
</tr>
<tr>
<td>F26</td>
<td>Rapporto isolamenti motori elettrici</td>
<td>PMS</td>
</tr>
<tr>
<td>F27</td>
<td>Lavori giornalieri sez. Coperta</td>
<td>PMS</td>
</tr>
<tr>
<td>F28</td>
<td>Lavori giornalieri sez. Macchina</td>
<td>PMS</td>
</tr>
<tr>
<td>F29</td>
<td>Lavori giornalieri impianto elettrico</td>
<td>PMS</td>
</tr>
<tr>
<td>F30</td>
<td>Rimanenze oli lubrificanti e combustibili</td>
<td>ELB / FUEL REPORT</td>
</tr>
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<td>F31</td>
<td>Movimenti equipaggio</td>
<td>CREW</td>
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ELB – Electronic Log Book

Configurazione del Sistema e Manuale operativo

<table>
<thead>
<tr>
<th>CONFIGURAZIONE DEL SISTEMA E MANUALE OPERATIVO</th>
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<td>SPECIFICA GENERALE</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Indice

1 Glossario ........................................................................................................... 3
2 Premessa ............................................................................................................ 4
3 I Registri di Bordo PRE-BOLLATI ................................................................. 6
4 Electronic Log-Book .......................................................................................... 8
4.1 ELB ................................................................................................................... 8
4.2 Approvazione ELB ........................................................................................ 8
5 Specifica del Sistema ........................................................................................ 10
  5.1 Architettura dell’hardware ......................................................................... 10
  5.2 Architettura software di base .................................................................... 10
  5.3 Architettura del software applicativo ............................................................ 11
  5.4 Architettura del Data Base ........................................................................ 12
  5.5 Layout della singola applicazione a bordo .................................................... 12
  5.6 Dizionario delle informazioni gestite nei registri cartacei (vedi Appendice) .. 13
  5.7 Conformità al CAD (Codice Amministrazione Digitale) ...................... 13
6 ELB: CaraTteristiche operative ...................................................................... 15
  6.1 Il Voyage & Fuel Reporting ....................................................................... 15
  6.2 Gli indici operativi ........................................................................................ 16
    6.2.1 Indicatori operativi e di performance ....................................................... 16
    6.2.2 Andamenti storici dei consumi ................................................................. 17
  6.3 Processi e attività gestite ............................................................................ 17
    6.3.1 Il viaggio e la tratta .................................................................................. 17
    6.3.2 Gli Eventi Viaggio .................................................................................... 18
    6.3.3 Il carico di FO e altro ............................................................................... 19
    6.3.4 La giacenza (ROB) Remain On Board .................................................... 19
    6.3.5 I consumi ................................................................................................ 20
    6.3.6 La relazione Viaggio ................................................................................ 20
    6.3.7 La previsione di consumo ....................................................................... 20
    6.3.8 I cruscotti .................................................................................................. 20
  6.4 I registri ........................................................................................................ 21
  7 strutture dei dati gestiti (esempi) .................................................................. 22
    7.1 Nave ............................................................................................................. 22
    7.2 Viaggio ........................................................................................................ 23
    7.3 Tratta .......................................................................................................... 24
    7.4 Tank .......................................................................................................... 24
    7.5 Tank type .................................................................................................... 25
    7.6 Fuel type .................................................................................................... 25
    7.7 ELB Header ................................................................................................ 25
    7.8 Giacenze fuel ............................................................................................. 26
    7.9 Fuel change ................................................................................................. 27
    7.10 Meteo ......................................................................................................... 27
    7.11 Bunker ....................................................................................................... 28
    7.12 Garbage discharge .................................................................................... 29
    7.13 Consumi ..................................................................................................... 29
    7.14 Registro dei Campioni del FO .................................................................. 30
    7.15 Gestione Rifiuti ........................................................................................ 30
8 ALLEGATI: Dizionario delle informazioni su carta .................................... 31
1 GLOSSARIO

**LB:** Log Book, ogni supporto cartaceo sul quale si registrano dati in formato organizzato

**ELB:** Electronic Log Book, versione elettronica del Log Book

**Misura:** valore acquisito riferito a un determinato campo (ad es. opacità, temperatura)

**Fault:** è un guasto o avaria generata all’interno del sistema FDS o ad uno dei suoi componenti.

**Trend:** andamento che misura il valore di una grandezza in uno spazio temporale.

**Anomalia da trend:** è l’andamento di un trend che non rispetta una logica predefinita.

**Manutenzione su condizione:** manutenzione che si effettua in base a una condizione di superamento di una soglia limite al fine di anticipare una possibile avaria.

**Manutenzione predittiva:** manutenzione che analizza le condizioni di funzionamento di un impianto e predice con precocità e affidabilità una possibile avaria.

**Work Request (WR):** richiesta di un lavoro generata automaticamente in seguito ad un evento (ad esempio può scatenarsi per un’ allarme o per l’andamento di un trend) o ad un inserimento manuale;

**Work Order (WO):** ordine di lavoro da eseguire in seguito ad una work request.

**Evento:** è un qualunque cambiamento di stato del sistema.

**Isolamento** (in questo contesto): l’esclusione dal funzionamento attivo di un sensore, di un avvisatore manuale, di una zona, un intero circuito (loop di sensori) o di una periferica.

**Alias:** è una stringa che rappresenta il riferimento a un insieme di dati utilizzando un unico nome; ad esempio l’alias #Ponte# si riferisce all’insieme dei ponti presenti su una nave.

**Area critica:** sezione a bordo definita a priori come zona molto sensibile e soggetta a condizioni ambientali gravose per il sistema di avvisatori.

**Zone:** un’area specifica della nave costituita da un insieme di locali presenti a bordo.

**Loop:** circuito elettrico su cui sono collegati un gruppo di sensori.
2 PREMESSA

Il personale di bordo è coinvolto in una serie di implicazioni formali che attestano il corretto svolgimento delle attività di esercizio nave. Tali implicazioni sono di tipo “formale” in quanto associate all’esecuzione di determinate attività ed esiste una serie di espletamenti per “comprovare” l’esecuzione di tali attività.

Tali espletamenti avvengono attraverso la compilazione di prescritti “Registri Cartacei”, su cui vengono apposte firme (più soggetti dal compilatore al Comandante) e le date di esecuzione attività; nel seguito tali “Registri Cartacei” saranno denominati “Log Book”.

Le norme di riferimento relativamente struttura (layout grafico) ed alla redazione dei Log Book, sono: art. 173 e seguenti del Codice Navigazione e del Regolamento per l’ esecuzione del codice della navigazione (navigazione marittima) approvato con DPR 15 febbraio 1952 n. 328, L.271 (sicurezza sulle navi) ultimamente approvato nel Decreto Ministeriale del 2-8-2011, HCCP (controlli relativi alla parte alberghiera di bordo) e internazionale (IMO - International Maritime Organization relativamente anche a SOLAS, MARPOL, ISPS, SCTW95).

Inoltre taluni Log Book devono anche essere preventivamente “bollati o validati” dalla Autorità Marittima (Capitanerie di Porto) prima del loro utilizzo.


Infatti si ricorda che da all’a metà anni ’90 l’introduzione dell’ISMC (International Safety Management Code) ha imposto alle Compagnie di dare «evidenza» relativamente alla gestione (ma anche alle modalità) con cui applicano le IMO Rules (SOLAS, MARPOL, SCTW, ...) attraverso il Sistema di Gestione SMS: Safety Management System (parzialmente per processi ma prevalentemente inteso “ad eventi”).

Ciò ha avuto come primo effetto un aumento delle soluzioni informative di gestione ma, parallelamente, si è assistito ad un proliferare di «rapportazione cartacea» quale «attestazione» dell’avvenuta attività richiesta e censita.

A bordo, quanto illustrato, comporta un livello altissimo di inefficienza caratterizzato: da una frequente compilazione di numerosi moduli cartacei (oltre quanto sotto riportato), da una conseguente ridondanza di informazioni richieste e quindi da alto numero di errori umani, ma soprattutto da una assenza di utilizzo “efficace” delle informazioni trattate, se non a fronte di re-digitazioni in altri software (durante il processo tali informazioni sia internamente che esternamente vengono anche reinserite più volte).

Il tutto porta ad un conseguente aumento di insoddisfazione e frustrazione del personale coinvolto che, inoltre, risulta essere in numero minore e quindi maggiormente oberato da innumerevoli compiti operativi.

La modalità di gestire le “informazioni” in forma cartacea, in sintesi, è manifestamente obsoleta, inefficiente ed in più retaggio di una gestione che, nella normativa italiana, trova completo superamento e nuova risposta nell’attuazione del CAD (Codice Amministrazione Digitale) nel Decreto Legislativo del 30 dicembre 2010 n. 235.

La risposta e il superamento di tali inefficienze si trovano in una “gestione elettronica” delle stesse informazioni che ne garantiscano l’affidabilità, la sicurezza e che sia completamente “sostitutiva” della modalità cartacea.
Anche la normativa europea con la Direttiva EU 2010/65 “on reporting for ships arriving in and/or departing from Ports of Member States” richiede alle nazioni entro il 2015 di recepire le “Ship Formalities” di arrivo/partenza nave “solo” in formato elettronico e strutturato (questa scadenza lunga è solamente per consentire alle nazioni di adeguarsi tecnicamente, cosa che ormai molte nazioni hanno già effettuato).

Inoltre la IMO FAL Committee 37 del 2011 apporta una revisione del “IMO Compendium on Facilitation and Electronic Business” e definisce la versione secondo lo Standard UN/EDIFACT (in vari MESSAGE) come alternativa alle tradizionali IMO FAL FORM, facendo un ulteriore passo (da semplice documento elettronico a formato dati strutturato e ad un utilizzo di uno Standard internazionale normalizzato) consentendo un più efficiente riuso delle informazioni contenute nei processi a valle (di ispezione/controllo, di gestione portuale, ...) da parte delle varie autorità competenti (marittime, polizia, doganali, sanitarie, portuali, ...).
3 I REGISTRI DI BORDO PRE-BOLLATI

I Registri, secondo layout approvati da MIT (Ministero delle Infrastrutture e Trasporti) o da organismi internazionali, pre-bollati, ciò significa che prima di essere utilizzati, devono essere bollati presso il Comando delle Capitanerie di Porto, e che debbono essere presenti a bordo, in tale forma cartacea, e opportunamente compilati sono i seguenti:

1. **Registro del carico per navi che trasportano sostanze liquide nocive;**
   Modello conforme alla normativa Internazionale SOLAS edizione 2006

2. **Registro di carico e scarico dei medicinali soggetti alla disciplina degli stupefacenti e sostanze psicotrope;**

3. **Oil Record (Registro degli Idrocarburi):**
   - part I (tutte le navi);
   - part II (navi petroliere);
   Modello conforme alla Resolution IMO MEPC 187(59) del 17 luglio 2009

4. **Giornale Nautico:**
   - **Parte I (Inventario di Bordo);**
     Conforme agli artt. 173, 174, 176, 177, 246, 247, 248 del Codice della Navigazione e artt. 362-369 del Regolamento per l’esecuzione del Codice della Navigazione (Navigazione Marittima). Inoltre la Parte I è parte integrante dell’ISM.
   - **Parte II (Giornale generale di Contabilità);**
     Conforme agli artt. 173. 174, 177, 178, 181 e 182 del Codice della Navigazione e all’art. 328 del Regolamento per l’esecuzione del Codice della Navigazione (Navigazione Marittima). Inoltre la Parte II è parte integrante dell’ISM.
   - **Parte III (Giornale di navigazione);**
   - **Parte IV (Giornale di Carico);**
     Conforme agli artt. 173, 174, 177, 178, 181 e 182 del Codice della Navigazione e all’art. 328 del Regolamento per l’esecuzione del Codice della Navigazione (Navigazione Marittima). Inoltre la Parte IV è parte integrante dell’ISM.
   - **Parte V (Giornale di Macchina);**
     Conforme agli artt. 175, 177, 178 del Codice della Navigazione e artt. 362-368, 373, 379,381 del Regolamento per l’esecuzione del Codice della Navigazione (Navigazione Marittima). Inoltre la Parte V è parte integrante dell’ISM.

5. **Giornale delle Radio-Comunicazioni (Radio-Communications Log Book)**
   Conforme all’art. 175 del Codice della Navigazione.
Di tutti i sopra citati registri si prevede la totale sostituzione con una versione elettronica (ELB - Electronic Log Book).

Inoltre la Resolution A.741(18) dell’IMO richiede che tutte le navi soddisfino i requisiti imposti dal codice ISM (International Safety Management) che a bordo è gestito dall’SMS (Safety Management System).

Come sopra evidenziato molte delle informazioni riportate nei Registri di bordo sono anche richieste in altri form dall’SMS stesso. Pertanto una gestione elettronica delle informazioni in ottica “once” evita, tra l’altro, di rintrodurre la stessa informazione in differenti Forms e Registri, quindi evitando, pertanto, possibilità di errore e perdite di tempo.
4 ELECTRONIC LOG-BOOK

4.1 ELB

Il registro elettronico (ELB) è l’aggregazione di tutte le informazioni presenti nel sistema e soggetto a prefissati vincoli (gerarchia di autorizzazioni e firme, seguendo un workflow prefissato e personalizzabile), unitamente alla tracciatura di una serie di informazioni relative all’utente che ha effettuato la registrazione (nome utente, data e ora) e al viaggio (tratta, stato e posizione).

Il proposto ELB è costituito da una parte costante (campi fissi) e da una variabile. Al tempo stesso, e, a seconda della natura dell’argomento, il dato può risultare di tipo Contestuale e/o di tipo Procrastinabile.

E’ possibile che alcuni tipi di registrazioni richiedano specifici vincoli operativi:
- Registrazione on line: il dato deve essere inserito durante la gestione del viaggio. La data di registrazione è assegnata dal sistema e non è modificabile.
- Autorizzazione. La registrazione prevede una gerarchie di autorizzazioni e firme, seguendo un un workflow prefissato e personalizzabile;

Le registrazioni riportano le informazioni relative all’utente che ha effettuato la registrazione, data e ora, informazioni relative al viaggio, tratta, stato e posizione.

Il proposto ELB è caratterizzato dalle seguenti caratteristiche tecniche:

- Il dato inserito non è modificabile dopo che la registrazione è stata confermata.
- E’ possibile effettuare una rettifica: in tal caso il sistema prevede la “cancellazione logica” della registrazione ed il reinserimento della stessa. Visivamente il dato cancellato viene comunque visualizzato, contrassegnato come cancellato.
- Le informazioni della registrazione e degli allegati sono garantite da modifica e contraffazione: i dati e gli allegati sono identificati da chiavi di hash e firmati digitalmente dal sistema con chiave crittografica.

Il proposto ELB è stato realizzato conforme ai requisiti “CAD Compliant,” Fault Tolerant e con gestione degli Approval Levels (firme).

4.2 Approvazione ELB

Vi sono numerose esperienze di applicazione dell’ELB (Electronic Log Book) a livello internazionale.

In ogni caso tutte le applicazioni sono caratterizzate dall’essere conformi ai seguenti regolamenti e aspetti generali:

Gli ELB sono completamente accettati per l’utilizzo su navi a completa sostituzione del Log Book cartaceo se soddisfano le seguenti richieste:

- Le “work station” sul ponte dove ELB è installato deve essere conforme con: IMO "Guidelines on Ergonomic Criteria for Bridge Equipment and Layout" contenute in MSC/Circ.982, and MSC/Circ. 891;

- La presentazione del ELB deve essere conforme alle richieste della “Resolution MSC.86 (70) e MSC/Circ.982(5.3.4)” emesse dall’IMO (International Maritime Organization);

- l’illuminazione del display e della tastiera devono essere conformi ai requisiti della Circolare IMO: MSC/Circ.982(5.3.6).

La seguente documentazione deve essere mantenuta costantemente a bordo nave e deve essere disponibile in ogni momento a richiesta, nel corso dei Port State Control o di altri enti autorizzati ad ispezioni nave o di “survey statutari”:

1. una dichiarazione da parte dei produttori del software, esempio “InfoSHIP ELB”, o della azienda installante se diversa, che lo stesso è stato installato secondo le regole in corso, testate le prestazioni e trovato in completa funzionalità (Dichiarazione di Conformità);

2. una dichiarazione da parte dell’Armatore che gli Ufficiali di bordo abbiano ricevuto training a riguardo, in conformità a quanto richiesto da STCW-95 Regulation 1/14.1.4.

5 SPECIFICA DEL SISTEMA

Il software InfoSHIP-ELB di cui si richiede “approvazione” fa parte di un “SISTEMA” di cui di seguito ne vengono definiti i componenti:

- **Hardware**: Personal Computer o qualsiasi dispositivo “Mobile” (Tablet, Smartphone, altri) in grado di visualizzare/inserire dati remotizzati sul database
- **Software di base**: Sistema Operativo (Windows, Unix, Linux, IOS, Android, altri);
- **Software Applicativo**: InfoSHIP-ELB per la gestione ed archiviazione delle singole informazioni in accordo con i flussi di gestione propri, nonché l’estrazione degli stessi in base a differenti parametri al fine di una loro elaborazione;
- **Database**: sistema per la gestione di basi di dati relazionali.

5.1 Architettura dell’hardware

FILO: FORSE Eé PARTE DI QUELLO DETTO DOPO ?

5.2 Architettura software di base

L’architettura prevede, a fini di ottenere la massima disponibilità del sistema (100%), un Hardware ridondato in alta affidabilità (HA) che utilizza Memorie su disco in RAID 10, doppio alimentatore, doppia scheda di rete, ecc. ...

Inoltre, per garantire la massima sicurezza del dato, è prevista la replica in tempo reale del dato tra i due PC, oltre la sincronizzazione con Database - Server remoti (esempio in ufficio
armatore) tramite connessione Internet satellitare con cadenza periodica (e.g. almeno una volta al giorno).

5.3 Architettura del software applicativo

Il software InfoSHIP – ELB è sviluppato in architettura a tre livelli (vedi di seguito puntuale definizione):
- Database-Server, contenenti la base di dati relazionali; quindi contiene la base dati dove le informazioni vengono memorizzate e richiamate per essere rese disponibili all’applicativo
- Application-Server, contenenti il software applicativo;
- Client, dove avviene l’interazione con il sistema.

NB: non necessariamente quelle riportate sopra che sono funzioni richieste risiedono su più Hardware distinti, ma possono anche risiedere su un unico Hardware o anche due.

Three-tier\(^3\) is a client–server architecture in which the user interface, functional process logic ("business rules"), computer data storage and data access are developed and maintained as independent modules, most often on separate platforms. It was developed by John J. Donovan in Open Environment Corporation (OEC), a tools company he founded in Cambridge, Massachusetts.

The three-tier model is a software architecture and a software design pattern.
A part from the usual advantages of modular software with well-defined interfaces, the three-tier architecture is intended to allow any of the three tiers to be upgraded or replaced independently in response to changes in requirements or technology. For example, a change of operating system in the presentation tier would only affect the user interface code.
Typically, the user interface runs on a desktop PC or workstation and uses a standard graphical user interface, functional process logic may consist of one or more separate modules running on a workstation or application server, and an RDBMS on a database server or mainframe contains the computer data storage logic. The middle tier may be multi-tiered itself (in which case the overall architecture is called an “n-tier architecture”).

Three-tier architecture has the following three tiers:

- **Presentation tier**
This is the topmost level of the application. The presentation tier displays information related to such services as browsing merchandise, purchasing, and shopping cart contents. It communicates with other tiers by outputting results to the browser/client tier and all other tiers in the network.

- **Application tier (business logic, logic tier, data access tier, or middle tier)**

  The logic tier is pulled out from the presentation tier and, as its own layer, it controls an application’s functionality by performing detailed processing.

- **Data tier**

  This tier consists of database servers. Here information is stored and retrieved. This tier keeps data neutral and independent from application servers or business logic. Giving data on its own tier also improves scalability and performance.


Lo strumento di sviluppo utilizzato consente la massima ingegnerizzazione e il più alto livello di “error free” del codice software il quale viene automaticamente “generato” dopo che vengono definite le entità, le classi e le informazioni da gestire.

SitePainter Revolution è un sistema di sviluppo specializzato nella realizzazione di applicazioni transazionali fortemente interattive in ambiente Web (n-tier) con interfaccia browser e utilizzarle con interfaccia browser di pari complessità ed interattività a quelle realizzabili in ambito Windows.

SitePainter Revolution è disponibile in versione Java(J2EE); supporta i più diffusi Application server J2EE compliant (Tomcat - Jrun - WebSphere ecc.) e i maggiori Database quali: Microsoft SQL Server, Oracle, DB2, Postgres, MySql 4.x, in ambiente Windows o Linux/Unix. È compatibile con le più aggiornate versioni di Web Browser quali Internet Explorer e Mozilla - Nescape.

### 5.4 Architettura del Data Base

Si rimanda ai paragrafi successivi per i data elements necessari (per es. Para 7.1). Per quanto riguarda l’architettura del Data Base, questa va adattata, caso per caso, alle architetture esistenti e/o al MIG (message implementation guide) che si intende adottare.

### 5.5 Layout della singola applicazione a bordo

| NB: per ogni singola installazione a bordo nave viene definito il layout e le caratteristiche di tutti i componenti facenti parte del Sistema tra cui Hardware su cui InfoSHIP-ELB risiede. Il tutto viene definito all’interno della Dichiarazione di Conformità dell’installazione. |

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*Info-SHIP: ELB*  
*01 luglio 2012*  
*Pag. 12/41*
5.6 Dizionario delle informazioni gestite nei registri cartacei (vedi Appendice)

Le informazioni che vengono gestite all’interno di InfoSHIP-ELB sono conformi a quanto contenuto nei vari Registri precedentemente elencati. La conformità è intesa come stesso identico contenuto informativo (qualità e quantità di informazioni presenti); ogni informazione presente nel Registro cartaceo trova riscontro nell’ELB. In Appendice per puntualità informativa viene riportato l’elenco dei campi gestiti nei Registri pre-bollati.

5.7 Conformità al CAD (Codice Amministrazione Digitale)

InfoSHIP-ELB è conforme al CAD (Codice Amministrazione Digitale), ed ha ricevuto una valutazione preliminare positiva da parte di DigitPA (Ente nazionale per la digitalizzazione della Pubblica Amministrazione) per ciò che concerne la “sicurezza” del dato e affidabilità del “Sistema” ed in particolare:

- Il software “InfoSHIP-ELB” è sviluppat o aggiornato secondo il Sistema di Qualità ISO 9001:2008: tutte le modifiche sono documentate e testate prima del rilascio così come è mantenuta la tracciabilità delle versioni software rilasciate. (se richiesto COPIA CERTIFICATO)

- “Fault Tolerant”: il Sistema funziona su due workstation (PC) completamente ridondanti e con base dati “replicata”. Inoltre i dati, vengono sincronizzati con l’installazione di terra presso uffici direzionali della compagnia.

- “Autenticazione”, identificazione dell’utente di bordo e sicurezza all’accesso: UserID e Password

- Gestione evoluta delle transazioni con “Tracking Log” automatico (utente - UserID, data, ora) sia in “inserimento” che negli “annullamenti” e “revisioni” delle informazioni gestite.

- Effettuata a Sistema la “Approvazione” dell’informazione registrata da parte dell’Ufficiale/i responsabile/i, l’informazione è modificabile esclusivamente attraverso una gestione che consenta “Annullamento Logico” (visibilità del dato cancellato nel reinserimento della variazione).


- “Data e Ora”, certificate e sincronizzate in relazione alla disponibilità di connettività, tramite protocollo NTP (Network Time Protocol) ai server del “tempo campione” dell’INRIM - Istituto Nazionale di Ricerca Metrologica (ntp1.inrim.it, ntp2.inrim.it) o altri
sistemi di certificazione o di distribuzione del tempo campione a bordo (esempio server collegato a GPS).
6 ELB: CARATTERISTICHE OPERATIVE

Come esempio di applicazione e utilizzo a bordo del proposto ELB, si riporta nel seguito la parte di gestione, in forma completamente elettronica e “once” relativa al Viaggio, al Fuel Oil e altri consumi da relazionare nel Voyage Reporting.

Si identificano le funzioni previste per il software InfoSHIP di Voyage & Fuel management delle sue funzioni anche di ELB – Electronic Log Book, di seguito indicato con VFR, ed altresì alle gestioni correlate alla IMO MARPOL.

Si ricorda e nel seguito si evidenzia come tutta le gestioni dell’ELB soddisfa anche tutti i requisiti a IMO in tema di prescrizioni MARPOL.

L’utilizzo dei sistemi di automazione per la raccolta dei dati è complementare all’introduzione manuale degli stessi e quindi di ausilio, non sono sostitutivi all’attività da parte dei responsabili di bordo, ai quali resta l’obbligo di conferma del dato e della transazione.

6.1 Il Voyage & Fuel Reporting

La parte applicativa software di Voyage & Fuel Reporting (VFR) si prefigge gli obiettivi di:

- Gestire le informazioni generali dell’operatività nave e di aggregazione relativa ai Viaggi ed alle Tratte, quali ad esempio:
  - La distanza;
  - Il tempo di navigazione, manovra e sosta;
  - I consumi
  - Le giacenze
- Gestire gli eventi e le attività riguardanti il VFR. Le informazioni raccolte sono associate al Viaggio, eventualmente alla Tratta e allo Stato (Navigazione, Manovra, Sosta Porto). Le informazioni gestite in relazione a carichi e consumi sono relative a:
  - I carichi di Fuel Oil (FO), Lub Oil (LO), Fresh Water (FW)
  - I cambi di tipologia di FO utilizzato nei varie fasi ed i consumi degli stessi
  - I consumi di LO per Tipo di utilizzo/destinazione
  - I consumi e la produzione di Distilled Water e FW

Le informazioni gestite in relazione al Viaggio:

  - I rilevamenti di Rotta e Posizione nave
  - Aggiornamento ETA (Estimated Time Arrival)
  - I rilevamenti delle condizioni meteo marine ed in generale tutte le informazioni contenute nel “Giornale Nautico Parte III”

Adempimenti MARPOL per FO e Garbage completano, ad esempio:
  - Garbage Log Book: normale Form
  - Oil Log Book Parte I e Parte II (carico e scarico FO): attualmente fanno parte dei Registri Pre-Bollati
E’ di fondamentale importanza sottolineare e d evidenziare che tutti gli Output ottenibili grazie ai dati gestiti all’interno del proposto SISTEMA ELB fa sì che questi ultimi risultino siano già conformi a IMO FAL Committee 37/2011 e Dir. EU 2010/65 e quindi consentano:

- Dai dati di Viaggio gestiti di ottenere anche la IMO FAL Form n.1 - General Declaration anche in formato: UN/EDIFACT CUSCAR
- Dal Garbage Management & Report di ottenere Waste Disposal come richiesto da norme EU: UN/EDIFACT WASDIS
- Da singole altre gestioni di ottenere gli altri IMO FAL Form che sono oggi in progress e più precisamente: IMO FAL FORM 2,3,4,5,6,7 securep etc.

6.2 Gli indici operativi

A scopo informativo di seguito si vuole dimostrare come una gestione strutturata e normalizzata dei dati di Viaggio nave e di Consumo permette altresì di determinare una serie di KPI e andamenti storici dei Consumi stessi, elencati successivamente, che sono anche la risposta alle richieste IMO SEEMP che sarà obbligatorio per tutte le navi a partire vigore dal 1° gennaio 2013.

6.2.1 Indicatori operativi e di performance

- Power Factor PF

E’ un indice di efficienza propulsiva, calcolato come rapporto tra potenza propulsiva media e la velocità media.

\[
PF = \frac{\text{Potenza propulsiva media}}{\text{Velocità media}}
\]

- Energy Efficiency Operational Indicator (EEOI)

Famiglia di indici che indicano l’efficienza relativamente ai consumi ed al carico.

Definendo le seguenti quantità relative ad un viaggio o a un periodo di tempo:

\( FC = \) Fuel Consumption, consumo di carburante generico. Considera i consumi di sola propulsione.

\( FC_i = \) Fuel Consumption. E’ relativo ad un particolare carburante (i-simo).

\( D = \) Distanza navigata, secondo quanto riportato nel giornale nautico per il viaggio o il periodo.

\( TW = \) Transport Work. Il lavoro (beneficio) ottenuto dal trasporto. In base al tipo nave può essere il carico trasportato o il numero dei passeggeri. Il termine TW viene in genere espresso con uno specifico indicatore:
• Cargo Mass Carried. Quando il TW è riferito a navi che effettuano puro trasporto il TW può essere costituito dal carico trasportato;
• Work Done. In caso di navi passeggeri o traghetto tramite il TW può essere rappresentato dal numero dei passeggeri o di veicoli (autovetture al seguito, autovetture nuove, mezzi pesanti).

Il TW deve essere definito con la parte tecnica per ottenere un indicatore significativo ai fini previsionali.
Per ulteriori chiarimenti vedi Guideline relativa a IMO - MEPC.1/Circ.684 17 August 2009.

In relazione al tipo di “payload” che si vuole analizzare, si possono definire diversi indicatori:

• Fuel Oil Consumption FOC

\[ FOC = \sum_{i} \frac{FCi}{TW \cdot D} \]

Il pedice ‘i’ indica i possibili tipi di carburante utilizzati.

• Emissioni stimate di NOx e SOx

\[ NOx \text{ o } SOx = \sum_{i} \frac{FCi \cdot Cfi}{TW \cdot D} \]

In questo caso i consumi FCI devono tenere in conto tutti i consumi di FO, compresi i generatori, caldaie ed inceneritori.

CFi = Coefficiente specifico per il carburante ed il tipo di emissione

6.2.2 Andamenti storici dei consumi
Sia i dati provenienti dal VFR che gli indici calcolati forniscono una base storica da analizzare relative all’efficienza energetica, alle emissioni ed ai costi dei viaggi, fornendo indicazioni di ritorno utili per la pianificazione dei viaggi: tempi medi di sosta, ritardo medio, scostamento rispetto alle condizioni di esercizio ottimali (es. trim, numero di motori, velocità, potenza).

6.3 Processi e attività gestite

6.3.1 Il viaggio e la tratta
Si definisce Tratta la navigazione da un porto ad un altro e la sosta che si effettua nel porto di destinazione. La Tratta è quindi costituita da una sequenza di eventi che concorrono a determinare lo stato della nave.

Gli Stati previsti per la nave sono:
• Sosta in porto o in mare;
• Navigazione;
• Manovra in ingresso in porto, in uscita o altro.
Il Viaggio è sinonimo di Tratta secondo la definizione IMO o può essere definito come sequenza di Tratte se si adotta il concetto utilizzato in navi da ‘crociera’.

Le informazioni relative al VFR sono associate ad una Tratta ed al suo Stato. Una Tratta è rappresentabile come una sequenza di Stati. Il passaggio da uno Stato ad un altro è provocato da un evento.

Esempi

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6.3.2 Gli Eventi Viaggio

Il sistema di VFR consente la registrazione dei dati temporali degli Eventi legati al Viaggio, quali ad esempio l’ormeggio, il disormeggio, l’ancoraggio in rada, il passaggio di uno stretto, cambi di carburante, ecc.

L’Evento prevede:

- Registrazione delle informazioni di base, quali ad esempio la Data e l’Ora dell’Evento e l’eventuale posizione, se pertinente;
- L’eventuale ritardo e la Causa (descrittiva e codificata);
- Una gestione specifica, come nel caso del bunkeraggio;
- L’acquisizione di allegati.
### 6.3.3 Il carico di FO e altro

Il sistema VFR prevede la gestione del carico di FO, LO, FW, DW. Le informazioni trattate sono:

- Tipo e Quantità;
- N.° Rif. ed informazioni di collegamento per la gestione acquisti effettuati a terra;
- Cassa della nave in cui il FO è stato caricato.

Le informazioni relative alle operazioni di carico, quali l’arrivo della bettolina, attacco manichetta, ecc. vengono registrate sotto forma di Eventi.

In fase di carico si possono acquisire documenti elettronici o immagini, al fine di archiviare una copia della Documentazione di Accompagnamento (Bunker Delivery Note) e/o di check-list legate alla Safety per operazioni effettuate durante operazione di carico.

### 6.3.4 La giacenza (ROB) Remain On Board

La giacenza o Remaining On Board (ROB) viene acquisita come elemento di quadratura di un viaggio o un periodo:

\[
\text{CARICO} + \text{ROB} - \text{CONSUMI} = 0 \quad (\text{salvo il margine di errore previsto})
\]
6.3.5  I consumi

I consumi vengono registrati nelle varie fasi del viaggio e tengono conto sia del Tipo di carburante che della Tipologia di destinazione d’uso.

I dati di consumo sono inseriti ed pertanto aggregati per:

- Stato nave (Navigazione, Manovra, Sosta).
- Classe del carburante (ATZ – Alto Tenore Zolfo, BTZ – Basso Tenore Zolfo, MDO – Marine Diesel Oil)
- Tipologia Destinazione (Main Engine, AUX, Boiler, produzione Fresh Water, ecc.)

6.3.6  La relazione Viaggio

La relazione Viaggio è l’operazione che consolida le informazioni via via inserite e le trasferisce anche a terra presso gli uffici della Compagnia. L’installazione di terra riceverà pertanto le informazioni di VFR da tutte le navi e consentirà di avere la visione e il controllo dell’intera flotta.

6.3.7  La previsione di consumo

Il sistema prevede la raccolta delle informazioni necessarie per poter effettuare le previsioni di consumo ed eventualmente economiche in termini di FO, LO e FW dell’intera flotta.

Il modello previsionale potrà tenere in conto vari parametri quali:

- Il modello di consumo di Targa della nave alle varie condizioni di esercizio (nave uscita dal bacino con carena, eliche e motori in perfetta efficienza), relativamente al FO;
- Analisi storica delle annualità e stagionalità per la specifica nave;

La previsione fornirà sarà espressa in termini di Tonnellata Metrica per lavoro svolto e distanza unitaria (1 Miglio nautico):

\[ \text{Previsione consumi} = \frac{tm}{TW \cdot 1mn} \]

\( TW = \) Transport work.

Le informazioni di previsione dei consumi e le informazioni relative alle previsioni degli itinerari (deployment) sono utilizzabili per definire il budget di periodo relativamente ai costi di carburante, acqua e olio lubrificante.

6.3.8  I cruscotti

La base dati di terra sarà utilizzata per la definizione di cruscotti a supporto delle Decisioni per il controllo dell’operatività della flotta.
6.4 I registri

Il Sistema consente a gestione elettronica di tutti gli altri Registri o Form gestiti tramite Electronic Log Book (ELB).
Sotto il profilo operativo, il Registro nasce come aggregazione di informazioni presenti nel sistema.

Alcuni tipi di registrazioni impongano alcuni vincoli:

- Registrazione del dato immediata: il dato deve essere inserito durante (subito dopo) la gestione. La data di Registrazione viene assegnata dal sistema e non è modificabile.
- Autorizzazione. La registrazione prevede sempre una gerarchia di Autorizzazioni (sostitutive delle Firme che si apponevano su cartaceo), seguendo un orkflow prefissato e personalizzabile (numero dei Livelli e quali figure);

Le registrazioni riportano le informazioni puntuali relative all’Utente (UserID) che ha effettuato la registrazione, Data / Ora, e sempre relazionate a informazioni relative al Viaggio, Tratta, Stato e Posizione.

Come precedentemente già riportato, l’inserimento nel Sistema possiede alcune caratteristiche tecniche fondamentali per assicurare la fedeltà e immodificabilità del dato:

- Il dato non è modificabile dopo che la singola registrazione è stata Confermata.
- E’ possibile effettuare una rettifica di informazione Confermata: in tal caso il sistema prevede la “cancellazione logica” della registrazione ed il reinserimento della stessa. Visivamente il dato cancellato viene comunque visualizzato, contrassegnato come cancellato (riproducente la funzionalità manuale di riga per cancellazione e riscrittura).
- Le informazioni della registrazione e degli allegati sono garantite da modifica esterna e contraffazione: i dati e gli allegati sono identificati da chiavi di “hash” e firmati digitalmente dal sistema con chiave crittografica.

La ‘scrittura’ è pertanto un’operazione di inserimento dati e/o consolidamento di informazioni inserite in momenti diversi.
# 7 STRUTTURE DEI DATI GESTITI (ESEMPI)

Le informazioni memorizzate dal sistema nelle varie maschere relative al Viaggio:

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Il codice della nave utilizzato all'interno della compagnia.

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## 7.3 Tratta

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## 7.4 Tank

Gestione del contenuto delle tanks

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### Dati relativi alle registrazioni

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IDVOYAGE | Codice viaggio | C | 10 | 0 | 0
IDLEG | Codice tratta | N | 6 | 0 | 0
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Facoltativo
CDSTATEDET | Assigned State Detail Code | C | 10 | 0 | 0
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7.14 Registro dei Campioni del FO

Secondo quanto previsto da MARPOL Annex VI, a ogni operazione di bunkeraggio vengono raccolti i campioni di carburante che vengono conservati a bordo fino all’esaurimento scorte e per almeno 12 mesi. I campione devono essere accompagnati dalla Bunker Delivery Note che deve essere conservata per almeno 3 anni.

La gestione del Registro dei Campioni tiene in conto delle seguenti attività:

- Registrazione nuovi campioni e BDN
- Consegna campioni ad AP
- Eliminazione campioni e BDN

7.15 Gestione Rifiuti

La gestione dei rifiuti consente la registrazione di due eventi:

- Lo scarico dei rifiuti ordinari
- Lo scarico di rifiuti speciali

Il sistema prevede, inoltre, la gestione delle anagrafiche di trasportatori, smaltitori e delle codifiche (codice rifiuto, stato fisico, classi di pericolosità). 

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**Info-SHIP: ELB**

01 luglio 2012

Pag. 37/41
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<td>Itinerario - data</td>
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ELB Data Collector System Architecture

The Data Collector is a system capable to gather data from automation systems, both systems already installed or new in-field sensors. The Data Collector is capable to manage different communication standard to interface the external sources:

- Serial connection: RS 232 for short cables, RS 422 or RS 485 for connections far up to 100 meters;
- Communication protocols: NMEA 0183 (the standard for the Navigation systems), proprietary simil-NMEA, MODBUS;
- Analogic interface: for those in-field sensors not interfaced to Automation or Navigation systems which outputs are analogic signals in current (e.g. 4 / 20 mA), voltage (e.g. 0 / 5 V or -5 / 5 V) or impulse, a dedicated interface could be set up.

The measures from different sources can be interfaced with their own speed and the Data Collector is capable to standardize them to have an uniform view of the controlled system.

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Automation System</td>
<td>Data related to all the operations monitored by Ship’s Automation Systems</td>
</tr>
<tr>
<td>Navigation System</td>
<td>Data relating to the Ship’s operative conditions (e.g. route and speed...)</td>
</tr>
<tr>
<td>Serial Cable</td>
<td>RS232 or 422 or 485</td>
</tr>
<tr>
<td>Converter</td>
<td>Converts the signal and allows to connect the Data Collector to the Automation and Navigation Systems</td>
</tr>
<tr>
<td>Other Sensors</td>
<td>Could be the inclinometers or other in-field sensors installed onboard</td>
</tr>
<tr>
<td>Analogic</td>
<td>e.g 4-20 mA, 0-5 V...</td>
</tr>
<tr>
<td>A/D Converter</td>
<td>Converts analogic signals to the DC: sampling frequency up to 12 hz</td>
</tr>
<tr>
<td>LAN</td>
<td>Ship’s intranet network</td>
</tr>
<tr>
<td>Operational Dashboard</td>
<td>Useful system for showing data to the crew with and receive manual inputs</td>
</tr>
<tr>
<td>Ashore Server</td>
<td>Receive Ship’s data and store them in a database</td>
</tr>
</tbody>
</table>

This project is co-funded by the European Commission
The Data Collector interfaces the navigation and automation systems through Serial-to-LAN converters and is also able to gather measures from single sensors through Analogic-to-Digital converters: any available measure on those systems could be collected, processed and stored. Those data are directly sent through ship network to the Data Collector installed on board, so few new cabling is required.

The system is built with a parametric architecture that allows a measure-tailored processing to increase its significance through operations and filters. An aggressive environment, as the ship is, can lead a properly working sensor to temporary errors (from a spike of a second to an error that lasts a few minutes during a transient). To avoid this unwanted behavior to affect the later analysis, the many values collected on a defined time basis of a single measure or a defined subset of all the measures can be processed and validated, becoming an only value of performance. The Performance is the result of the processing of many values of a Measure collected for a defined time basis by one or more of the following:

- average;
- standard deviation;
- maximum or minimum value;
- median;
- high or low-pass filters.

It is clear that one processed Measure could generate more Performances (e.g. on a 5 minutes basis all the values of the ship's speed collected one each second could generate the following performances: average speed, minimum speed, maximum speed and the standard deviation).

The system is fully configurable both in the frequency sampling of the measures and in format and frequency of outputs: e.g. the RHS could be read daily, the tanks soundings hourly and the main engine power every few seconds; the output could be generated in almost real time for monitoring purposes or daily or monthly, depending on the purposes of the system.
The Data Collector is able to calculate first level performances, not available in the systems on board, combining collected measures or performances with standard parameters. Following there are some simple examples of existing calculations:

1. from the measured power of the Diesel generator or shaft generator obtain its status → the only measure available on the automation system is the Diesel generator power, it has been defined a threshold for the measure above which the equipment is considered running and a new performance changes from OFF to ON. This information is used in the voyage performance analysis to show the average number of Diesel generators running in port and at sea in different legs.

2. from main engine power obtain its consumption, considering the type of fuel in use → the measure available on the automation system is the shaft power and, from a manual input of the responsible Officer on the system, the type of fuel in use and its technical specifications are known. The shaft power, through efficiency coefficient for shaftline and gearbox, is reduced to the engine and it is multiplied by a defined value of Specific Fuel Oil Consumption (or SFOC) given by Company Technical Department, eventually corrected by the calorific value of the fuel obtaining the value of the fuel flow that the engine should require if in perfect conditions of maintenance. If the volume flow is required the value obtained could be divided by the fuel density, already known. This information is used for check the actual fuel consumption with the ideal ones and provide alerts when the two values are diverging.

The user on board may check the data flow and to receive useful information and tips from the system with a user-friendly interface of the Operational Dashboards, accessible from any computer connected with ship’s network. The scope of the Operational Dashboards are:

- to show to the user on board the measures available to the Data Collector and the performances calculated;
Activity 3.2

- to alert in case of malfunctioning or other issues defined by the Technical Department (e.g. the speed is too far from the required to meet the ETA requirements...) or given by the additional InfoSHIP EGO modules (e.g. the actual trim is too far from the optimum);
- to interact with the system providing the information not achievable from the ship’s systems through the manual inputs.

The status of the monitored systems is displayed by a “traffic light indicator” in the Operational Dashboards that, if a problem is detected (e.g. non-optimal trim resulting in an increase of propulsive power) could raise attention and suggest the solution.

The same system of the Operational Dashboards is available in the ashore version for the Technical Superintendent of the ship in the offices, if the ship has the minimum requirements for the Internet connection. The most relevant different between the on board and ashore version is that the latter can manage multiple ships, providing their main data on a map and allowing direct connection on board.

The ship – shore transmission could be arranged both using company procedure already in place or creating and managing a new transmission.

The Data Collector software described in the previous paragraphs can be installed on a virtual server if the ship is fitted with the proper hardware or can be provided in an industrial PC to be installed on board, with all the other hardware and converters.

The wind state and sea state could be acquired through a web service that send to the ship weather updates about the area around her position, without any human intervention.

With a database of the ports served by the Company, it is possible to automatically open the voyage at departure and close the voyage at arrival, for a better data aggregation and further analysis.

Within AnNa Project, it has been studied a possible communication interface between Data Collector and the ELB (Electronic Log Book) systems. A subset of the Data Collector handled information is indeed the same required in ELB. The communication between these systems could help the manual entry operations for fulfilling the ELB Forms reducing the Ship Officer’s effort.
ELB System Architecture

Electronic Log Book (ELB) is a software system designed for a paperless management of all the data related to the exercise of the ship that is compulsory to record on board in a structured format. The should have a parametric architecture that will allow the data entry from both manual input, by the embarked crew, or automatic acquisition, from ship’s automation, navigation and other systems, if suitable. The philosophy of the system is to simplify the filling and the management of all the data, avoiding the multiple entries of the same information: the data is submitted once to the system that distributes it where required, for every process that takes place on board.

One of the benefits deriving from the use of the system will avoid the waste of time deriving from fulfilling all the reporting activities on paper and to reduce the possibility of mistake that the complex and alienating process could lead. Another important benefit could be the possibility to track the registrations in the system, having the certainty that any process is properly described.

On board, the officer in charge of the single procedure has the possibility to check the information in the system, eventually editing, and to validate them with his user’s credentials.

| Manual Input | The ship’s crew does the manual input in the system to register all the information of the procedure performed |
| Ship LAN     | The ship’s intranet |
| Data Collector | A module connected to ship’s systems gathering data in automatic |
| Validation on board | The officer in charge of the procedure analyzes the information and validates it |
| ELB          | The system has redundant hardware and database |
| Ashore Server | A server ashore (e.g. hosted in the Company offices or in IB offices) where the data arrives from the ship and where is available for further Company analysis |
Activity 3.2

**SOSW**
Ship Owner Single Window that distributes the needed data to other stakeholders both public and private (e.g. immigration offices, Company Agent ashore, services provider...)

The core of the software is the management of Voyage and Fuel data that structures the voyage as a series of States (Sailing, Port and Maneuver) and Phases (e.g. Loading, Unloading, Strait crossing, ECO Sailing, ...), according to the operative conditions defined by the Company. For each State and Phase is possible to aggregate data and information to calculate consumptions and benchmarks.

The system allows the management of data fully consistent with the information assets required by regulations but also allows the management of specific information required by the Company for internal purposes. For the latter case, it is also allowed to configure Company internal forms in the software (e.g. Pdf, Web Form, etc...) to safeguard the formal content of existing SMS.

Every procedure carried out on board could be associated to a specific workflow with pre-defined constraints (e.g. deadline of registration, hierarchy of permissions and signatures), together with the tracing of specific information about the user responsible for the registration (username, date and time) and the journey (ship, leg, state and position). In fact, the system is designed to fully ensure the reliability of the data and the security and the transparency of transactions.

The software is made of many modules, as shown in detail:

- **Ship Reporting & Inspection**
  This module allows the management of Electronic Logbooks such as the Nautical Journal, the Radio Log, the forms required by MARPOL Annexes (Oil Record, Garbage, Hazardous material...), etc...
  All the reporting implications relating to regulations (such as SMS, ISPS,...) could be included.

- **Ship Formalities**
  Manages the IMO FAL Form from 1 to 7 and other SHIP Formalities (Maritime Health Declaration, Waste Disposal and Notification for EMSA, Security Report, ...), producing outputs in UN/EDIFACT format, in accordance with the IMO FAL Committee 37/2011.
  ELB is completely Paperless, as per EU Directive 65/2010.

- **Ship-owner Single Window**
  Through the Single Window, all the needed information from the SR and SF modules are automatically re-routed to various Private & Public Stakeholders recipients, such as the Port Single Window or National Single Window, the CSW Classification Single Window or to other bodies.

The system on board is fault tolerant: the hardware where it is installed has to be redundant and the database is synchronized with the Headquarter installation and the ship – shore transmission could be arranged both using company procedure already in place or creating and managing a new transmission.
DRAFT REPORT OF THE FACILITATION COMMITTEE
ON ITS FORTIETH SESSION

1 GENERAL

1.1 The Facilitation Committee held its fortieth session from 4 to 8 April 2016 under the Chairmanship of Mr. Yury Melenas (Russian Federation), who was unanimously elected as Chairman for 2016 at the opening of the session. The Vice-Chairman, Mrs. Marina Angsell (Sweden), who was unanimously elected as Vice-Chairman for 2016 at the opening of the session, was also present.

1.2 The session was attended by delegations from Member States, an Associate Member, by representatives from the United Nations Programmes, specialized agencies, by observers from intergovernmental organizations; and by observers from non-governmental organizations in consultative status as listed in document FAL 40/INF.1.

Secretary-General's opening address

1.3 The Secretary-General commenced his opening address by expressing his sympathy for the victims of the terrorist attacks in Brussels on 22 March 2016, noting that a highly appreciated and respected member of the IMO Family, Mr. Johan Van Steen, a distinguished delegate from Belgium to the FAL Committee and other IMO meetings, had been killed. The Secretary-General conveyed the Organization's and his own condolences to the delegation of Belgium, the Belgian Directorate of Shipping and to the bereaved families, friends and colleagues of Mr. Van Steen and of the other innocent victims of these terrorist attacks. The Committee observed a period of silence in memory of Mr. Van Steen and other victims.
1.4 The Secretary-General then welcomed participants and in his opening address he raised, among other views, the following key ideas:

.1 that the Committee needed to meet on an annual basis, rather than the current frequency of once every 18 months, because it would enable the Committee to develop and achieve momentum in its important work;

.2 to invite the Committee to revisit the concept of the ship/port interface and encouraged Member States to present proposals to FAL 41 to include a new agenda item in the HLAP of the Organization to put it back on the agenda for FAL 41 and beyond, with a focus on the relationship between ships and ports; and

.3 to make the Committee even more inclusive and to encourage active participation from all stakeholders within Government and industry.

1.5 The full text of his opening speech can be downloaded from the IMO website at the following link: http://www.imo.org/MediaCentre/SecretaryGeneral/Secretary-GeneralsSpeechesToMeetings

Chairman's remarks

1.6 In responding, the Chairman thanked the Secretary-General for his words of guidance and encouragement and assured the Secretary-General that his advice and requests would be given every consideration in the deliberations of the Committee and its working groups.

1.7 The Delegation of Belgium thanked the Secretary-General and the Committee for the support expressed for the victims and, in particular, Mr. Van Steen, and undertook to pass on the message of support to family and friends of Mr. Van Steen and to the Belgian authorities.

Adoption of the agenda

1.8 Following the decision of A 29 to include a new output in the High Level Action Plan (HLAP) for 2016-2017, on "IMO's contribution to addressing Unsafe Mixed Migration by Sea", with MSC, FAL and LEG as parent organs, the Committee agreed to include "Unsafe Mixed Migration by Sea" as a new agenda item 18 on the provisional agenda.
1.9 The Committee agreed that a number of documents (FAL 40/6/1, FAL 40/6/1/Corr.1, FAL 40/6/3, FAL 40/6/4 and FAL 40/6/5) that had been submitted under agenda item 6 on Requirements for access to, or electronic versions of, certificates and documents, including record books required to be carried on ships, actually related to electronic FAL Forms and the FAL Compendium and would therefore be more properly considered under agenda item 5 on Application of single-window concept.

1.10 The Committee adopted the provisional agenda, set out in document FAL 40/1, as amended, as the agenda for the session, and agreed further to be guided by the annotated agenda (FAL 40/1/1) and the provisional timetable during the session.

Credentials

1.11 The Committee was informed that the credentials of delegations attending the session were in due and proper form.

1.12 The Committee noted that the Government of Turkey had completed its domestic procedures for the ratification of the FAL Convention and the instruments would be deposited with IMO within the next few weeks. Five other IMO Conventions were at the final stages of ratification by the Turkish Government.

2 DECISIONS OF OTHER IMO BODIES

2.1 The Committee noted the information provided in documents FAL 40/2, FAL 40/2/1 and FAL 40/2/2 (Secretariat), in relation to the outcomes of the work of LEG 102, MEPC 67, MEPC 68, MSC 94, MSC 95, TC 65, C 113, C 114, III 2, CCC 2 and E&T 24, C/ES.28 and C 115, on matters of relevance to the work of the Committee and decided to consider the various issues which warranted action by the Committee under the relevant agenda items.

2.2 The Committee noted the information provided verbally by the Secretariat on the outcome of NCSR 3, under agenda item 7.

3 CONSIDERATION AND ADOPTION OF PROPOSED AMENDMENTS TO THE CONVENTION

3.1 The Committee recalled that FAL 35 had agreed to initiate a comprehensive revision of the Convention on Facilitation of International Maritime Traffic, 1965 (FAL Convention) with a view to ensuring that it adequately addressed the present and emerging needs of the
shipping industry as well as for modernization of its provisions, taking into account for example, and inter alia, developments in the field of the transmission of information and data by electronic means and the Single Window concept.

3.2 The Committee recalled further that FAL 36, FAL 37, FAL 38 and FAL 39 had worked on the review of the FAL Convention, and an intersessional correspondence group had been working since FAL 36.

3.3 The Committee recalled that FAL 39 had approved the draft amendments to the annex to the FAL Convention, for circulation in accordance with the provisions of article VII(2)(a) of the Convention, as set out in the annex of FAL 40/3, with a view to adoption at its present session (FAL 39/16, paragraph 4.43).

3.4 The Committee recalled that FAL 39 had agreed to keep within square brackets Standard 2.8.1 and FAL Form 7, pending the advice by CCC 2, for proper consideration at FAL 40, the only pending issue coming from the comprehensive review process.

3.5 The Committee further recalled that the proposed amendments were circulated to all IMO Member States and Contracting Governments to the FAL Convention under cover of Circular Letter No.3554, dated 24 June 2015.

3.6 The Committee noted that no documents had been submitted commenting on the amendments to the annex of the FAL Convention approved by FAL 39.

4 COMPREHENSIVE REVIEW OF THE FAL CONVENTION

4.1 Regarding the pending issue for the completion of the comprehensive review of the FAL Convention related to the Dangerous Goods Manifest (Standard 2.8.1 and FAL Form 7), the Committee noted that E&T 23 had considered two proposals presented for the amendment of FAL Form 7, one from IVODGA (CCC 1/6/7) and the other from Japan (E&T 23/5), and had prepared the necessary amendments to FAL Form 7 in compliance with the requirements of the IMDG Code.

4.2 The Committee noted that E&T 23 had agreed to delete the information related to the master, since the master's name and signature are not required by the IMDG Code or SOLAS, and Standard 2.8.1 of the FAL Convention should be amended accordingly.
4.3 The Committee noted that E&T 23 had agreed that it would be helpful for users to have additional guidance specifying the type and format of information required in each of the columns on FAL Forms (e.g. stowage position as indicated in the stowage plan), and had invited FAL 40 to consider including such guidance/information within the FAL Form itself (i.e. footnotes, rear page of the FAL Form) or within the Explanatory Manual to the FAL Convention.

4.4 The Committee noted that CCC 2, on receiving the report of E&T 23, had agreed the draft amendments to FAL Form 7 and had instructed E&T 24 to develop additional guidance on the type and format of information required in the boxes of the FAL Form 7, for submission to FAL 40 directly for its consideration and inclusion, if appropriate, in the ongoing revision of the FAL Convention.

4.5 The Committee noted that the draft additional guidance prepared by E&T 24 for FAL Form 7, that refers also to the SOLAS Chapter VII requirements for solid bulk cargo, did not include supplementary requirements (if any) for solid bulk cargoes.

**Standard 2.8.1 and FAL Form 7**

4.6 The Committee considered the revised Standard 2.8.1 prepared by the Secretariat based on the decisions adopted by CCC 2, and the revised FAL Form 7 agreed by CCC 2, as set out in annexes 2 and 1 respectively of document FAL 40/4, and agreed to reinstate the word “freight” before “container” in Standard 2.8.1 and in FAL Form 7. The Committee agreed on the other amendments introduced in Standard 2.8.1 and FAL Form 7.

**Additional information related to FAL Form 7**

4.7 The Committee considered the Additional information related for FAL Form 7 agreed by E&T 24 as annex 3 to document FAL 40/4, and agreed that the most appropriate place to include this information was in the Explanatory Manual to the FAL Convention.

**Establishment of the drafting group**

4.8 The Committee established the Drafting Group on Amendments to the Annex of the FAL Convention under the chairmanship of Mr. Fabien Joret (France), and instructed it, taking into account the relevant discussions and decisions in plenary, to prepare the final text of the draft Amendments to the annex of the FAL Convention, together with the associated draft FAL resolution.
Report of the drafting group

4.9 Having received the report of the drafting group (FAL 40/WP.5), [without further debate], the Committee, on 8 April 2016, [unanimously][by at least two-thirds of the Contracting Governments present and voting] adopted, by resolution FAL.12(40), and in accordance with article VII(2)(a), amendments to the annex to the Convention. The text of resolution FAL.12(40), with the text of the adopted amendments annexed thereto is set out in annex 1.

Date of entry into force of the amendments

4.10 The Committee also unanimously decided that the said amendments should enter into force, in accordance with article VII(2)(b) on 1 January 2018, unless, prior to 1 October 2017, at least one-third of the Contracting Governments have notified the Secretary-General in writing that they do not accept the amendments.

Instructions to the Secretariat

4.11 The Committee instructed the Secretariat, when preparing the authentic and certified texts of the amendments in the official languages and in the official translations, to effect any corrections that may be identified, and to bring to the attention of the Committee any errors or omissions which require action by the Contracting Governments. The Committee also authorized the Secretariat to improve the presentation and layout of the IMO FAL Forms.

4.12 The Chairman, in congratulating the Committee for adopting the amendments, emphasized the valuable contribution which the amendments would make to the Contracting Governments' efforts to facilitate international maritime traffic.

5 APPLICATION OF SINGLE-WINDOW CONCEPT

5.1 The Committee recalled that FAL 39 had noted that the majority of Member States had some kind of single window in place related to cargo, but only a few had any single window for maritime transport. To make more efficient use of the limited resources available under ITCP, the Secretariat had planned to design a prototype of a maritime single window (MSW).

5.2 The Committee recalled that FAL 39 had noted that the initiative was an essential part of the review of the annex to the FAL Convention, as it would support the implementation of systems for the electronic exchange of information. In this context, the Secretariat had presented the project to be implemented in three phases, as follows:
First phase: gathering information on the current situation of the clearance of ships, cargo and passengers at ports from some developing countries;

Second phase: gathering further information from the authorities involved in the clearance of ships; and

Third phase: on the basis of the information collected, design, develop and implement a prototype MSW in one of the selected countries.

The Committee recalled that following consideration and noting the support from various delegations to the proposal, FAL 39 had requested the Secretariat to report on the progress of the project to FAL 40.

The Committee noted that the two first phases of the project had already been completed and the results presented to TC 65, for its consideration and inclusion in the ITCP of the Organization for the 2016-2017 biennium. After consideration, TC 65 had decided, inter alia, to:

1. include the project on the development of an MSW prototype in the 2016-2017 ITCP;

2. request the Secretariat to provide to TC 66 a clear project outline on the development of the single window concept together with the related budget estimates for the initial and annually recurring costs; and

3. urge Member States and shipping industry stakeholders to make voluntary contributions, either financial or in-kind, for the progression of the proposed project.

The Committee noted that a number of delegations had already offered their support, both at TC 65 and C 114, to contribute and assist with the project.

The Committee considered document FAL 40/5 (Secretariat) that provided information on the IMO project on the development of a prototype maritime single window. Following the decisions made by TC 65 and the offers made at C 114, the Secretariat had established a series of consultation meetings with other international organizations (UNCTAD,
WCO and IPCSA), and with Chile, Norway, the Republic of Korea and the European Commission, the donors that had generously offered their assistance. These meetings were held with the intention of establishing the scope and management of the assistance offered by the donors.

5.7 After these meetings, the Secretariat was aware that most, if not all, the systems presented by the donors could already achieve the goals of the project. Some of the systems were more complex than others due to specific port/user requirements and had been in operation for many years. However, one of the main differences that was observed was the lack of harmonization of formats for data submission. There were, basically, three different preferences: EDIFACT (noting that there are different versions in place), XML and Excel. Harmonization and standardization of data formats should also be considered as the ultimate aim of the project.

5.8 Bearing in mind the information collected during the above consultations, the Secretariat identified three alternatives to be considered by the FAL Committee:

1. the first alternative was to develop a prototype MSW re-using one of the systems offered by the donors and/or parts of different systems;

2. the second alternative was to develop a completely new prototype taking into account the experience of others in the development and implementation of MSW systems; and

3. the third and last alternative was not develop a prototype, but to recommend the use of one or various existing systems, for instance, from among those offered so far, and any other that may be offered in the future.

5.9 The Secretariat assesses that if alternatives 1 or 2 were to be available for use prior to the date envisaged in the aforesaid amendments so that it would need to take into account the time required for development, testing and implementation, including:

1. defining the scope of the project (e.g. development, implementation, continuous maintenance and training, etc.) and of the MSW prototype system, including the system's functional requirements (e.g. reporting
requirements, data formats, system’s compatibility, language interface, compatibility with different data bases and operative systems, etc.); and

identifying resources needed and opportunities, including any budgetary implications for the Organization.

5.10 Alternative 3 would allow immediate implementation of existing MSW system(s) and the use of available resources to assist developing countries willing to implement MSW systems with feasibility studies, testing, implementation, training, etc.

5.11 The delegation of the UNECE underlined that though there may be various versions of official EDIFACT messages, all of these are backwards compatible. They further underlined that there is not one single XML standard, and these XML standards are not necessarily compatible with each other. The delegation of UNECE recalled UN Recommendations 33 and 34 on "single window implementation" and on "data simplification and standardization", and from their experience, the objective of single window implementation should not be to have a single window per se, but rather to facilitate the processes to be implemented by the economic operator.

5.12 The majority of the Committee supported the development of a MSW by the Organization (alternative 1), with a preference for re-using one of the systems offered by the donors.

5.13 Some delegations expressed their preference for alternative 3, as this would allow Member States to implement the system at an earlier stage, before the MSW is completed, and this approach would allow them to select the system more appropriate to their needs and characteristics.

5.14 The Committee also recognized the potential benefits for combining both alternatives, i.e. the Organization would continue working on the development of the MSW prototype, while Member States could implement their systems based on one of the systems offered.

5.15 The Committee noted document FAL 40/INF.6 (China, Japan and the Republic of Korea) which provided information on the Northeast Asia Logistics Information Service Network (NEAL-NET) that supports exchange of government-related port logistics information systems between China, Japan and the Republic of Korea, and which was envisaged to be
expanded to other IMO Member States with a view to further collaboration in the field of port logistics information sharing.

5.16 In considering document FAL 40/INF.8 (Republic of Korea), the Committee noted the information on the single window system in the Republic of Korea intended to foster the integration with other systems, thereby supporting the development of future integrated Single Window environment. The document explained that this system was based on an open platform and issues regarding the development of standard service platform, flexible and expandable solutions were addressed. The Republic of Korea expressed its intention to provide further information at the next session of the Committee.

5.17 The Committee noted the information provided in document FAL 40/INF.9 (Honduras) related to the new single window system in the Republic of Honduras.

**Maintenance of the IMO Compendium on facilitation and electronic business**

5.18 The Committee recalled that FAL 38 had approved FAL.5/Circ.40 on “Revised IMO Compendium on Facilitation and Electronic Business”.

5.19 The Committee recalled that FAL 39 had noted the discussions between the Secretariats of IMO and WCO on the possibility of WCO technical bodies maintaining the compendium from a technical viewpoint. Building on the already good cooperation between the two organizations, WCO had agreed that the technical maintenance of the compendium would be carried out by its Data Model Project Team (DMPT) and the Information Management Sub-Committee (IMSC).

5.20 The Committee recalled that under the proposed mechanism of cooperation, WCO would work purely on the technical maintenance of the standard codes of the FAL forms and the FAL Committee would remain the competent body for policy-making, such as the development of new FAL forms or amendments to existing ones. According to that procedure, any technical improvements developed by the IMSC would be passed to the FAL Committee for its endorsement, dissemination by FAL circular and approval for inclusion in revised editions of the compendium. The revised compendium would subsequently be distributed as a joint IMO-WCO publication.
5.21 The Committee recalled that FAL 39, recognizing that the participation in the DMPT was open to all interested parties, had agreed to the proposal, and therefore the future technical maintenance of the compendium would be made by WCO, with the FAL Committee remaining the competent body for policy-making, under the terms of the above-mentioned mechanism of cooperation between the two organizations.

5.22 The Committee recalled that FAL 39 had agreed to include in the compendium the WCO Data Model references relating to FAL forms.

5.23 As discussed in paragraph 1.9 above, the Committee considered the following documents under this agenda item:

1. documents FAL 40/6/1 and FAL 40/6/1/Corr.1 (WCO) that reported on the progress of the review of the Compendium on Facilitation and Electronic Business by the WCO, and a new format for the Compendium was presented to the Committee for its consideration;

2. document FAL 40/6/3 (ISO) commenting on document FAL 40/6/1. ISO supported the semantic information model approach suggested by WCO and suggested that one common information model is defined for all FAL forms. ISO also suggested including mappings to ISO 28005-2 in this model. Member States were invited to participate in the work of revision of the ISO 28005-2 standard, to be held in 2016/2017;

3. document FAL 40/6/4 (UNECE) commenting on document FAL 40/6/1. UNECE requested the participation of relevant stakeholders, other than customs, in the work for the maintenance of the IMO Compendium. It further requested the inclusion of the UN/CEFACT Core Component Library (CCL) as the common basis for cross industry information exchange, and offered to work jointly with WCO and IMO to achieve this desired goal; and

4. document FAL 40/6/5 (Japan) proposed some amendments to the current version of the FAL Compendium (FAL.5/Circ.40).
All other documents

5.24 The Committee noted document FAL 40/INF.7 (Republic of Korea), which provided information on the measures for automation and standardization of maritime transport and examined the possibility of integration with port logistics information system. The progress of development and standardization of maritime communication technology was also discussed.

5.25 After further general discussion, the Committee decided to forward all documents to the working group on electronic means for the clearance of ships.

Establishment of the working group

5.26 Having considered the above matters, the Committee established the working group on electronic means for the clearance of ships, under the chairmanship of Mr. Butturini (USA), and instructed it, taking into account documents FAL 40/5, FAL 40/6/1, FAL 40/6/1/Corr.1, FAL 40/6/3, FAL 40/6/4 and FAL 40/6/5 and the comments made and decisions taken in plenary, to:

.1 consider the issue of harmonization and standardization of data reporting formats between different existing maritime single windows platforms and advise, as appropriate;

.2 consider the alternatives presented in paragraphs 9.1 and 9.3 of document FAL 40/5; recommend the way forward for the development of the maritime single window prototype; and define the scope of the project and of the prototype system, the high-level system’s functional requirements, including the use of existing systems and the identification of resources needed and opportunities;

.3 consider proposals on documents FAL 40/6/1 and FAL 40/6/1/Corr.1, taking into account comments on documents FAL 40/6/3, FAL 40/6/4 and FAL 40/6/5, and advise on the re-formatting of FAL.5/Circ.40, IMO Compendium on Facilitation and Electronic Business as appropriate;
Report of the working group

[5.27] Having received and considered the report of the working group (FAL 40/WP.[3]), the Committee approved it in general and, in particular, took action as summarized in the ensuing paragraphs.

5.28 The Committee noted the following views expressed during the deliberations of the group related to the alternatives presented in paragraph 9 of document FAL 40/5:

   .1 the majority of delegations were in favour of progressing the alternative described in paragraph 9.1 (i.e. to develop a prototype based on one of the existing systems offered by the donors), as it could also serve as a way of leading the harmonization and standardization of reporting requirements;

   .2 some delegations indicated their preference to proceed with the alternative described in paragraph 9.3, making use of existing systems and focusing efforts on the data reporting harmonization and standardization of MSWs already implemented; however, it was also indicated that this option would not be favourable for some of the donors as it could impact the level and the amount of assistance to be provided; and

   .3 other delegations were also of the view that, although it was not part of the terms of reference of the group, the alternative presented in paragraph 9.2 (i.e. develop a completely new prototype) could also be reconsidered after agreeing the scope of the system.

5.29 The Committee noted that the alternatives presented in paragraphs 9.1 and 9.3 of document FAL 40/5 did not necessary exclude each other. Moreover, MSW systems offered by some of the donors were currently available to Member States requiring assistance, on a bilateral basis.

5.30 With regard to the development of the prototype MSW, the Committee expressed the following views, that:

   .1 there were several EDIFACT versions, but all of them were backward compatible, and that there could be different versions of XML, not necessarily being fully compatible with each other;
.2 a scalable modular development of a MSW prototype would be the most appropriate solution as it could be easily integrated into wider SW concepts and promote interoperability;

.3 there could be many different implementations of MSW at national level depending on the structure and responsibilities of different authorities involved in the process of clearance of ships; and

.4 before selecting a base system for the development of a MSW prototype, it would be necessary to review users’ expectations and agree on key principles.

5.31 The Committee noted that user needs were important to define the scope of the MSW prototype and, in this respect:

.1 invited Member States requiring assistance for the implementation of MSWs to contact the Secretariat (falsec@imo.org) as soon as possible in order to discuss their specific needs and explore possible solutions;

.2 invited Member States and organizations willing to assist with the implementation of MSWs or the development of a prototype MSW to contact the Secretariat or submit information to FAL 41; and

.3 requested the Secretariat to report back to FAL 41 with an analysis of the needs, a summary of commonalities and any additional information;

Harmonization and standardization of data reporting formats

5.32 The Committee noted the view of the group that there were both technical and policy issues that needed to be addressed as part of the harmonization and standardization of data reporting formats between different existing MSW platforms to, among other things, reduce the administrative burden on board ships.

5.33 The Committee also noted that many of the technical issues related to harmonization and standardization would be addressed as part of the revision of the IMO Compendium, the cooperation work to be conducted between different stakeholders, in particular, UNECE, WCO
and ISO, the implementation of MSWs, and the continuous work of the Committee in promoting interoperability and facilitation aspects.

5.34 The Committee further noted that harmonization and standardization issues are often driven by unavoidable differences in national legislation, organization, and data needs among the various receivers of information, including individual ports and port States.

5.35 In this context, the Committee invited Administrations to promote and encourage harmonization among their individual ports.

**Maintenance of the IMO Compendium on facilitation and electronic business**

5.36 The Committee agreed that the IMO Compendium should not be reformatted, at this stage, and that the definitions for data in FAL Forms contained in annex 1 to the IMO Compendium should be reviewed or clarified to address possible misinterpretations by relevant users of the Compendium and other stakeholders, such as ISO, UNECE and WCO, and to harmonize as much as possible with the underlying data models.

5.37 The Committee also agreed that the existing FAL Forms and ship security-related information should be reviewed for possible mistakes and inconsistencies, as indicated in documents FAL 40/6/1 and FAL 40/6/1/Corr.1 and FAL 40/6/5.

5.38 In view of the above, the Committee established a Correspondence Group, under the coordination of the United States¹, on the Review of the IMO Compendium on Facilitation and Electronic Business, with the following terms of reference:

1. review the definitions for data in FAL forms contained in annex 1 to the IMO Compendium to clarify their meaning and consistency with the WCO, UNECE and ISO and data models to promote harmonization and interoperability;

¹ Coordinator:
Mr. Roger Butturini
United States Coast Guard
United States Department of Homeland Security
Email: roger.k.butturini@uscg.mil
.2 review the FAL forms\(^2\) and ship's security-related information for possible mistakes and inconsistencies, taking into account documents FAL 40/6/1, FAL 40/6/1/Corr.1 and FAL 40/6/5;

.3 reconsider the need and feasibility of revising the layout of the technical data in the Compendium to accommodate the different data model maintenance tools used by the UNECE, WCO, ISO and similar stakeholders; and

.4 submit a report to FAL 41.

5.39 The Committee noted that further work on data mapping would be conducted in parallel by UNECE, WCO, ISO and private sector stakeholders (such as the Shipping Message Development Group (SMDG) and the PROTECT group), providing relevant inputs to the work of the Correspondence Group].

6 REQUIREMENTS FOR ACCESS TO, OR ELECTRONIC VERSIONS OF, CERTIFICATES AND DOCUMENTS, INCLUDING RECORD BOOKS REQUIRED TO BE CARRIED ON SHIPS

Background

6.1 The Committee recalled that FAL 38 had approved the revised list of certificates and documents required to be carried on board ships as FAL.2/Circ.127, subject to concurrent decision of MSC 92 and MEPC 66. These Committees concurred with the FAL 38 decision, and approved it as FAL.2/Circ.127-MEPC.1/Circ.817-MSC.1/Circ.1462.

6.2 The Committee recalled that FAL 39 had agreed that electronic certificates should be used as equivalent to traditional paper certificates, provided that the certificates and the website used to access them conformed to the guidelines approved by the Organization and that specific verification instructions were available on board the ship.

6.3 The Committee recalled that FAL 39 had also agreed that electronic certificates viewed on a computer should be considered as meeting the requirements to be "on board" and, in that respect, invited MSC and MEPC to consider amending FAL.2/Circ.127-MEPC.1/Circ.817-MSC.1/Circ.1462, on "List of certificates and documents required to be carried on board ships", to reflect that understanding.

\(^2\) Noting that a revision to FAL form 7 may be needed.
6.4 The Committee recalled that FAL 39 had requested the Secretariat to modify the module "Survey and certification" of GISIS to add references to Administrations issuing electronic certificates, including the list of certificates issued electronically by each Administration and any additional information, as considered necessary by the Administration. This information was to be accessible to the general public. The Committee had also urged Administrations issuing electronic certificates to communicate the necessary information to the Organization through the "Survey and certification" module of GISIS, once changes to the module had been implemented.

6.5 The Committee recalled that FAL 39 had approved FAL.5/Circ.39/Rev.1 on Guidelines for the use of electronic certificates, and had invited MSC and MEPC to note the contents of the circular and take any necessary action, as appropriate.

6.6 FAL 39 had considered whether the guidelines should be converted into an Assembly resolution or included in the FAL Compendium, and had agreed that it was premature to decide at this stage. The Committee had agreed that FAL 40 would revisit that proposal on the basis of the experiences of the application of the guidelines.

6.7 The Committee recalled that FAL 39 had agreed to re-establish the Correspondence Group on electronic access to certificates and documents, under the coordination of the United States.

List of certificates and documents required to be carried on board ships

6.8 The Committee noted that MEPC 67 and MSC 94 had instructed III 2 to consider amending FAL.2/Circ.127-MEPC.1/Circ.817-MSC.1/Circ.1462 to reflect the provisions of the Guidelines for the use of electronic certificates (FAL.5/Circ.39/Rev.1) approved by FAL 39, in relation to the agreement that electronic certificates viewed on a computer should be considered as meeting the requirements to be "on board", provided that the certificates and the website used to access them conform to the guidelines approved by the Organization.

6.9 The Committee noted that III 2, having noted that the Global Integrated Shipping Information System (GISIS) module on Survey and Certification had been further developed in order to allow the recording of e-certificate-related information, had agreed that the existing FAL.2/Circ.127-MEPC.1/Circ.817-MSC.1/Circ.1462 was not in conflict with the use of e-certificates and that there was no need to align the above-mentioned circular with FAL.5/Circ.39/Rev.1 at that time. However, a need might arise later, based on the outcome of
the consideration by MEPC 69 of the use of electronic record books under MARPOL and the work of the Correspondence Group on electronic access to certificates and documents, established by FAL 39.

Use of Electronic Record Books

6.10 The Committee noted that MEPC 67 had requested the Secretariat to inform the Correspondence Group on the use of electronic record books under MARPOL, which was due to report to MEPC 68, of the approval of the *Guidelines for the use of electronic certificates* (FAL.5/Circ.39/Rev.1).

6.11 The Committee noted that due to time constraints, MEPC 68 had agreed to defer consideration of the agenda item on the "Use of electronic record books", and the report of the Correspondence Group on the use of electronic record books under MARPOL (MEPC 68/9) to MEPC 69.

Report of the Correspondence Group on electronic access to certificates and documents

6.12 The Committee noted with appreciation the report of the Correspondence Group on electronic access to certificates and documents required to be carried on ships (FAL 40/6), in particular by its coordinator, Mr. Roger K. Butturini (United States).

6.13 In considering the report of the correspondence group, the Committee agreed to refer it to the Working Group on electronic means for the clearance of ships for its consideration.

6.14 The Committee noted document FAL 40/6/2 (ISO) that provided more technical details on the fully digital and signed version of electronic certificates and how this system can be implemented, and if so decided by the Committee, ISO would initiate the development of the necessary technical standards. The Committee agreed not to forward this document to the working group, because it was premature to consider this subject by the group at this stage.

Instructions to the working group

6.15 The Committee instructed the Working Group on electronic means for the clearance of ships, under the chairmanship of Mr. Roger Butturini (United States), taking into account document FAL 40/6 and the relevant discussions and decisions in plenary, to:

.1 finalize the guidelines for use of electronic certificates and advise on the future of the guidelines;
.2 finalize the proposed amendments to resolution A.1052(27), *Procedures for port State control, 2011* aimed at promoting wider acceptance of electronic certificates;

.3 consider whether it is necessary to re-establish the Correspondence Group on electronic access to certificates and documents; if so, advise the Committee as appropriate and prepare draft terms of reference; and

**Consideration of the report of the working group**

[6.16] Having received the relevant part of the working group (FAL 40/WP.3), the Committee took action as indicated in the following paragraphs.

**Guidelines for the use of electronic certificates**

6.17 The Committee endorsed the view of the group that, for the time being, it would be better to keep the guidelines as a FAL circular, and not to convert it to an Assembly resolution or incorporate it into the IMO Compendium, and to continue gathering experience with respect to the implementation of electronic certificates.

6.18 The Committee approved FAL.5/Circ.39/Rev.2, for the use of electronic certificates.

6.19 The Committee agreed that it was not necessary to re-establish the Correspondence Group on Electronic Access to Certificates and Documents and invited Member States implementing electronic certificates to continue to share their experiences by submitting information to FAL 41.

6.20 The Committee noted the proactive work by organizations such as ISO to develop the necessary standards to support development and implementation of fully digital certificates based on data models similar to those used for electronic messages and supported continuation of these types of initiatives.
Procedures for port State control, 2011 aimed at promoting wider acceptance of electronic certificates;

6.21 The Committee approved the draft amendments to resolution A.1052(27) on Procedures for port State control, 2011, and agreed to forward them to the Maritime Safety Committee and the Marine Environment Protection Committee for their consideration and, if appropriate, subsequent submission to the Assembly for adoption.]

7 MEASURES TO PROTECT THE SAFETY OF PERSONS RESCUED AT SEA

Regional arrangement for the Mediterranean region

7.1 The Committee recalled that at COMSAR 14 in March 2010, the Secretary-General had offered his good offices to progress the discussion on measures to protect the safety of persons rescued at sea in the Mediterranean region.

7.2 The Committee recalled that since this decision, one regional meeting had been hosted by Italy on 12 October 2011, and draft terms of reference were approved in principle and a draft Regional MoU was partly revised during that meeting. In order to make significant progress towards finalizing the draft Regional MoU, it had been considered beneficial to hold informal consultations among interested parties to agree on some of the more contentious issues and associated draft texts before organizing the next regional formal meeting. Accordingly, informal consultations of interested parties were held at IMO Headquarters on 21 February 2012, 11 February 2014 and on 7 April 2014, to progress the work on the development of a draft regional agreement.

7.3 The Committee noted that an informal meeting between the Member States involved in previous discussions was held on 13 April 2015, but no significant progress on the regional agreement had been achieved.

Industry guidance on large-scale rescue operations at sea

7.4 The Committee noted that MSC 95 had considered key issues within its competence, including search and rescue and operation of merchant ships in view of the recent development of mass rescue of migrants. MSC 95 had:

.1 placed planned output 5.1.2.2 on the agenda of NCSR 3 from the 2016-2017 biennium agenda; and
7.5 The Committee noted that NCSR 3 had considered document NCSR 3/18 (ICS) that provided information on the second edition of “Large scale rescue operations at sea: Guidance on ensuring the safety and security of seafarers and rescued persons”, and had agreed:

.1 to invite MSC to encourage Member States and observer organizations to promote the availability of the industry Guidance as widely as possible;

.2 that no further action had to be taken by the Sub-Committee with regard to the industry Guidance; and

.3 to thank ICS for the valuable and useful work in this regard, and to note the second edition of the industry Guidance and the comments made in paragraphs 7 to 10 of document NCSR 3/18, and, in particular, that this Guidance should remain a live document for as long as required, promulgated and updated by the industry co-sponsors.

The Sub-Committee had noted the information provided and views expressed by several delegations that:

.1 unsafe mixed migration by sea remained a matter which should stay high on the Organization’s agenda;

.2 the rescue of migrants at sea, in particular, in the Mediterranean was still a major problem and many organizations, including IMRF and FRONTEX were assisting the local rescue services;

.3 ships and crew, called to assist in these rescue operations, should be protected from danger and offered support; and

.4 there was a need for greater effort by coastal States of departure to better manage and ultimately prevent the departure of unsafe craft in undertaking such dangerous voyages from their respective shores.
8 CONSIDERATION AND ANALYSIS OF REPORTS AND INFORMATION ON PERSONS RESCUED AT SEA AND STOWAWAYS

Facilitation module in IMO's Global Integrated Shipping Information System (GISIS)

8.1 The Committee recalled that the details of the module for Facilitation in GISIS were promulgated by Circular Letter No.3281, on 28 June 2012, and Circular Letter No.3476, on 22 July 2014, and that this module allows access to the following information:

.1 reports on stowaway incidents;

.2 information on the contact addresses of the offices of designated national authorities and international organizations for facilitation purposes;

.3 information on E-addresses of governmental authorities for facilitating the exchange of electronic information; and

.4 notifications to IMO pursuant to article VIII of the FAL Convention.

8.2 The Committee encouraged Member States and international organizations to make use of the GISIS modules for uploading data and consulting information.

Consideration and analysis of reports and information on stowaways

8.3 The Committee noted information from the Secretariat that since FAL 39, the Secretariat has issued FAL.2/Circ.129 and FAL.2/Circ.130 which set out the annual statistics for 2014 and 2015, respectively.

8.4 According to these reports, 494 stowaway cases were reported to the Organization in 2008, 314 in 2009, 253 in 2010, 70 in 2011, 36 in 2012, 70 in 2013, 61 in 2014 and 21 in 2015.

8.5 In terms of numbers of stowaways, the cases reported to the Organization involved 2,052 stowaways in 2008; 1,070 in 2009, 721 in 2010, 189 in 2011, 64 in 2012, 203 in 2013, 120 in 2014 and 52 in 2015.
Stowaway cases and stowaways

<table>
<thead>
<tr>
<th>Year</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
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<td>494</td>
<td>314</td>
<td>253</td>
<td>73</td>
<td>90</td>
<td>70</td>
<td>61</td>
<td>21</td>
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<tr>
<td>Stowaways</td>
<td>2,052</td>
<td>1,070</td>
<td>721</td>
<td>193</td>
<td>166</td>
<td>203</td>
<td>120</td>
<td>52</td>
</tr>
</tbody>
</table>

8.6 The Committee noted that the total number of reports received by the Organization until 31 December 2015 was 4,474, which involved 13,984 stowaways.

8.7 The Committee noted the fact that, despite the new facility provided in GISIS, the downward trend of notifications to IMO was pronounced, and the number of reports were very low and therefore the statistics were not very reliable (only 61 stowaway cases and 120 stowaways in 2014 and 21 stowaway cases and 52 stowaways in 2015).

8.8 The Committee recalled resolution A.1074(28), on Notification and circulation through the Global Integrated Shipping Information System (GISIS), and urged Member States and international organizations to provide timely and accurate information on stowaway cases to the IMO making use of the GISIS module.

8.9 The P&I Clubs reminded the Committee that had carried out two previous data collection exercises in respect of stowaways in order to encourage the better implementation of the "Revised guidelines on the prevention of access by stowaways and the allocation of responsibilities to seek the successful resolution of stowaway cases", through closer cooperation of national administrations, port authorities, shipmasters and shipowners in order to facilitate the disembarkation and repatriation of stowaways. The two previous data collection exercises had analysed data in respect of the numbers, total cost, nationalities and ports of embarkation of stowaways for the policy years 2007-2008 (FAL 36/6) and 2011-2012 (FAL 38/6/2). The P&I Clubs informed the Committee that a third data collection exercise had commenced for the policy year 2014-2015 and the results of this exercise would be reported to FAL 41. The P&I Clubs hoped that having three data sets at three-yearly intervals would clarify whether there were any trends in the data and, in particular, whether there was any indication that the regional seminars that had been held (see paragraph 12.2.3) had had an impact on the issue.
8.10 The Committee noted the information provided by the Secretariat related to some improvements introduced in the interface of the stowaway module in the GISIS system, to facilitate the upload of the information as well as for the production of reports on stowaways. The details of the improved module would be promulgated by means of a circular letter soon after FAL 40.

8.11 The Committee recalled that FAL 27 had instructed the Secretariat to issue a statistical analysis of the report received by the Organization for each calendar year on an annual basis, and a quarterly list of incidents, and taking into account the new facility of GISIS, the Committee agreed to discontinue the issue of quarterly list of incidents of stowaways and circulars on annual statistics of the incidents of stowaways for the calendar years. However, the Secretariat will keep the Committee informed about the annual and total figures of stowaways received by the Organization.

Consideration and analysis of reports and information on persons rescued at sea

8.12 The Committee recalled that FAL 39 had noted that the total number of incidents related to unsafe practices associated with the trafficking or transport of migrants by sea reported to the Organization for the period 1 January 1999 to 1 September 2014 was 1,925, involving 88,833 mixed migrants.

8.13 The Committee recalled further that FAL 39 had noted that the actual numbers of mixed migrants and persons rescued at sea were significantly higher than as reported in GISIS and that the number had increased significantly in 2014 with large numbers of people needing to be rescued.

8.14 The Committee noted that following the decision of MSC 95 to amend reporting format set out in the annex to document MSC 95/21/10/Add.1, the new inter-agency platform for information sharing on migrant smuggling by sea populated by the IMO Secretariat using the data contained in existing MSC.3 circulars, was launched on 6 July 2015, and included publicly accessible data and restricted access information for Member States. Details of the new joint platform was promulgated in Circular Letter No.3569, issued on 15 July 2015.

8.15 The Committee noted that following the introduction of the new platform, the function of the FAL module in GISIS promulgating Reports on unsafe practice associated with the trafficking or transport of migrants by sea (Circular Letter No.3281 of 28 June 2012) has been deactivated and was no longer available in GISIS.
8.16 The Committee noted with concern that since the date of the launch of the platform only one incident had been introduced in the joint database on migrants smuggling by sea.

8.17 The Committee agreed to encourage Member Governments to provide timely and accurate information on migrant incidents and on suspected smugglers and vessels to the Organization via the facilitation module in GISIS.

9 GUIDELINES ON THE FACILITATION ASPECTS OF PROTECTING THE MARITIME TRANSPORT NETWORK FROM CYBERTHREATS

9.1 The Committee recalled that FAL 39 had considered the need for the development of Guidelines on maritime cybersecurity in light of the dramatic increases in the use of cybersystems across the maritime sector; however FAL 39 had noted that the relevant planned output in the High-level Action Plan for the Organization gave responsibility for maritime security to MSC and not to FAL; that the industry was already working to address the issue; and that the issue was also being considered by the Maritime Safety Committee.

9.2 The Committee recalled that following consideration of a proposal from Canada (document FAL 39/WP.8), FAL 39 had agreed to include in the post-biennial agenda of the Committee an output on "Guidelines on maritime cybersecurity", with one session needed to complete the item.

9.3 The Committee noted that C 113 (document C 113/D, section 6) had endorsed, inter alia, the new outputs agreed at the session for inclusion in the High-level Action Plan and priorities for the 2016-2017 biennium, with the modification that the title of the output should read "Guidelines on the facilitation aspects of protecting the maritime transport network from cyberthreats".

9.4 The Committee noted that A 29 had adopted within the High-level Action Plan (resolution A.1098(29)), output 6.1.1.2 that called for development of "Guidelines on the facilitation aspects of protecting the maritime transport network from cyberthreats".

9.5 The Committee noted that the issue of cybersecurity was also being considered by MSC and that the task for the FAL Committee is to focus on the facilitation aspects of protecting the maritime transport network. Within this context, and in considering the facilitation aspects of protecting the maritime transport network from cyberthreats, as opposed to the preventive security and mitigation aspects, the Committee noted that:
the objectives of the International Ship and Port Facility Security (ISPS) Code include the establishment of a framework to "detect security threats and take preventive measures against security incidents affecting ships or port facilities used in international trade";

the Organization had issued a range of guidance on security risk management. A comprehensive framework for conducting security assessments against all threats is contained in section 5 of the *Guide to Maritime Security and the ISPS Code*;

both the Facilitation and Maritime Safety Committees have agreed (MSC-FAL.1/Circ.1) that the WCO has primacy over supply chain security, with IMO's role being limited to those aspects related to ships and port facilities; and

the FAL Convention, SOLAS Convention, ISPS Code, and the "Guide to Maritime Security and the ISPS Code" do not directly address the responsibility of Administrations to protect the ship arrival, stay, departure, and security information they receive in compliance with requirements in those documents.

The Committee considered the following documents:

FA 40/9 (Canada and the United States), proposing a framework in the development of cyber risk management (CRM) guidelines for the protection of trade-related information; highlighting the threats to safety and security arising from vulnerabilities from improper integration of cybersystems; and proposing coordination with the MSC for the joint FAL-MSC development of a single set of non-mandatory, holistic CRM guidelines that would address safety, security and trade-related information;

FAL 40/INF.5 (Canada and the United States) providing an amalgamation of international CRM best practices that could serve as a point of reference for the elaboration of the guidelines proposed in the annex to document FAL 40/9;
.3 FAL 40/9/1 (ICS et al.) providing comments on document FAL 40/9, and while recognizing the benefits in a goal of developing a single set of cyber risk management guidelines, as a long-term objective, that would address the safety of cybersystems on board ships, including the "trade related information" as discussed in FAL 40/9, however, anything outside of the "facilitation aspects" would best be discussed by MSC; and

.4 FAL 40/INF.4 (ICS et al.) providing information about the newly developed industry cybersecurity guidelines on board ships.

9.7 The Committee, recognizing that MSC is responsible for maritime security, agreed that in order to avoid duplication, proper coordination with the Maritime Safety Committee was needed in order to develop a single set of non-mandatory cyber risk management guidelines, including the protection of trade-related information.

9.8 The majority of delegations proposed that it was premature to consider the development of the guidelines at this stage, and expressed the opinion that the Committee should wait for the outcome of the Maritime Safety Committee before developing the part of the guidelines related to the protection of trade-related information. However, the Committee agreed to have a preliminary discussion to identify the facilitation aspects of cyberthreats that may affect international maritime traffic, and to inform the Maritime Safety Committee accordingly.

Instructions to the working group

9.9 Having considered the above matters, the Committee instructed the Working Group on electronic means for the clearance of ships, taking into account comments, proposals and decisions made in plenary, to consider, in principle, the facilitation aspects of cyberthreats that may affect international maritime traffic, in order to better inform the Maritime Safety Committee’s deliberations on cybersecurity.

Report of the working group

9.10 Having received the relevant part of the report of the working group (FAL 40/WP.3), the Committee took action as indicated hereunder.
9.11 The Committee endorsed the views of the group that:

.1 the FAL Committee has a role in the Organization's response to the growing cyberthreats;

.2 the FAL Committee has important responsibilities related to the management of risks associated with cyberthreats in respect to facilitation, such as MSWs, processes for electronic certificates and data exchange between ships and shore, pre-arrival information based on the Convention and processes involving ship-port interface;

.3 should MSC decide to develop guidelines on cybersecurity, this should be done as joint FAL/MSC guidelines, to avoid duplication, and whose principles could be applied to all stakeholders, including both the ship and the shore side; and

.4 as there would be two sessions of MSC before FAL 41, FAL delegates should be encouraged to participate in meetings of the Maritime Safety Committee in this respect.

9.12 The Committee agreed to extend the target completion date for this agenda item to 2017.

10 GUIDELINES ON MINIMUM TRAINING AND EDUCATION FOR MOORING PERSONNEL

10.1 The Committee recalled that FAL 32 had approved FAL.6/Circ.11, *Guidelines on minimum training and education for mooring personnel*, and had established a Correspondence Group on Development of a Model Course on Training of Mooring Personnel.

10.2 The Committee recalled that FAL 38 had agreed to include a new output on "Review the Guidelines on minimum training and education for mooring personnel" in the High-level Action Plan of the Organization and priorities for the 2014–2015 biennium.

10.3 The Committee recalled that FAL 39 had considered document FAL 39/9 (Belgium, Italy and Spain) proposing to amend FAL.6/Circ.11, and had agreed to forward this document to the Working Group on FAL Circulars on Training of Mooring Personnel.
10.4 The Committee recalled that FAL 39 had considered the report of the working group (FAL 39/WP.7), and having noted the division of opinions in the working group, FAL 39 had recognized that it was not possible to approve the revised guidelines prepared by the working group at that time. FAL 39 had further noted the following issues that should be considered in the future revision of the guidelines:

.1 the need to include in the guidelines a definition on mooring personnel; and

.2 whether to maintain the references to the privatization of ports services in the circular.

10.5 The Committee recalled that FAL 39 had approved the extension of this output to 2016 and invited Member States and international organizations to present proposals to FAL 40.

10.6 The Committee considered documents FAL 40/10 (IFSMA, IHMA and the Nautical Institute) and FAL 40/10/1 (Italy and Spain), which contained two different proposals for amending these guidelines.

10.7 The Committee, noting the differences on the scope of application of the guidelines in the two documents, i.e. document FAL 40/10, maintaining the existing two-level training approach, and document FAL 40/10/1, proposing the same level of training to all mooring personnel whether they are on boat or not, agreed that two levels of training should be included in the guidelines. Based on this decision, the Committee decided to use document FAL 40/10 as the basic document for the discussion on the working group but to take into account the detailed suggestions made in document FAL 40/10/1.

Establishment of the working group

10.8 The Committee established the Working Group on the FAL Circular on training of mooring personnel under the Chairmanship of Mr. Haakon Storhaug (Norway), and instructed it, taking into account documents FAL 40/10 and FAL 40/10/1, the decisions of, and comments and proposals made in plenary, to:

.1 review the Guidelines on minimum training and education for mooring personnel, and prepare a final draft for approval by the Committee based on document FAL 40/10; and

.2 prepare the cover of a FAL Circular, if appropriate;
Consideration of the report of the working group

[10.9] Having considered the report of the working group (FAL 40/WP.4) under this agenda item, the Committee approved it in general.

10.10 The Committee approved FAL.6/Circ.11/Rev.1 on Revised guidelines on minimum training and education for mooring personnel.

11 REVIEW OF THE ICAO/IMO PUBLICATION ON INTERNATIONAL SIGNS TO PROVIDE GUIDANCE TO PERSONS AT AIRPORTS AND MARINE TERMINALS

11.1 The Committee recalled that FAL 39 had considered document FAL 39/13 (Italy and ISO), proposing a review of the Joint IMO/ICAO publication on international signs to provide guidance to persons at airports and marine terminals, and had agreed to include in the post-biennial agenda of the Committee an output on “Review of the international signs to provide guidance to persons at marine terminals”. Taking into account that the subject would not be considered by the Committee until the spring of 2016, FAL 39 had agreed to inform ICAO of that decision and, in order to avoid any possible delay, to recommend ICAO to release their publication on international signs to provide guidance to persons at airport terminals, as appropriate. After FAL 39, the ICAO Secretariat had advised that ICAO would not complete its work until May 2016, and therefore ICAO could wait for the outcome of FAL 40.

11.2 The Secretariat further informed the Committee on the plan by the ICAO Secretariat to present a progress report to the meeting of the ICAO Facilitation Panel in April 2016, and to continue its work intersessionally, with the aim of completing it by summer 2017.

11.3 The Committee considered document FAL 40/11 (ISO), proposing to work intersessionally through its Technical Committee 8, and to present the revised contents of the publication as appropriate to FAL 41. Member States were invited to advise ISO as necessary in their work, by contacting the chairman of ISO TC8 SC1 or the secretary to SC1 for further information or to take part in the development of the necessary signs.

11.4 During the ensuing discussions, the Committee noted concerns expressed that the signs under consideration with respect to marine terminals were not safety-related and were already fit for purpose. ISO confirmed that the intention was to align only safety-related signs

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https://edocs.imo.org/Final Documents/English/FAL 40-WP 1 (E).docx
to ensure that they were the same on board ships as in marine terminals. There was therefore little for IMO to do other than to validate the work of ICAO in order that the outcome of ICAO's work could go forward as a joint publication.

11.5 The Committee decided that as ICAO would not complete the work until late 2017, it would be more appropriate to place the item on the post-biennial agenda, rather than to consider the matter at FAL 41.

12 TECHNICAL COOPERATION ACTIVITIES RELATED TO FACILITATION OF MARITIME TRAFFIC

12.1 The Committee recalled that TC 65 had approved the Integrated Technical Cooperation Programme (ITCP) for 2016-2017 which included several activities relevant to the FAL Convention to be implemented during the biennium.

12.2 The Committee considered document FAL 40/1 (Secretariat) that reports on the status of activities relevant to the implementation of the FAL Convention, as amended, conducted under the ITCP in the period from May 2014 to November 2015, and noted that:

.1 two sub-regional seminars were held in Turkey and Bahrain;

.2 three national seminars were held in Angola, Cambodia and Papua New Guinea to promote the accession of the FAL Convention and to encourage better implementation of the FAL Convention. These national seminars offered a better understanding of the FAL Convention, electronic means for the clearance of ships and the use of the single window concept. The seminars also focussed on improving the coordination between public authorities and the private sector in ports;

.3 following the successful Regional Seminar on Stowaways in West and Central Africa held in Côte d'Ivoire, the Secretariat had organized a regional seminar on "Stowaways in Eastern and Southern Africa: Analysis of the current situation and measures to reduce their number", in South Africa; and

.4 other important project related to facilitation was the Demonstration Project that was approved by TC 62, with the aim of "showing the potential role of maritime transport facilitation in the reduction of poverty (MDG 1)". The
Secretariat had fielded one mission to Cameroon in February 2015 to conduct the second and last part of the second phase of the Project. The Committee noted that the analysis of the two phases of the project and the consultants' reports had commenced and the result of the exercise will be presented to TC 66.

12.3  The delegation of Cameroon expressed its appreciation for the demonstration project on the potential impact of facilitation on maritime transport and the reduction of poverty. The stakeholders in Cameroon had considered the consultants' report to be useful. The key recommendations on strengthening facilitation measures in ports would form the basis for a request for further technical assistance from the Organization.

12.4  The Committee concluded by urging Member States to contribute to the technical cooperation programme of IMO.

13  RELATIONS WITH OTHER ORGANIZATIONS

Relations with non-governmental organizations

13.1  In considering document FAL 40/13 (Secretariat), the Committee noted the relevant decisions of C 113 and C 114 in respect of relations with non-governmental organizations, and in particular welcomed the decision of C 114 for granting consultative status to the International Port Community Systems Association (IPCSA), because the contribution of the new NGO might have a positive impact to the work of the Committee.

14  APPLICATION OF THE COMMITTEE’S GUIDELINES

14.1  The Committee recalled that FAL 39 had approved FAL.3/Circ.210 on the Guidelines on the organization and method of work of the Facilitation Committee.

14.2  The Committee recalled that A 29 had adopted resolution A.1099(29), the document on Application of the Strategic Plan and the High-level Action Plan of the Organization, that requested the Council and the committees to review and revise, during the 2016-2017 biennium, the guidelines for the organization and method of their work, taking into account the document on Application of the Strategic Plan and the High-level Action Plan of the Organization, as appropriate.
14.3 The Committee considered documents FAL 40/14 and FAL 40-INF.2 (Secretariat) proposing amendments to the Committee's Guidelines on the organization and method of its work, and the following views were expressed:

.1 there were some editorial differences between the text proposed by the Secretariat with resolution A.1099(29); and

.2 taking into account the compulsory nature of resolution A.1099(29), the text should be reviewed to reflect the mandatory character that the text should have.

14.4 After a thorough discussion, the Committee agreed to delete the word "Guidelines" from the title and from the text, and to use mandatory language along the new document as necessary, based on resolution A.1099(29). The Committee agreed to instruct the Secretariat to prepare a working paper including the aforesaid amendments, in order to be considered by the Committee on Friday, 8 April.

[14.5 Having received the Secretariat's document (FAL 40/WP.6), the Committee approved the "document on the Organization and method of work of the Facilitation Committee" for circulation by means of a new FAL.3 Circular, which supersedes the existing guidelines.

14.6 The Committee instructed the Secretariat to prepare and circulate the new document on the organization and method of work of the Facilitation Committee, and authorized the Secretariat to effect any required editorial amendments which may be found necessary during the preparation of the document.

14.7 The Committee further agreed to advise the other committees that FAL 40 had reviewed its Guidelines on the organization and method of work to include mandatory language in its document in order to align with the document on Application of the Strategic Plan and the High-level Action Plan of the Organization adopted by resolution A.1099(29).

14.8 The Committee agreed further to amend the title of the agenda item on "Application of the Committee's Guidelines" to "Application of the Committee's document on Organization and method of work", to be consistent with the above-mentioned decision.]
15  WORK PROGRAMME

Substantive items for inclusion in the agenda for FAL 41

[15.1  In considering document FAL 40/WP.2 (Chairman) and on the basis of the progress made during the session, the Committee amended and approved the list of substantive items to be included in the provisional agenda for FAL 41, as set out in annex […]].

15.2  Noting the proposal by the Secretary-General to focus more on the relationship between ships and ports and, in particular, the role of the port as a fundamental service provider to ships, the Committee encouraged Member States and international organizations to revisit the concept of the ship/port interface and to present proposals to FAL 41 to include a new agenda item in the HLAP of the Organization.

Establishment of working and drafting groups during FAL 41

15.3  The Committee, taking into account the decisions made under various agenda items, agreed that working groups on the following items should be established at FAL 41:

   [.1  E-business possibilities for the facilitation of maritime traffic; and
   .2  review of the Explanatory Manual to the FAL Convention.]

15.4  The Committee recognized that, at this stage, it was not possible to predict if additional drafting groups should be established at FAL 41.

15.5  The Committee further agreed that, should the need arise, FAL 41 should determine any other working or drafting groups which might need to be established when considering the various agenda items. The Committee instructed the Secretariat, in consultation with the Chairman, to prepare and circulate the provisional timetable for FAL 41 and a list of the likely working or drafting groups which might need to be established for consideration by FAL 41.

Proposals for meeting weeks for the biennium 2018-2019

15.6  The Committee considered the proposal by the Secretary-General that the Committee should meet in regular session once a year, in accordance with Article 50 of the IMO Convention and Rule 2(a) of the Rules of Procedure, rather than the current frequency of once every 18 months, because this would enable the Committee to develop and achieve momentum in its important work.
15.7 The Committee recalled that FAL 37 (document FAL 37/17 paragraph 14.7) had proposed that the Committee should meet every 18 months, instead of every 12 months, based on the agenda for the next session and the then current budgetary and economic constraints. FAL 37 had agreed that the decision would need to be reviewed periodically, taking into account the agenda of the Committee as well as the need to progress facilitation-related matters. The Council (document C/ES 26/D, paragraph 8.2) had noted that the Committee’s decision to meet every 18 months was subject to review.

15.8 The Committee [agreed to meet in regular sessions once a year, one meeting week during 2018 and one meeting week during 2019, and invited the Secretary-General to prepare relevant budgetary proposals for the biennium 2018-2019 for consideration by the thirtieth regular session of the Assembly in November 2017] [did not agree to the proposal].

Date and venue of the next session

15.9 The Committee noted that FAL 41 had been tentatively scheduled to take place from [3 to 7 April] 2017 at the IMO Headquarters, 4 Albert Embankment, London, United Kingdom.

Status of planned outputs of the Committee for the 2018-2019 biennium

15.10 The Committee noted that in accordance with paragraph 9.1 of the document on the Application of the Strategic Plan and the High-level Action Plan of the Organization, adopted by resolution A.1099(29), the reports on the status of outputs included in the High-level Action Plan shall be prepared and annexed to the report of each session of the sub-committees and committees, and to the biennial report of the Council to the Assembly. Such reports shall identify new outputs accepted for inclusion in the biennial agendas.

15.11 The Committee noted further that resolution A.1099(29) also requested that, in preparing such reports, each organ of the Organization should consolidate therein all the reports on the status of outputs which it has received since its previous report.

15.12 The Committee endorsed the status of the outputs for the 2016-2017 biennium included in the biennial status report which had been prepared by the Secretariat, in consultation with the Chairman, as set out in annex […].
Post-biennial agenda of the Committee

15.13 The Committee noted that in the context of resolution A.1099(29) the Committee shall establish and maintain a post-biennial agenda, using the format set out in the aforementioned document, and it shall be annexed to the reports of each session.

15.14 The Committee endorsed the status of planned outputs accepted as post-biennial outputs for the 2016-2017 biennium, and which are provided in annex [...].

Development of a new Strategic Framework for the Organization for 2018-2023

15.15 The Committee noted the decision of A 29 to develop a new strategic framework for the Organization for 2018-2023, output number 4.0.3.1, with a target completion year of 2017.

15.16 The Secretariat informed the Committee on its intention to submit a document with the revised outputs of the Committee in line with the new strategic framework to FAL 41, for its consideration and proper action. The Committee noted that FAL 41 would report the outcome of this revision to C 118 accordingly.]

16 ELECTION OF CHAIRMAN AND VICE-CHAIRMAN FOR 2017

16.1 The Committee, in accordance with its Rules of Procedure, re-elected [Mr. Yury Melenas (Russian Federation)] to the post of Chairman and [Mrs. Marina Angsell (Sweden)] to the post of Vice-Chairman for 2017, by acclamation.

17 ANY OTHER BUSINESS

Review of Administrative requirements in mandatory instruments

17.1 When considering document FAL 40/17/1, the Committee noted that C 113 had approved the final report of its Ad Hoc Steering Group on Reducing Administrative Requirements and had requested the relevant committees to review administrative requirements under their purview and to consider how to proceed with the outcome of the SG-RAR’s work, with a view to developing appropriate outputs to be included in the High-level Action Plan for 2016-2017.

17.2 The Committee noted further that LEG 102, MEPC 68 and MSC 95 had considered the relevant requirements compiled by the Secretariat related to the work of the Legal Committee, environment-related, and safety- and security-related IMO instruments,
respectively, along with the SG-RAR's recommendations and a summary of feedback obtained during the public consultation. (LEG 102/6, annex, MEPC 68/13/2, annex and MSC 95/21, annex), and they had instructed the Secretariat to analyse the information taking into account the decisions by A 28 concerning reporting through GiSIS (resolution A.1074(28)) and the outcome of the work of the Correspondence Group on the use of electronic record books under MARPOL, and to report the outcome of this analysis to LEG 103, MSC 96 and MEPC 69.

17.3 The Committee noted that A 29 had included the output 14.0.1.1 on "Analysis and consideration of recommendations to reduce administrative burdens in IMO instruments including those identified by the SG-RAR" in the HLAP for the 2016-2017 biennium, and although the FAL Committee had not had the opportunity to consider the outcome of C 113, and based on the other committees' decisions and in anticipation of FAL's concurrence at its session in 2016, the FAL Committee had also been included as a parent organ for the above-mentioned output.

17.4 The Committee concurred with the decision of A 29 to include FAL Committee as a parent organ for the output 14.0.1.1 on "Analysis and consideration of recommendations to reduce administrative burdens in IMO instruments including those identified by the SG-RAR".

17.5 The Committee noted that no administrative requirements associated with the FAL Convention were in the list of administrative requirements perceived as being an administrative burden (C 113/11, appendix 7).

17.6 The Committee considered the list compiled by the Secretariat (document FAL 40/17/1, annex). The Committee noted that although the nine requirements under the Committee's purview related to facilitation-related IMO instruments had not been identified by stakeholders as an administrative burden specifically, they had been found by the SG-RAR to be similar to requirements that were deemed to be administrative burdens in relation to conventions under the purview of other Committees (as set out in document C 113/11, appendix 6), and therefore could benefit from a review by the FAL Committee.

17.7 The Committee instructed the Secretariat to take into account the decisions of A 28 concerning reporting through GiSIS (resolution A.1074(28)) and the decisions by A 29 related to the Organization's continued efforts to reduce administrative burdens, and to analyse this information with respect to feasibility, costs, benefits and likelihood of being used. The Committee
agreed to take the outcomes of the related discussions of MEPC 69 and MSC 96 into account at FAL 41. The Committee also invited Member States to submit proposals to FAL 41.

17.8 The Committee considered the proposal made by the Secretariat to establish a joint MSC/MEPC/FAL working group during FAL 41 to consider the requirements and propose common solutions. The Committee noted that the intent behind the Secretariat's proposal was to have a coordinated and holistic approach with the outputs from all technical committees and to take into account that neither MSC nor MEPC have any free working groups to undertake this work. However, the Committee expressed doubts on how feasible a joint working group would be and did not support the proposal.

Declaration of the United for Wildlife International Taskforce on the Transportation of Illegal Wildlife Products

17.9 The Committee considered document FAL 40/17/3 (Secretariat) related to the Declaration of the United for Wildlife International Taskforce on the Transportation of Illegal Wildlife Products, signed by the Secretary-General of the Organization on 15 March 2015. The Committee noted that the Declaration was prepared by an International Taskforce on the transportation of illegal wildlife products, and contained firm commitments to tackle the illegal wildlife trade.

17.10 The Committee noted that many within the transport sector, including companies represented on the task force, had agreed to enforce a zero-tolerance policy by never knowingly facilitating or tolerating the carriage of illegal wildlife or illegal wildlife products. The policy will be included in documents such as conditions of carriage, employment and client contracts as well as in marketing material.

17.11 The Committee noted that the illegal wildlife trade has many parallels with the illicit drug trade, an issue that was addressed by the Committee in the past, for example through the adoption of resolution FAL.9(34) on Revised Guidelines for the prevention and suppression of the smuggling of drugs, psychotropic substances and precursor chemicals on ships engaged in international maritime traffic. The Committee while recognizing that IMO is not the lead agency for the prevention and suppression of the illegal wildlife trade or the smuggling of drugs, agreed that a failure to take appropriate measures to prevent the carriage of such products on board ships might lead to seafarers being delayed for legal proceedings and their ships being delayed.
17.12 The Committee noted the information provided in document FAL 40/17/4 (CLIA), with the experience of CLIA and support for the United for Wildlife International Taskforce on the transportation of illegal wildlife products and their related draft declaration.

17.13 The United Kingdom reiterated the human cost of the illegal wildlife trade funding organized crime and illegal armed groups, welcomed the fact that the shipping industry was already participating within the Taskforce and strongly encouraged further engagement in this vital work.

17.14 The Committee encouraged Member States and observer delegations to bring the Declaration to the attention of relevant national authorities and constituent members, as appropriate.

**Information concerning the development of uniform definitions of ship port operations in support of safe, efficient and sustainable transport logistics**

17.15 The Committee considered document FAL 40/INF.3 (BIMCO et al.), with information about industry discussions to develop internationally agreed definitions of ship port operations, and noted that international organizations and industry representatives from 15 major shipping lines and four leading ports had been working together in a Port Call Optimization "Taskforce" to develop a common understanding of the stages of ship port operations related to time, place and activity in line with the current practices on board ships, at terminals, and in commercial contracts.

17.16 The Committee invited the co-sponsors to present to FAL 41 the outcome of the test of the new definitions of ship port operation events during real time ship calls to be held in 2016.

**United Nations verification and inspection mechanism for Yemen**

17.17 The Committee noted the information provided by the Secretariat on the work of the United Nations Verification and Inspection Mechanism for Yemen (UNVIM) established pursuant to United Nations Security Council Resolution 2216 (2015):

1. United Nations Security Council Resolution 2216 (2015), adopted on 14 April 2015, calls upon Member States, in particular Member States neighbouring Yemen, to inspect, in accordance with their national authorities and legislation and consistent with international law, all cargo to Yemen in their territory, if the Member State concerned has information that provides
reasonable grounds to believe the cargo contains arms and related material prohibited by paragraph 14 of the resolution;

.2 pursuant to Resolution 2216 (2015) and at the request of the Government of the Republic of Yemen, the Secretary-General of the United Nations had instituted a United Nations Verification and Inspection Mechanism (UNVIM) for the facilitation of commercial imports to Yemen; and

.3 further information on Resolution 2216 (2015), information for Member States, UNVIM standard operating procedures and online forms for use by industry can be found on UNVIM’s public website (http://www.vimye.org/).

18 UNSAFE MIXED MIGRATION BY SEA

18.1 Following the agreement by the Committee to include a new agenda item on Unsafe mixed migration by sea (paragraph 1.8 above), the Committee considered under this agenda item the information provided in document FAL 40/17 (Secretariat) on the outcome of the inter-agency High-level meeting to address unsafe mixed migration by sea which was held at IMO Headquarters on 4 and 5 March 2015 and document FAL 40/17/2 (Secretariat) on Amendments to MSC/Circ.896/Rev.1.

18.2 The Committee noted that LEG 102, when considering the outcome of the inter-agency High-level meeting, had noted that the aim of the meeting had been to facilitate dialogue and promote enhanced cooperation and harmonization between United Nations agencies, international organizations, non-governmental organizations, Governments and the shipping industry. The following views had been expressed:

- the issue of mixed migration was a global problem and search and rescue (SAR) systems maintained by the shipping community were not designed for rescuing hundreds of thousands of people drifting on small, unseaworthy boats left in shipping lanes;

- the Legal Committee should review the international legal regime dealing with the complex issue of migration by sea and identify gaps that needed to be addressed;

- the issue should also be referred to MSC, FAL and the Council as a matter of priority;
the situation of migrants at sea, and SAR services in the Mediterranean region, was desperate, with urgent action needed, and procedural obstacles should not prevent the Legal Committee and IMO from addressing this problem; and

- some delegations expressed concerns at the proposed review of the definition of “distress” and that the issue was one that extended beyond the Legal Committee.

18.3 The Committee noted that MSC 95, during a special session on unsafe mixed migration by sea to consider the outcome of the inter-agency High-level meeting, had considered key issues within its competence, including search and rescue and operation of merchant ships in view of the recent development of mass rescue of migrants, and following the discussion, MSC 95 had:

.1 agreed to place on the agenda of MSC 96 an item on “Unsafe Mixed Migration by Sea”;

.2 invited Member States to make submissions to MSC 96, further elaborating on the issues and suggestions that they raised during MSC 95;

.3 placed planned output 5.1.2.2, Measures to protect the safety of persons rescued at sea, on the agenda of NCSR 3 from the 2016-2017 biennium agenda; and

.4 forwarded the Guidance on ensuring the safety and security of seafarers and rescued persons to the NCSR Sub-Committee for consideration and instructed NCSR 3 to report back to MSC 96.

18.4 The Committee noted further that on the invitation by Italy an Informal Meeting to Review the Legal Framework for the Rescue of Mixed Migrants at Sea was held at IMO Headquarters on 21 September 2015.

18.5 In considering document FAL 40/17/2, the Committee noted that the Secretariats of IMO, IOM and UNODC, following the recommendation of the inter-agency High-level meeting to address unsafe mixed migration by sea to develop shared databases on migrant incidents and on suspected smugglers and vessels, had proposed to MSC 95 amendments to the appendix of MSC/Circ.896/Rev.1, to reflect the information on migrant incidents and suspected
smugglers and vessels to be included in the shared databases, leaving aside the trafficking of migrants as this issue was beyond the scope of cooperation between the three organizations.

18.6 The Committee also noted that MSC 95, having considered the proposals on shared databases on migrant incidents and on suspected smugglers and vessels:

.1 had accepted, as work in progress, the amended reporting format set out in the annex to document MSC 95/21/10/Add.1;

.2 had forwarded MSC/Circ.896/Rev.1 and the revised format to the FAL Committee for its consideration from that Committee's point of view with a view to adopting a joint MSC/FAL circular by FAL 40 and MSC 96; and

.3 had invited Member Governments to bring the amended reporting format to the attention of all parties concerned, and to provide timely and accurate information on migrant incidents and on suspected smugglers and vessels to the Organization via the Facilitation module in GISIS.

18.7 No documents had been submitted to FAL 40 commenting on document FAL 40/17/2, however, following discussions, the Committee agreed to recommend that MSC take the following into account when amending MSC/Circ.896/Rev.1:

.1 the non-mandatory nature of the text of the guidelines should be retained;

.2 the first paragraph of the annex to the draft revised circular relating to the Convention on transnational organized crime should be deleted;

.3 the third paragraph of the annex to the draft revised circular should refer to Member States rather than Contracting Governments;

.4 with respect to the reporting format in the appendix to the annex to the draft revised circular, the title of the report should reflect that it is concerned with migrant incidents at sea;
in the reporting format, it was unclear what the difference was between the information sought in the "Brief description of incident and measures taken" and the "Details of smuggling of migrants by sea" fields. The two fields should be merged; and

to facilitate future updating, the circular should remain as an MSC circular under the purview of MSC rather than become a joint MSC-FAL circular.
The radio log shall be kept at the place where the Radio Services is maintained. Every qualified operator shall enter in the log, with his name:

Details of communications exchanged between the ship station and land or mobile stations.

The log must be signed daily by the ship's Master too and filled in double copy. It will be always available for possible inspections by the competent authorities.

DISPOSAL OF THE LOG
The duplicates (carbon copy perforated sheets) must be detached and carefully fastened together in the correct order to form the record of the operation of the Radio Communications. They should be finally disposed of in the manner directed by the Operating Company or the Shipowner as the case may be. The master shall then deliver the completed Log to the appropriate Accounting Authority (Telemar IU03).
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GIORNALE NAUTICO

Libro Primo

INVENTARIO DI BORDO
INVENTORY LOG BOOK
MINISTERO DELLE INFRASTRUTTURE E DEI TRASPORTI
DIREZIONE GENERALE PER LA NAVIGAZIONE E IL TRASPORTO MARITTIMO E INTERNO

GIORNALE NAUTICO
LIBRO PRIMO
INVENTARIO DI BORDO
INVENTORY LOG BOOK

del / of ____________________________

( art. 173 Codice della Navigazione
             art. 173 Navigation Code
)

Il presente Inventario di bordo composto di n. ........... pagine, ognuna delle quali firmata e bollata
This log book composed of No. ........... pages, each one signed and stamped

col timbro d’Ufficio, viene rilasciato al _________________________________________________
with the seal of office, is issued to _______________________________________________________

di tonnellate di stazza lorda ....................................................... e netta ..............................................................
of GRT .............................................................. and net, ..............................................................

iscritto .... al n. .................................. di matricola del Compartimento Marittimo di ..............................................................
registered at No. .................................. of identification number of Maritime Area of ..............................................................

ovvero (1) del Registro delle Navi Minori e Galleggianti del ..............................................................
or (1) at Register of Smaller Vessels and Crafts of ..............................................................

al Comando del ..............................................................
and Commanded by ..............................................................

.............................................................., il / on ..............................................................

..............................................................

IL / THE (2) ..............................................................

..............................................................

(1) Per le navi minori di cui all’art. 176, comma primo, del Codice della Navigazione.
(1) For smaller vessels, art. 176 - 1st paragraph of the Code of Navigation
(2) Timbro fiscale con l’indicazione del grado e qualifica di chi rilascia il giornale e firma relativa.
(2) Fiscal stamp with indication of the degree of who issues the log book and sign

CODICE DELLA NAVIGAZIONE

Art. 173. – Il giornale nautico è diviso nei seguenti libri: a) inventario di bordo; b) giornale generale e di contabilità; c) giornale di navigazione; d) giornale di carico o giornale di pesca, secondo la destinazione della nave.


Art. 176. – Le navi minori e i galleggianti marittimi di stazza lorda superiore alle dieci tonnellate, se a propulsione meccanica, o alle venticinque, in ogni altro caso, devono essere provvisti dell’inventario di Bordo. Le navì ed i galleggianti della navigazione interna, indicati a tal fine dal Regolamento, devono essere provvisti dell’inventario; le navi, quando siano adibite a servizio pubblico, devono inoltre essere provviste del Giornale di Bordo, formato con le modalità stabilite dal Regolamento.

Art. 177. – Le norme per la vicinanza e la tenuta dei libri di bordo e per le relative annotazioni sono stabilite dal Regolamento.

Art. 246. – Sono pertinenze della nave le imbarcazioni, gli attrezzi e gli strumenti, gli arredi ed in generale tutte le cose destinate in modo durevole a servizio o ad ornamento della nave.

La destinazione può essere effettuata anche da chi non sia proprietario della nave o non abbia su quest’una un diritto reale.

Art. 247. – Ai terzi di buona fede, che hanno acquistato diritti sulla nave, la proprietà aliena della pertinenza può essere opposta solo quando risulta da scrittura avente data certa anteriore ovvero dall’inventario di Bordo.

La cessazione della qualità di pertinenza di una cosa, la cui proprietà aliena non risultava da scrittura avente data certa anteriore o dall’inventario di Bordo, non è opponibile ai terzi i quali abbiano anteriormente acquistato diritti sulla nave.

Art. 248. – La destinazione di una cosa al servizio o all’ornamento della nave non pregiudica i diritti preesistenti sulla cosa medesima a favore di terzi. Tuttavia tali diritti non possono essere opposti ai terzi di buona fede se non risultano da scrittura avente data certa anteriore o dall’inventario di Bordo.

REGOLAMENTO PER L’ESECUZIONE DEL CODICE DELLA NAVIGAZIONE

Art. 362. – I libri di bordo sono conformi ai modelli approvati dal Ministro della Marina Mercantile e prima di essere posti in uso devono essere numerati, fermati e bullati col timbro d’ufficio, al sommo di ogni mezzo foglio, dal Comandante del Porto o dall’Autorità Consolare.

Nella prima pagina di ciascun libro, deve essere inserita dichiarazione firmata dal Comandante del Porto attestante il numero delle pagine di cui il libro si compone, il nome, il tipo, l’ufficio d’iscrizione e il numero di matricola della nave, il nome del Comandante, e la data di rilascio.

Art. 363. – I libri di bordo devono essere tenuti per ordine di data, di seguito, senza spazi in bianco, senza interlinee e senza trasporti in margine. Non vi possono fare abrasioni e, ove sia necessaria qualche cancellazione, questa deve eseguirsi in modo che le parole cancellate siano leggibili. Gli spazi vuoti devono essere riempiti con linee a penna.

Art. 364. – I libri di bordo devono essere presentati ad ogni richiesta dell’Autorità Marittima Mercantile o di quella Consolare, la quale ha facoltà di rilasciarne copie o estratti.
Art. 365. – Quando si procede alla cancellazione della nave del registro d’iscrizione, a norma dell’art. 153 del Codice, l’Autorità Marittima Mercantile o quella Consolare del luogo in cui si trova la nave ritira e trasmette i libri di bordo, per la custodia, all’Ufficio d’iscrizione della nave.

Quando i libri siano esauriti o resi inservibili l’Autorità del luogo, previo rilascio dei nuovi libri con le modalità di cui all’art. 362, li ritira e li trasmette per la custodia all’Ufficio d’iscrizione della nave.

Art. 366. – Se in corso di navigazione un libro di bordo è esaurito o perduto o distrutto, il Comandante ne forma uno provvisorio, nel quale deve indicare innanzi tutto la causa della perdita o della distruzione.

Il libro provvisorio è valido fino al primo porto di approdo, dove il Comandante deve fare la sua dichiarazione all’Autorità Marittima Mercantile o a quella Consolare.

Questa redigono, in calce al libro provvisorio e dopo la vidimazione, sulla dichiarazione del Comandante e alla presenza di due testimoni, apposito processo verbale, di cui trasmettono copia all’Ufficio d’iscrizione della nave.

Art. 367. – Dopo la redazione del processo verbale, di cui all’articolo precedente, l’Autorità Marittima Mercantile o quella Consolare ritira il libro di bordo provvisorio e rilascia un nuovo libro.

Il libro di bordo provvisorio ritirato è trasmesso per la custodia all’Ufficio d’iscrizione della nave.

Quando l’Autorità Marittima Mercantile o quella Consolare non ha a disposizione libri in bianco, essa numerà, firma e bolla col timbro d’ufficio, al sommo di ogni mezzo foglio, il libro provvisorio, annotando altresì l’obbligo del Comandante di provvedere, appena possibile, alla regolare sostituzione.

Art. 368. – L’Autorità Marittima Mercantile o quella Consolare, se rileva che in un libro di bordo sono state inserite false dichiarazioni, disperde il sequestro del libro e compila processo verbale, che deve essere allegato alla denuncia all’Autorità Giudiziaria unitamente al libro sequestrato.

In tal caso alla nave viene rilasciato un nuovo libro di bordo.

Art. 369. – L’Inventario di Bordo deve essere sottoscritto dal Comandante della nave, controfirmato dai periti incaricati della visita della nave e vistato dall’Autorità Marittima Mercantile o da quella Consolare.

Le variazioni negli attrezzi e negli oggetti di corredo e di armamento della nave devono essere annotate sull’inventario di Bordo e giustificate col semplice riferimento alle annotazioni esistenti nel Giornale Generale e di Contabilità.

Nelle successive visite fatte alla nave, la verifica dell’inventario e delle variazioni suddette è compiuta dai periti incaricati della visita, i quali ne fanno annotazione sull’inventario stesso; tale annotazione è vistata, all’atto della compilazione nonché delle successive variazioni, dall’Autorità Marittima Mercantile o da quella Consolare.

Per le navi non soggette a visita, la verifica dell’inventario deve essere fatta ogni due anni.

La copia dell’Inventario di Bordo, agli effetti dell’art. 621 del Codice, è vistata, all’atto della compilazione nonché delle successive variazioni, dall’Autorità Marittima Mercantile o da quella Consolare.

Agli effetti previsti dagli articoli 247 e 248 del Codice, le annotazioni relative alla destinazione e alla cessazione della pertinenza della nave devono essere vistate a richiesta del proprietario o di un suo rappresentante ovvero del titolare del diritto sulla pertinenza, dall’Autorità Marittima Mercantile o da quella Consolare.

**AVVERTENZE**

Tutte le variazioni o annotazioni apportate sull’inventario devono essere chiare e concise e firmate dal comandante. I visti delle autorità marittima o consolari devono essere apposti in modo da mettere in evidenza la data della vidimazione, che deve corrispondere a quella del visto sul giornale generale e di contabilità il quale riporta le stesse variazioni.
TABella dei TrezzI ed altri oggetti di Corredo e di armamento
che la nave deve avere in dotazione

(La tabella deve essere firmata da un funzionario del competente Ispettorato R.I.N.A.)

TABLE OF TOOLS AND OTHER ITEMS OF EQUIPMENT AND ACCOMPANYING
THE SHIP MUST BE PURCHASED

(The table must be signed by a competent official of the Inspectorato R.I.N.A.)

Spazio nel quale dovrà essere incollata la tabella del materiale di dotazione fissata dai regolamenti

Space in which to be glued to the table of material endowment established by the Regulations
<table>
<thead>
<tr>
<th>Numero Codice</th>
<th>Descrizione del Materiale</th>
<th>Quantità</th>
<th>ANNOTAZIONE: Variazioni nelle dotazioni, con riferimento a quelle annotate nel Giornale Generale e di Contabilità. Firma del Comandante della nave, visiti dell’Autorità marittima e consolare.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artículo Code</td>
<td>Description of Material</td>
<td>Quantity</td>
<td>POSTSCRIPT: Changes in the envelopes, with reference to those recorded in General News and Accounting. Signed by the Commander of the ship.</td>
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<td>visas of Maritime and consular authority.</td>
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</tbody>
</table>


**MINISTERO DELLE INFRASTRUTTURE E DEI TRASPORTI**
**DIREZIONE GENERALE PER LA NAVIGAZIONE, IL TRASPORTO MARITTIMO E INTERNO**

**GIORNALE NAUTICO – LIBRO TERZO**

**GIORNALE DI NAVIGAZIONE**

**NAUTICAL LOG BOOK- PART THREE**

**NAVIGATION LOG BOOK**

(art. 173/c del Codice della Navigazione / art. 173/c Code of Navigation)

Il presente Giornale di navigazione, di .......... pagine, ognuna delle quali firmata e bollata col timbro d’Ufficio, viene rilasciato alla nave:

*This navigation log book, composed of ........ pages, each one signed and stamped with the official seal is issued to the vessel:*

<table>
<thead>
<tr>
<th>Numero IMO / IMO number:</th>
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<tr>
<th>Stazza lorda: Gross tonnage:</th>
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<tr>
<th>Stazza netta: Net tonnage:</th>
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<tr>
<th>Potenza apparato motore: Engine power:</th>
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<tr>
<th>Iscritta al Compartimento marittimo di: Port of Register</th>
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<th>Al n.</th>
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<th>At n.</th>
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<tr>
<th>Nome del Comandante / Master’s name:</th>
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| ................., il / on ................. | IL / THE ................. |

[Signature of Officer]

Il presente giornale è parte integrante del ISM a cui si rimanda.


This book is integral part of ISM to which it refers.

Scala del vento Beaufort e stato del mare
Beaufort wind scale and sea state

<table>
<thead>
<tr>
<th>Scala del vento Beaufort</th>
<th>Velocità del vento Wind speed</th>
<th>Termini descrittivi del vento Wind descriptive terms</th>
<th>Probabile altezza media delle onde in metri Probable wave height in metres</th>
<th>Probabile altezza massima delle onde in metri Probable maximum wave height in metres</th>
<th>Stato del mare Sea state</th>
<th>Termine di descrizione Sea descriptive terms</th>
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</thead>
<tbody>
<tr>
<td>Beaufort wind scale</td>
<td>Nodi Knots m/s</td>
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<td>Calma Calm</td>
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<tr>
<td>1</td>
<td>1.5-3</td>
<td>3-15</td>
<td>Brisa leggera Light breeze</td>
<td>0.1</td>
<td>0.1</td>
<td>1</td>
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<tr>
<td>2</td>
<td>4-6</td>
<td>16-33</td>
<td>Brisa fresca Fresh breeze</td>
<td>0.2</td>
<td>0.3</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>7-10</td>
<td>34-54</td>
<td>Vento leggero Light breeze</td>
<td>0.6</td>
<td>1.0</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>11-16</td>
<td>55-73</td>
<td>Vento moderato Moderate breeze</td>
<td>1.0</td>
<td>1.5</td>
<td>4</td>
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<tr>
<td>5</td>
<td>17-21</td>
<td>80-107</td>
<td>Vento forte Strong breeze</td>
<td>2.0</td>
<td>2.5</td>
<td>5</td>
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<tr>
<td>6</td>
<td>22-27</td>
<td>108-138</td>
<td>Vento fresco Fresh wind</td>
<td>3.0</td>
<td>4.0</td>
<td>6</td>
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<tr>
<td>7</td>
<td>28-33</td>
<td>139-168</td>
<td>Vento forte Strong wind</td>
<td>4.0</td>
<td>5.0</td>
<td>7</td>
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<td>8</td>
<td>34-40</td>
<td>172-207</td>
<td>Burrasca Gale</td>
<td>5.5</td>
<td>7.0</td>
<td>8</td>
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<tr>
<td>9</td>
<td>41-47</td>
<td>208-244</td>
<td>Burrasca fortissima Storm</td>
<td>7.0</td>
<td>10.0</td>
<td>9</td>
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<tr>
<td>10</td>
<td>48-55</td>
<td>245-284</td>
<td>Tempesta Severe storm</td>
<td>9.0</td>
<td>12.0</td>
<td>10</td>
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<tr>
<td>11</td>
<td>56-63</td>
<td>285-326</td>
<td>Tempesta violenta Violent storm</td>
<td>11.5</td>
<td>16.0</td>
<td>11</td>
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<tr>
<td>12</td>
<td>64+</td>
<td>327+</td>
<td>Uragano Hurricane</td>
<td>14+</td>
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<td>12</td>
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* I valori si riferiscono a onde flottabili ognuna per effetto del vento in mare aperto.
* + + va considerata l'irruzione del mare che si verifica al vento diretto del mare aperto.
* I riferimenti si riferiscono agli sviluppi dell'onda in meridiana.
* ** The log effect between the wind getting up and the sea increasing should be borne in mind.

TENDENZA DEL BAROMETRO-BAROMETER TREND

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<tr>
<th>In aumento, poi in diminuzione Increasing, then decreasing</th>
<th>In aumento, poi in diminuzione Increasing, then decreasing</th>
<th>In aumento, poi in diminuzione Increasing, then decreasing</th>
<th>In aumento, poi in diminuzione Increasing, then decreasing</th>
<th>In aumento, poi in diminuzione Increasing, then decreasing</th>
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<td><img src="image2.png" alt="Graph" /></td>
<td><img src="image3.png" alt="Graph" /></td>
<td><img src="image4.png" alt="Graph" /></td>
<td><img src="image5.png" alt="Graph" /></td>
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** In aumento, poi in diminuzione Increasing, then decreasing
** Decreasing, then increasing
** Increasing, then decreasing
** Decreasing, then increasing
** Increasing, then decreasing

** In aumento, poi in diminuzione Increasing, then decreasing
** Decreasing, then increasing
** Increasing, then decreasing
** Decreasing, then increasing
** Increasing, then decreasing
### Rotte seguite / Courses followed

<table>
<thead>
<tr>
<th>Ora di vento</th>
<th>Rotta vera</th>
<th>Scarico e detona</th>
<th>Bassa in eccentrica</th>
<th>Bassa normale</th>
<th>Giri delle eliche</th>
<th>Velocità stimata</th>
</tr>
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<tbody>
<tr>
<td>Time on board</td>
<td>True course</td>
<td>Leeway and Drift</td>
<td>Gyro Compass</td>
<td>Standard compass</td>
<td>Propellers</td>
<td>Estimated speed</td>
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### Osservazioni meteorologiche / Meteorological Observations

<table>
<thead>
<tr>
<th>Ora di bordo</th>
<th>Vent. Wind</th>
<th>Mare Sea</th>
<th>Cielo Sky</th>
<th>Visibilità Visibility</th>
<th>Barometro Barometer</th>
<th>Termometro Thermometer</th>
<th>Umidità relativa Relative Humidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time on board</td>
<td>Direction</td>
<td>Speed</td>
<td>Direction</td>
<td>Force</td>
<td>Millimetri</td>
<td>Trend</td>
<td>Secondo</td>
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### RISULTATI DELLE OSSERVAZIONI ASTRONOMICHE

### RESULTS OF SIGHT REDUCTIONS

<table>
<thead>
<tr>
<th>Ora di bordo</th>
<th>Correzione giornaliera di posizione</th>
<th>Punto guida</th>
<th>Ponti guida in bordo</th>
<th>Trazione</th>
<th>Estimanted position</th>
<th>Observations</th>
<th>Lines of position</th>
<th>Latiitudine</th>
<th>Longitudine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time on board</td>
<td>Daily position correction</td>
<td>Navigation mark</td>
<td>On board observation</td>
<td>Traction</td>
<td>Standard position</td>
<td>Observations</td>
<td>Lines of position</td>
<td>Latitude</td>
<td>Longitude</td>
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### Estimanted speed

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<tr>
<th>Mg/Min</th>
<th>m / s</th>
<th>Velocità</th>
<th>Mg/Min</th>
<th>m / s</th>
<th>Velocità</th>
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<th>Velocità</th>
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<tr>
<td>Ora di bordo Time on board</td>
<td>Distanza traverso A beam distance</td>
<td>Rotta vera True course</td>
<td>Latitudine Latitude</td>
<td>Longitudine Longitude</td>
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<td>Dalle ore 00 alle 04 / From 00:00 to 04:00</td>
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<td>Dalle ore 04 alle 08 / From 04:00 to 08:00</td>
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<tr>
<td>Dalle ore 12 alle 16 / From 12:00 to 16:00</td>
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<td>Dalle ore 20 alle 24 / From 20:00 to 24:00</td>
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**Consegned ed eventuali osservazioni del Comandante:** (1) Ora di bordo

**Master’s orders:** (1) On board time

(1) Indicare anche le disposizioni date in materiale di assetto della nave / Report also orders given relating to the trim of the vessel.
MINISTERO DEI TRASPORTI

GIORNALE NAUTICO

del

LIBRO TERZO

GIORNALE DI NAVIGAZIONE

(art. 173/e Codice della Navigazione)

Il presente Giornale di navigazione, composto di n. pagine, ognuna delle quali firmata di tonnellate di stazza lorda e netta, inserita al n. di matricola del Compartimento Marittimo di e comandat dal

dal 20_

Bello d'Ufficio

Timbro inserito con indicazione del grado e della qualifica di chi rilascia il giornale e timbro fiscali.

€ 28,46

€ 28,46

Istmo Poligrafico e Zega dello Stato, Roma

CODICE DELLA NAVIGAZIONE

Art. 173. - Il giornale nautico è diviso nei seguenti libri: a) inventario di bordo; b) giornale generale e di contabilità; c) giornale di navigazione; d) giornale di caricamento o giornale di pesca, secondo la destinazione della nave.

Art. 174, comma 3°. - Sul giornale di navigazione sono annotate la rotta seguita e il cammino percorso, le osservazioni meteorologiche, le rilevazioni e le manovre relative, ed in genere tutti i fatti inerenti alla navigazione.

Art. 177. - Le norme per la revisione e la tenuta dei libri di bordo e per le relative annotazioni sono stabilite dal Regolamento.

Art. 178. - Ferme le rimanenti annotazioni sui documenti della nave le disposizioni degli articoli 2700, 2702 del Codice civile, le annotazioni del giornale nautico relativo all'esercizio della nave fanno prova anche a favore dell'armatore, quando sono regolarmente effettuate; fanno prova in ogni caso contro l'armatore, ma chi vuol trarre vantaggio non può scinderne il contenuto.

Art. 182. - Se nel corso del viaggio si sono verificati eventi straordinari relativi alla nave, alle persone che erano a bordo, o al carico, il Comandante della nave all'arrivo in porto deve farne denuncia al Comandante del Porto o all'Autorità consolare, allegando un estratto del giornale nautico con le relative annotazioni.

Se la nave non è provvista di giornale, o se sul giornale non è stata fatta annotazione, l'Autorità marittima o consolare riceve la dichiarazione giurata del Comandante e ne redige processo verbale.

Le Autorità predette procedono, ove sia il caso, ad inchieste sommarie sui fatti denunciati e sulle cause, trasmettendo senza indugio gli atti relativi all'Autorità giudiziaria competente, a norma degli articoli 315, 584, a eseguire la verifica della relazione di eventi straordinari.

REGOLAMENTO PER L'ESECUZIONE DEL CODICE DELLA NAVIGAZIONE

Art. 362. - I libri di bordo sono conformi ai modelli approvati dal Ministero per la marina mercantile e prima di essere posti in uso devono essere numerati, firmati e bollati col timbro d'ufficio, al sommo di ogni mezzo foglio, dal Comandante del Porto o dall'Autorità consolare.

Nella prima pagina di ciascun libro deve essere inserita dichiarazione firmata dal Comandante del Porto attestante il numero delle pagine di cui il libro si compone, il nome, il tipo, l'Ufficio di iscrizione e il numero di matricola della nave, il nome del Comandante e la data di rilascio.

Art. 363. - I libri di bordo devono essere tenuti per ordine di data, di seguito, senza spazi in bianco, senza interlinee e senza trasporti in margine. Non vi si possono abrasione e, ove sia necessaria qualche cancellazione, questa deve eseguirsi in modo che le parole cancellate siano leggibili. Gli spazi vuoti devono essere sempre riempiti con linee a penna.

Art. 364. - I libri di bordo devono essere presentati ad ogni richiesta dell'Autorità marittima mercantile o di quella consolare, la quale ha facoltà di rilasciare copia o estratti.

Art. 365. - Quando si procede alla cancellazione della nave dal Registro d'iscrizione, a norma dell'art. 163 del Codice, l'Autorità marittima mercantile o quella consolare nel luogo in cui si trova la nave ritira e trasmette i libri di bordo, per la custodia, all'Ufficio d'iscrizione della nave.

Quando i libri siano esausti o resi inutilizzabili l'Autorità del luogo, previo rilascio dei nuovi libri con le modalità di cui all'art. 362, li ritira e li trasmette per la custodia all'Ufficio d'iscrizione della nave.
Art. 366. Se in corso di navigazione un libro di bordo è esaurito o perduto o distrutto, il Comandante ne forma uno provvisorio, nel quale deve indicare innanzi tutto la causa della perdita o della distruzione.

Il libro provvisorio è valido fino al primo porto di approdo, dove il Comandante deve fare la sua dichiarazione all'Autorità marittima mercantile o a quella consolare.

Questa redigono, in calce al libro provvisorio e dopo la vidimazione, sulla dichiarazione del Comandante e alla presenza di due testimoni, apposito processo verbale, di cui si trasmettono copie all'Ufficio d'iscrizione della nave.

Art. 367. Dopo la redazione del processo verbale, di cui all'articolo precedente, l'Autorità marittima mercantile o quella consolare ritira il libro di bordo provvisorio e rilascia un nuovo libro.

Il libro di bordo provvisorio ritirato è trasmesso per la custodia all'Ufficio d'iscrizione della nave.

Quando l'Autorità marittima mercantile o quella consolare non ha a disposizione libri in bianco, essa numerà, firma e bolla col timbro d'Ufficio, al sommo di ogni mezzo foglio, il libro provvisorio, annotando altresì l'obbligo del Comandante di provvedere, appena possibile, alla regolare sostituzione.

Art. 368. L'Autorità marittima mercantile o quella consolare, se rileva che in un libro di bordo sono state inserite false dichiarazioni, dispone il sequestro del libro e compila processo verbale, che deve essere allegato alla denuncia all'Autorità giudiziaria unitamente al libro sequestrato.

In tal caso alla nave viene rilasciato un nuovo libro di bordo.

Art. 371. Sul giornale di navigazione si devono fare, alla fine di ogni turno di guardia, le annotazioni richieste dal terzo comma dell'art. 174 del Codice.

Il Giornale di navigazione è scritto e firmato dal Comandante per le guardie da lui fatte e per ogni altra annotazione che egli stimi opportuna; è scritto e firmato dagli ufficiali di bordo per le guardie da essi fatte ed è vistato dal Comandante.

Art. 382. Quando le formalità indicate negli articoli 181 e 182 del Codice non possono essere eseguite nei porti esteri, perché non esiste Autorità consolare e all'Autorità locale non sia riconosciuta tale competenza dalle leggi locali e da trattati internazionali, le formalità stesse sono eseguite nel primo porto di approdo nello Stato o nel porto di approdo all'estero, dove risiede una Autorità consolare italiana.
<table>
<thead>
<tr>
<th>Vento</th>
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<tr>
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<td>Bava di vento</td>
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<tr>
<td>2</td>
<td>Brezza leggera</td>
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<td>3</td>
<td>Brezza tesa</td>
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<td>Vento moderato</td>
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<td>5</td>
<td>Vento teso</td>
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<td>6</td>
<td>Vento fresco</td>
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<tr>
<td>7</td>
<td>Vento forte (o burrasca debole)</td>
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<td>8</td>
<td>Burrasca</td>
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<td>9</td>
<td>Burrasca forte</td>
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<td>10</td>
<td>Tempesta</td>
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<td>11</td>
<td>Tempesta violenta</td>
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<td>12</td>
<td>Uragano</td>
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<table>
<thead>
<tr>
<th>Stato del cielo</th>
<th>Visibilità</th>
<th>Tendenza del barometro</th>
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</thead>
<tbody>
<tr>
<td>0</td>
<td>Sereno mezzo coperto</td>
<td>Nebbia densissima</td>
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<tr>
<td>1</td>
<td>Mezzo coperto</td>
<td>Nebbia densa</td>
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<td>2</td>
<td>Nebbia</td>
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<td>3</td>
<td>Provaschi</td>
<td>Nebbioso</td>
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<td>4</td>
<td>Pioggerella</td>
<td>Foschia forte</td>
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<td>5</td>
<td>Pioggia</td>
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<td>6</td>
<td>Neve</td>
<td>Orizzonte invisibile</td>
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<td>7</td>
<td>Nevischio</td>
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<td>8</td>
<td>Grandine</td>
<td>Orizzonte netto</td>
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<td>9</td>
<td>Temporale</td>
<td>Oltre 30 miglia</td>
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</table>
AVVERTENZE

1. Gli Ufficiali di coperta, imbarcati sulle navi abilitate alla navigazione di lungo corso, di grande e piccolo cabotaggio, debbono tenere un *Quaderno dei calcoli* sul quale devono essere direttamente eseguiti i calcoli relativi alle osservazioni astronomiche.

2. *La carta nautica ed i documenti nautici* (portolano, elenco dei fari, ecc.) relativi alla zona nella quale si sta svolgendo la navigazione, debbono essere a portata dell’Ufficiale in comando di guardia e sulla carta deve essere segnata la rotta percorsa. Questa non deve essere cancellata fino a che la nave non ripassi per la stessa zona.

3. Tutte le carte ed i documenti nautici di cui sopra debbono essere aggiornati con le correzioni pubblicate dagli avvisi ai naviganti dell’Istituto Idrografico della Marina e da altri analoghi Istituti esteri. Dovrà, inoltre, essere presa nota a matita di tutti gli avvisi ai naviganti trasmessi via radio.

4. La velocità stimata della nave, da annotarsi sul presente giornale, deve essere, se possibile, dedotta dai giri delle eliche apprezzando convenientemente l’effetto del vento e del mare. In caso di impossibilità, deve essere dedotta dai solcometri esistenti a bordo.

5. Le determinazioni astronomiche di posizione devono essere eseguite, tempo permettendo, quando la navigazione si svolge fuori vista di punti terrestri identificabili sulla carta per periodi superiori a 24 ore.


7. Per indicare la forza del vento, lo stato del mare, lo stato del cielo, le condizioni di visibilità e la tendenza del barometro, debbono essere adoperate le scale meteorologiche in uso (Scala di Beaufort e Metodo Marina), riportate nella tabella a fianco.

8. Il rapporto della guardia deve essere firmato dall’Ufficiale alla fine del proprio turno di guardia.

9. Le consegne devono essere scritte dal Comandante, almeno una volta al giorno e comunque ogni sera prima che lasci il ponte di comando per riposo notturno, nelle pagine relative, alla data ed ora cui esse si riferiscono. Il Comandante deve annotare, quando ne sia il caso, la velocità e la direzione delle correnti marine subite dalla nave nella giornata.

10. Le indicazioni relative all’assetto longitudinale della nave e le relative variazioni di esso, sono richieste particolarmente per le navi passeggeri. Per le altre navi, tali indicazioni sono richieste soltanto quando per la particolare natura del carico si rendano necessari spostamenti di pesi intesi a modificare l’assetto della nave.
### RISULTATI DELLE OSSERVAZIONI ASTRONOMICHE

<table>
<thead>
<tr>
<th>Ora di bordo</th>
<th>Correzione totale bussola normale</th>
<th>Punto stimato</th>
<th>Punto osservato</th>
<th>Retta di altezze</th>
<th>Firma dell'osservatore</th>
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<tr>
<td></td>
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<td>Meridiano dell'ora di bordo</td>
<td>Movimento di avanzo e ritardo dell'orologio</td>
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<td>T. M. G.</td>
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<td>Alle ore:</td>
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<td>Correzione (k)</td>
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<td>Longitudine:</td>
<td>Minuti:</td>
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<td>Punto osservato alle ore 12 vero</td>
<td>Latitude</td>
<td>Longitudine</td>
<td>Latitude</td>
<td>Longitudine</td>
<td>Latitude</td>
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<td>Ora di bordo</td>
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<td>Cammino percorso dal mezzodi precedente: mg.</td>
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<td>Vm.</td>
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<td>Cammino percorso dal punto di partenza: mg.</td>
<td>in</td>
<td>Vm.</td>
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<td></td>
<td>Cammino da percorrere sino a destinazione: mg.</td>
<td>in</td>
<td>Vm.</td>
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**Nota**: Facoltativo per le navi adibite esclusivamente al piccolo traffico.
### Rapporto dell'Ufficiale di guardia

**Avvistamento della terra fitta di bordo, riconoscimento di punti terrestri, avvistamento di fari e torri terrestri, terra di bordo e rilevamento suolo, sondaggi di fondo terra di bordo e profondità; rilevamento idrografometro terra di bordo e rilevamenti; impiego del Radar, manovre eseguite in mare aperto; avvistamenti radioradar terra di bordo, fari esterni, chiamate di soccorso di altre navi; corse con navi da guerra e immagini radar maestri.**

### Ora di bordo | Distanza terra | Rotta vera | Latitudine | Longitudine
--- | --- | --- | --- | ---
| dalle ore 00 alle ore 04 |  |  |  |  |
| dalle ore 04 alle ore 08 |  |  |  |  |
| dalle ore 08 alle ore 12 |  |  |  |  |
| dalle ore 12 alle ore 16 |  |  |  |  |
| dalle ore 16 alle ore 20 |  |  |  |  |
| dalle ore 20 alle ore 24 |  |  |  |  |

**Firma**

**Consegnatura ed eventuali osservazioni del Comandante:**

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1° Ora di bordo

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**Firma**
REGISTRO DI
CARICO E SCARICO

delle preparazioni soggette alla
disciplina degli stupefacenti e sostanze
psicotrope.
Mod. conforme D.M. 20 aprile 1976 G.U. 121.
Leggi: 8/2/2001 n.12 e precedenti
L. 16/1/2003 n.3, art.44 - D.M. 4 aprile

a cura del Dott. Sergio Amisano
Farmacia Montini - Genova

RILASCIATO IL ........................................

PER ........................................
REGISTRO DI
CARICO E SCARICO

dei medicinali soggetti alla
disciplina degli stupefacenti
e sostanze psicotrope.
Mod. conforme D.M.20 aprile
1976 G.U.n.121.
Leggi: 24/6/2003 e precedenti-
DL 30/12/2005 n.272 coordinato
con Legge 21 febbraio 2006 n.49.
Aggiornato alla data di ristampa.

Aggiornato alla data di ristampa:
30 GIU. 2008

A cura del Dott. Sergio Amisano
Farmacia Montini -16126 Genova
v.Gramsci 67 R-v.del Campo 84R
t.010 2465930 - tfax 010 2478651

RILASCIATO IL

PER
AVVERTENZE

1) denominazione del medicamento (Cardiostenol fiale, morfina un centigrammo fiale, Luminal fiale, Talwin fiale, ecc.)

2) deve essere indicato il numero progressivo delle operazioni eseguite in entrata (carico) ed uscita (scarico) nell’anno solare, cioè ha inizio con il 1° gennaio di ogni anno e termina il 31 dicembre. Ogni anno solare pertanto, ha una sua propria numerazione progressiva.

3) dopo aver indicato l’anno, annotare in questa colonna il giorno e il mese effettivi del movimento di entrata o uscita.

4) se si tratta di movimento di entrata (carico), indicare gli estremi (numero e data) della richiesta per il fornitore, nonché la sua denominazione e ubicazione. Nel caso di movimento di uscita (scarico) per diretta somministrazione al malato, indicare nome, cognome e residenza di quest’ultimo; nel caso di richiesta dei vari reparti interni, se trattasi di istituto di cura ecc., indicare numero e data della richiesta che deve essere compilata, firmata e datata dal capo reparto o primario. Nell’eventualità di distruzione, di furto, di rottura o di perdita che determinino variazione in diminuzione delle quantità registrate, annotare gli estremi del relativo verbale.

5) indicare esplicitamente l’unità di misura adottata per le trascrizioni, che deve essere necessariamente riferita all’unità posologica (dose-forma), cioè, fiale, compresse, capsule, supposte, per le forme farmaceutiche unidose, ed alla quantità in peso per le forme farmaceutiche multidose (sciroppi, gocce, ecc.). Esempio: Talwin, morfina: fiale; gartenale, Talwin tab, ecc.: compresse; ecc.). Una stessa unità di misura deve essere adottata per le trascrizioni di carico e scarico e per la compilazione della richiesta.

6) indicare la diagnosi e la sintomatologia.

7) è responsabile dell’acquisto, detenzione, custodia e somministrazione delle preparazioni stupefacenti e psicotrope (artt. 42 e 64). Le preparazioni stupefacenti e psicotrope devono essere conservate in armadio chiuso a chiave.

8) compilare solo per natanti o trasporti aerei e terrestri.

9) i dati totali dell’entrata, dell’uscita e l’eventuale giacenza vanno riportati integralmente nel caso in cui le trascrizioni da effettuare nella nuova pagina riguardino lo stesso anno solare della pagina di provenienza. Se nella nuova pagina verranno effettuate le trascrizioni relative all’anno solare successivo a quello della pagina di provenienza, va riportato il dato della sola giacenza e mai quelli in entrata e uscita dell’anno precedente.

NOTA per Ospedali senza farmacia, cliniche private, istituti e case di cura.

La detenzione, custodia e somministrazione dei medicinali e la tenuta del registro di reparto sono responsabilità del capo reparto o primario. Egli è coadiuvato in questo compito dall’infermiere professionale addetto al reparto (caposalpa) (art. 41 DPR 128 - 27.3.69). Anche il registro interno è vidi-
mato preventivamente dall’Autorità Sanitaria Locale pagina per pagina.
Poiché il Legislatore esplicitamente demanda ogni responsabilità in materia di farmaci stupefacenti o psicotropi al Direttore Sanitario, ed a lui solo, è bene che questi eserciti la massima sorveglianza sui reparti, servendosi tra l’altro di mezzi quali le richieste interne e il registro di carico e scarico interno di reparto. I dati di questo registro sono necessari ad integrare quelli da lui già trascritti sul proprio registro, esplicitamente richiesti dalla legge (art. 64), e non necessariamente in suo possesso (data della somministrazione, qualità e quantità del medicinali somministrato, nome, cognome e residenza del pa-
ziente, diagnosi o sintomatologia). Il registro interno di reparto può essere eliminato solo se i singoli Medici faranno, di volta in volta, richiesta scritta al Direttore Sanitario per ogni singola somministrazione, specificando i dati sopra indicati. Nei reparti i farmaci stupefacenti e psicotropi devono essere conservati in armadio chiuso a chiave.
<table>
<thead>
<tr>
<th>Anno</th>
<th>Documentazione di entrata od uscita</th>
<th>Entrata</th>
<th>Uscita</th>
<th>Giacenza</th>
<th>NOTE</th>
<th>Direttore Sanitario</th>
<th>Itinerario</th>
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<td>Origine, dati della richiesta - Destinazione</td>
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<td>Comandante</td>
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a pag. ___ riportare
REGISTRO DEGLI IDROCARBURI
PARTE I
OPERAZIONI RIGUARDANTI IL LOCALE
APPARATO MOTORE
(TUTTE LE NAVI)

OIL RECORD BOOK
PART I
MACHINERY SPACE OPERATIONS
(ALL SHIPS)

Nome della nave:
Name of ship:

Matricola e Compartimento di iscrizione:
Distinctive number or letter - Port of Registry:

Stazza lorda tonn.:
Gross tonnage:

Periodo dal: .................................................. al: ..................................................
Period from: .................................................. to: ..................................................

Edizione 2011 / 2011 Edition
REGISTRO DEGLI IDROCAR布URI
OIL RECORD BOOK

Parte I - Operazioni riguardanti il locale apparato motore
Part I - Machinery space operations

Il presente registro, composto di n° ........................................ pages, each one is signed and
bollata con timbro d’ ufficio, è stato oggi rilasciato alla sottoindicata nave, al comando
office stamped, has been issued to the below mentioned vessel, under the command
del of ..............................................................................................................

addi .............................................................................................................. date .................................................................

II.................................................................

Nome della nave:
Name of ship: ...........................................................................................

Matricola:
Distinctive number or letters: ........................................................................

Stazza lorda tonn.: 
Gross tonnage: ..............................................................................................

Periodo dal: al:
Period from: ................................................... to: .................................................................

Revised as per IMO Resolution MEPC 187 (59) adopted on 17 July 2009.
N.B. Registro edito da CAIM come da Resolution MEPC 187 (59) del 17 Luglio 2009 -
uso soggetto alla disciplina di cui all’art. 1193 c. 3 c.n.

NOTA:
Il Registro degli idrocarburi Parte I deve essere tenuto a bordo di tutte le navi petroliere di stazza lorda uguale o superio-
re a 150 tonnellate e di tutte le navi non petroliere di stazza lorda uguale o superiore a 400 tonnellate, per annotare le
operazioni attinenti al locale apparato motore. Da parte delle navi petroliere deve essere tenuto a bordo anche il Registro
degli Idrocarburi Parte II per annotare le operazioni attinenti al carico e alla zavorra.

NOTE:
Oil Record Book Part I shall be provided to every oil tanker of 150 tons gross tonnage and above and every ship of 400 tons
gross tonnage and above, other than oil tankers, to record relevant space operations. For oil tankers, Oil Record Book Part
II shall also be provided to record relevant cargo/ballast operations.
INTRODUZIONE


Quando si registra qualche operazione nel Registro Idrocarburi, dovranno essere annotate nelle colonne appropriate la data, la lettera di codice ed il numero della voce per l’operazione in atto e le annotazioni richieste dovranno essere registrate cronologicamente negli spazi vuoti.

Ciascuna operazione completata dovrà essere firmata e datata dal o dagli Ufficiale/incaricato/i. Il comandante della nave dovrà firmare ogni pagina completata.

Il Registro Idrocarburi Parte I contiene molti riferimenti alle quantità di olio. La limitata precisione dei dispositivi per la misurazione della cisterna, le variazioni di temperatura ed il clinging influenzano l’accuratezza delle letture. Le registrazioni nel Registro degli Idrocarburi saranno valutate in conformità.

In caso di scarico accidentale o eccezionale di olio, la dichiarazione delle circostanze e delle ragioni di questo scarico, deve essere fatta sul registro idrocarburi parte I. Qualsiasi fallimento dell’equipaggiamento per il filtraggio dell’olio deve essere riportato sul registro idrocarburi parte I.

Le entrate nel suddetto registro, per le navi che hanno un certificato IOPP, devono essere scritte almeno in inglese, francese o spagnolo. Laddove le entrate sono anche scritte nella lingua ufficiale della nazione di cui la bandiera della nave batte, ciò deve prevalere in caso di controversia o discrepanza.

Il registro idrocarburi deve essere riposto in un luogo facilmente raggiungibile durante le ispezioni e, tranne caso di navi rimosse da ogni equipaggio, deve essere conservato un dato per il periodo nel quale la nave è in navigazione. Prolungare il periodo di conservazione per tre anni dopo che è stata effettuata l’ultima entrata.

L’autorità competente per il dato dello stato membro della convenzione può ispezionare il registro idrocarburi parte II a bordo di ogni nave in cui è applicato questo annex mentre la nave è in navigazione. La nave è fermata nel suo porto o negli offshore terminals, può fare una copia di una qualsiasi entrata di questo registro e può richiedere al comandante di certificare che questa sia la copia autentica di tale entrata. Qualsiasi copia di una registrazione del Registro Idrocarburi Parte II che sia certificata dal comandante come vera sarà ammessain qualsiasi procedimento giuridico come comprovante dei fatti dichiarati nella registrazione. L’ispezione di un Registro Idrocarburi Parte II è il prenderne la copia certificata dall’autorità competente sotto questo paragrafo deve essere eseguita il prima possibile, senza causare alla nave eccessivi ritardi.

INTRODUCTION

The following pages of this section show a comprehensive list of items of machinery space operations which are, when appropriate, to be recorded in the Oil Record Book, in accordance with Regulation 17 of Annex I of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78). The items have been grouped into operational sections, each of which is denoted by a letter code.

When making entries in the Oil Record Book, the date, operational code and item number shall be inserted in the appropriate columns and the required particulars shall be recorded chronologically in the blank spaces. Each completed operation shall be signed for and dated by the officer of officers in charge. The master of the ship shall sign each completed page.

The Oil Record Book Part I contains many references to oil quantity. The limited accuracy of tank measurement devices, temperature variations and clinging will affect the accuracy of these readings.

The entries in the Oil Record Book should be considered accordingly. In the event of accidental or other exceptional discharge of oil, statement shall be made in the Oil Record Book Part I of the circumstances of, and the reasons for, the discharge.

Any failure of the oil filtering equipment shall be noted in the Oil Record Book Part I.

The Entries in the Oil Record Book Part I. for ships holding an IOPP Certificate, shall be at least in English, French or Spanish. Where entries in official language of the State whose flag the ship is entitled to fly are also used, this shall prevail in case of a dispute or discrepancy.

The Oil Record Book Part I shall be kept in such a place as to be readily available for inspection at all reasonable times and, except in the case of unmanned ships under tow, shall be kept on board the ship. It shall be preserved for a period of three years after the last entry has been made.

The competent authority of the Government of a Party to the Convention may inspect the Oil Record Book Part I on board the ship to which this Annex applies while the ship is in its port or offshore terminals and may make a copy of any entry in that book and may require the master of the ship to certify that the copy is a true copy of such entry. Any copy so made which has been certified by the master of the ship as a true copy of an entry in the Oil Record Book Part I shall be made admissible in any juridical proceedings as evidence of the facts stated in the entry. The inspection of an Oil Record Book Part I and taking of a certified copy by the competent authority under this paragraph shall be performed as expeditiously as possible without causing the ship to be unduly delayed.

- 2 -
LISTA DELLE VOCI DA REGISTRARE
LIST OF ITEMS TO BE RECORDED

(A) ZAVORRAMENTO O PULIZIA DELLE CISTERNE ADIBITE A OLIO COMBUSTIBILE.
BALLASTING OR CLEANING OF OIL FUEL TANKS.

1.: Identificazione della/e cisterna/e zavorrata/e.
Identification of tank/s ballasted.

2.: Se pulite da quando hanno contenuto l’ultima volta olio combustibile e, in caso contrario, tipo di olio combustibile caricato precedentemente.
Whether cleaned since they last contained oil and, if not, type of oil previously carried.

3.: Procedura di pulizia:
Cleaning process:

.1 Posizione della nave all’inizio ed alla fine della pulizia;
Position of ship and time at the start and completion of cleaning;

.2 Identificare la/e cisterna/e in cui uno o l’altro metodo è stato impiegato (lavaggio a vapore, pulizia con chimici; tipo e quantità di chimici usati in metri cubi);
Identify tank/s in which one or another method has been employed (washing through, steaming, cleaning with chemicals; type and quantity of chemicals used in m³);

.3 Identificazione della/e cisterna/e in cui l’acqua di lavaggio è stata transferita e la quantità in M³.
Identity of tank/s into which cleaning water was transferred and the quantity in M³.

4.: Zavorramento:
Ballasting:

.1 Posizione della nave, data e ora di inizio e fine zavorramento;
Position of ship and time at start and end of ballasting;

.2 Quantità in metri cubi di zavorra in caso di cisterne non pulite in M³;
Quantity of ballast if tanks are not cleaned in M³;

(B) DISCARICA DELLA ZAVORRA SPORCA O ACQUA DI LAVAGGIO DELLE CISTERNE DI OLIO COMBUSTIBILE INDICATA NELLA SEZIONE (A).
DISCHARGE OF DIRTY BALLAST OR CLEANING WATER FROM OIL FUEL TANKS REFERRED TO UNDER SECTION (A).

5.: Identificazione della/e cisterna/e.
Identity of tank/s.

6.: Posizione della nave all’inizio della discarica.
Position of ship at start of discharge.

7.: Posizione della nave alla fine della discarica.
Position of ship on completion of discharge.

8.: Velocità della nave durante la discarica.
Ship’s speed/s during discharge.

9.: Metodo di discarica:
Method of discharge:

.1 Attraverso il separatore da 15 ppm;
Through 15 ppm equipment;

.2 Alla stazione di ricezione.
To reception facilities.

10.: Quantità scaricata in metri cubi.
Quantity discharged in cubic meters.

(C) RACCOLTA, TRASFERIMENTO ED ELIMINAZIONE DEI RESIDUI OLEOSI (MORCHIE).
COLLECTION, TRANSFER AND DISPOSAL OF OIL RESIDUES (SLUDGE).

11.: Raccolta dei residui oleosi (morchie).
Collection of oil residues (sludge).

Quantità di residui oleosi (morchie) ritenuti a bordo. La quantità dovrebbe essere registrata settimanalmente: (1) (ciò significa che la quantità deve essere registrata una volta a settimana anche se il viaggio dura più di una settimana).
Quantity of oil residues (sludge) retained on board. The quantity should be recorded weekly(1) (This means that the quantity must be recorded once a week even if the voyage lasts more than one week).
1. Identificazione della/e cisterna/e
   identity of tank/s ........................................

2. Capacità della/e cisterna/e
   capacity of tank/s ..................................... m³

3. Quantità totale ritenuta
   total quantity of retention .......................... m³

4. Quantità di residui raccolti manualmente in m³ (Raccolta manuale effettuata dove i residui oleosi (morchie) vengono trasferiti nelle apposite cisterne di raccolta).
   Quantity of residue collected by manual operation in m³ (Operator initiated manual collections where oil residue (sludge) is transferred into the oil residue (sludge) holding tank(s)).

12. Metodi di eliminazione e trasferimento del residuo.
   Methods of disposal or transfer of residue.

Specificare quantità dei residui oleosi trasferiti o eliminati, la/e cisterna/e vuotata/e la/e quantità trattenuta/e in m³:
   State quantity of oil residues transferred or disposed of, the tank/s emptied and the quantity of contents retained in m³:

1. Alle stazioni di ricezione (identificare il porto) (2);
   To reception facilities (identify port) (2);

2. In un’ altra/e cisterna/e (indicare la/e cisterna/e ed il contenuto);
   to another (other) tank/s (indicate tank/s and the total content of tank/s);

3. Bruciati con l’ inceneritore (indicare il tempo totale dell’ operazione);
   Incinerated (indicate total time of operation);

4. Altri metodi (specificare quali).
   Other method (state which).

(D) INIZIO DISCARICA FUORIBORDO NON AUTOMATICA, TRASFERIMENTO O ELIMINAZIONE CON ALTRI METODI DELL’ ACQUA ACCUMULATA NEI LOCALI MACCHINE.
   NON-AUTOMATIC STARTING OF DISCHARGE OVERBOARD, TRANSFER OR DISPOSAL OTHERWISE OF BILGE WATER WHICH HAS ACCUMULATED IN MACHINERY SPACES.

13. Quantità scaricata o eliminata in metri cubi (3).
   Quantity discharged or disposed of in cubic meters (3).

14. Data e ora della discarica o dell’ eliminazione (inizio e fine).
   Time of discharge or disposal (starts and stop).

15. Metodo di discarica, trasferimento o eliminazione:
   Method of discharge, transfer or disposal:

   1. Attraverso il separatore da 15 ppm (specificare la posizione all’inizio ed alla fine);
      Through 15 ppm equipment (state position at start and end);

   2. Ad una stazione di ricezione (indicare il porto) (2);
      To reception facilities (identify port) (2);

   3. Trasferimento allo slop tank o ad una cisterna di contenimento o altra/e cisterna/e (indicare la/e cisterna/e, specificare la quantità trasferita e la quantità in metri cubi trattenuta in cisterna/e);
      To slop tank or holding tank or other tank(s) (indicate tank(s)); state quantity retained in tank(s), in cubic meters;

(E) INIZIO DISCARICA AUTOMATICA FUORIBORDO, TRASFERIMENTO O ELIMINAZIONE CON ALTRI METODI DELL’ ACQUA DI SENTINA ACCUMULATA NEI LOCALI MACCHINE.
   AUTOMATIC STARTING OF DISCHARGE OVERBOARD, TRANSFER OR DISPOSAL OTHERWISE OF BILGE WATER WHICH HAS ACCUMULATED IN MACHINERY SPACES.

16. Data, ora e posizione in cui il sistema è stato avviato per funzionare in maniera automatica per la discarica fuoribordo attraverso il separatore da 15 ppm.
   Time and position of ship at which the system has been put into automatic mode of operation for discharge overboard through 15 ppm equipment.
17.: Data e ora in cui il sistema è stato avviato per funzionare in maniera automatica per il trasferimento dell'acqua di sentina nell'apposita cisterna. [Identificare cisterna]  
\emph{Time when the system has been put into automatic mode of operation for transfer of bilge water to holding tank. (Identify tank).}

18.: Data e ora in cui il sistema è stato messo in funzione manuale.  
\emph{Time when the system has been put to manual operation.}

\section*{F) CONDIZIONE DEL SISTEMA DI CONTROLLO E DI MONITORAGGIO PER LA DISCARICA OLIO.  
CONDITION OF THE OIL FILTERING EQUIPMENT.}

19.: Data e ora dell' avaria del sistema (4).  
\emph{Time of system failure (4).}

20.: Data e ora in cui il sistema è stato reso operativo.  
\emph{Time when system has been made operational.}

21.: Motivi dell' avaria.  
\emph{Reasons for failure.}

\section*{G) DISCARICHE ACCIDENTALI O ECCEZIONALI DI OLIO.  
ACCIDENTAL OR OTHER EXCEPTIONAL DISCHARGES OF OIL.}

22.: Data e ora dell' evento.  
\emph{Time of occurrence.}

23.: Posto o posizione della nave all' ora dell' evento.  
\emph{Place or position of ship at time of occurrence.}

24.: Quantità approssimativa e tipo di olio.  
\emph{Approximate quantity and type of oil.}

25.: Circostanze della discarica o sfuggita, le cause e le annotazioni principali.  
\emph{Circumstances of discharge or escape, the reasons thereof and general remarks.}

\section*{H) BUNKERAGGIO ED IMBARCO DI OLIO LUBRICANTE.  
BUNKERING OF FUEL OR BULK LUBRICATING OIL}

26.: Bunkeraggi:  
\emph{Bunkering:}

.1 Luogo di effettuazione del bunkeraggio;  
\emph{Place of bunkering.}

.2 Ora del bunkeraggio.  
\emph{Time of bunkering.}

.3 Tipo e quantità di fuel oil ed identificazione della/e cisterna/e (specificare quantità in tonnellate imbarcata e quantità totale della/e cisterna/e).  
\emph{Type and quantity of fuel oil and identity of tank(s) (state quantity added in tonnes and total content of tank(s)).}

.4 Tipo e quantità in tonnellate di olio lubrificante ed identificazione della/e cisterna/e (specificare quantità imbarcata e quantità totale della/e cisterna/e).  
\emph{Type and quantity of lubricating oil and identity of tank(s) (state quantity added in tonnes and total content of tank(s)).}

\section*{I) ALTRE PROCEDURE OPERATIVE ED ANNOTAZIONI GENERALI.  
ADDITIONAL OPERATIONAL PROCEDURES AND GENERAL REMARKS.}

(1) Solo nelle cisterne elencate al punto 3.1 del FORM A e FORM B del supplemento al Certificato IOPP.  
(1) Only in tanks listed in item 3.1 of FORM A and FORM B of the supplement to the IOPP Certificate.

(2) I Comandanti delle navi devono farsi rilasciare dall'operatore dell' impianto di ricezione, che include bettoline e autocisterne, una ricevuta o un certificato che specifichi la quantità delle acque di lavaggio, di zavorra sporca, di residui e misture di oli trasferiti, con la data e l' ora di trasferimento. Questa ricevuta o certificato, se allegato al Registro degli Idrocarburi, può aiutare il Comandante e dimostrare che la sua nave non può essere coinvolta in supposte situazioni di inquinamento. La ricevuta o il certificato dovrebbe essere tenuto allegato al Registro degli Idrocarburi.  
(2) Ship's masters should obtain from the operator of the reception facilities, which include barges and tank trucks, a receipt or certificate detailing the quantity of tank washings, dirty ballast, residues or oily mixtures transferred, together with the time and date of the transfer. This receipt or certificate, if attached to the Oil Record Book, may aid the master of the ship in clarifying that his ship was not involved in an alleged pollution incident. The receipt or certificate should be kept together with the Oil Record Book.

(3) In caso di scarico o eliminazione di acqua di sentina dai recipienti della stiva, dichiarare l'identità e la capacità di questi recipienti e la quantità conservata in essi.  
(3) In case of discharge or disposal of bilge water from holding tank(s), state identity and capacity of holding tank(s) and quantity retained in holding tank.

(4) La condizione dell' equipaggiamento per il filtraggio d' olio copre anche i dispositivi dell' allarme e dell' arresto automatico, se applicabile.  
(4) The condition of the oil filtering equipment covers also the alarm and automatic stopping devices, if applicable.
NOME DELLA NAVE:
NAME OF SHIP: .................................................................

SIGLA O NUMERO DI REGISTRAZIONE:
DISTINCTIVE NUMBER OR LETTERS: .................................................

OPERAZIONI LOCALI MACCHINE
MACHINERY SPACE OPERATIONS

<table>
<thead>
<tr>
<th>Data Date</th>
<th>Codice Code (Lettera) (Letter)</th>
<th>Voce Item (Numero) (Number)</th>
<th>Registrazione delle operazioni/firma dell' Ufficiale incaricato Record of operations/signature of officer in charge</th>
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REGISTRO DEGLI IDROCARBURI
PARTE II
OPERAZIONI RIGUARDANTI IL CARICO
E LA ZAVORRA
(NAVI PETROLIERE)

OIL RECORD BOOK
PART II
CARGO BALLAST OPERATIONS
(OIL TANKERS)

Nome della nave:
Name of ship: .................................................................

Matricola e Compartimento di iscrizione:
Distinctive number or letter - Port of Registry: ............................

Stazza lorda tonn.:  
Gross tonnage: ...............................................................

Periodo dal: ......................................................... al:  ........................................
Period from: ............................................................. to: ...................................

Edizione 2011 / 2011
Il presente registro, composto di n° ___________ pagine, ognuna delle quali firmata e bollata con timbro d’ufficio, è stato oggi rilasciato alla sottointesa nave, al comando del ________________

addì

____________________ date ________________________

Il________________________

Nome della nave:
Name of ship: _______________________________________

Matricola e Compartimento di iscrizione:
Distinctive number or letter - Port of Registry: ________________________________

Stazza lorda tonn.: 
Gross tonnage: ___________________________________________________________________

Periodo dal: ____________________ al: ____________________
Period from: ____________________ to: ____________________

Revised as per IMO resolution MEPC. 187 (59) adopted on 17 July 2009.
N.B. Registro edito da CAIM come da resolution MEPC. 187 (59) del 17 Luglio 2009 - uso soggetto alla disciplina di cui dell’art. 1193 c. 3 c.n.

NOTA:

La Parte II del Registro degli Idrocarburi deve essere tenuta a bordo di tutte le navi petroliere di stazza lorda uguale o superiore a 150 tonnellate, per annotare le operazioni attinenti al carico e alla zavorra. Tali navi petroliere devono essere munite anche del Registro degli Idrocarburi Parte I, per annotare le operazioni attinenti al locale apparato motore.

NOTE:
Every Oil Tanker of 150 gross tonnage and above shall be provided with Oil Record Book Part II to record relevant cargo/ballast operations. Such a tanker shall also be provided with Oil Record Book Part I to record relevant machinery space operations.
**Nome della Nave:**
**Name of Ship:**

**Sigla o Numero di Registrazione:**
**Distinctive Number or Letters:**

**Piano delle Cisterne del Carico e delle Cisterne Slop**
**Plan View of Cargo and Slop Tanks**
*(da completare a bordo)*
*(to be completed on board)*

<table>
<thead>
<tr>
<th>Identificazione delle cisterne</th>
<th>Capacità</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Identifications of the tanks</em></td>
<td><em>Capacity</em></td>
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<tr>
<td>(Give the capacity of each tank and the depth of slop tank(s)).</td>
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</tbody>
</table>
INTRODUZIONE

Le pagine seguenti di questa sezione indicano un elenco delle operazioni relative al carico e alla zavorra, che, quando applicabili, devono essere registrate nel Registro Idrocarburi in accordo alla Regola 36 dell’Annesso I della Convenzione Internazionale per la prevenzione dell’Inquinamento da Navi, 1973, come modificata dal suo Protocollo del 1978 (MARPOL 73/78). Le voci sono state raggruppate in sezioni operative, ciascuna delle quali è contraddistinta da una lettera di codice. Quando si registra qualche operazione nel Registro Idrocarburi parte II, dovranno essere annotate nelle colonne appropriate la data, la lettera di codice e il numero della voce per l'operazione in atto e le annotazioni richieste dovranno essere registrate cronologicamente negli spazi vuoti.

Ciascuna operazione completata dovrà essere firmata e datata dal o dagli Ufficiali/i incaricato/i. Ciascuna pagina completata dovrà essere firmata dal Comandante della nave.

Per quanto riguarda le navi petroliere impiegate in traffici specifici, in accordo alla Regola 2.5 dell’Annesso I della MARPOL 73/78, un’apposita dichiarazione dovrà essere firmata, nel Registro Idrocarburi parte II, dalla competente Autorità Portuale.

Il Registro Idrocarburi parte II contiene molti riferimenti alle quantità di olio. La limitata precisione dei dispositivi per la misurazione della cisterna, le variazioni di temperatura ed il cingapping influenzano l'accuratezza delle letture. Le registrazioni nel Registro degli Idrocarburi parte II saranno valutate in conformità.

In caso di scarico accidentale o eccezionale di olio, la dichiarazione delle circostanze e delle ragioni di questo scarico, deve essere fatta sul registro idrocarburi parte I.

Qualsiasi avaria dell'equipaggiamento per il filtraggio dell'olio deve essere riportato sul registro idrocarburi parte I.

Le entrate nel suddetto registro, per le navi che hanno un certificato IOPP, devono essere scritte almeno in inglese, francese o spagnolo.

Laddove le entrate sono anche scritte nella lingua ufficiale della nazione di cui la bandiera della nave bate, ciò deve prevalere in caso di controversia o discrepanza.

Il registro idrocarburi deve essere riposto in un luogo facilmente raggiungibile durante le ispezioni e, tranne caso di navi rimorchiate senza equipaggio, deve essere tenuto a bordo della nave.

Deve essere conservato per un periodo di tre anni dopo che è stata effettuata l’ultima entrata.

L’autorità competente per conto dello stato membro della convenzione può ispezionare il registro idrocarburi parte II a bordo di ogni nave in cui è applicato questo annexe mentre la nave è ferma nel suo porto o negli offshore terminals, può fare una copia di una qualsiasi entrata di questo registro e può richiedere al comandante di certificare che questa sia la copia autentica di tale entrata. Qualsiasi copia di una registrazione del Registro Idrocarburi Parte I che sia certificata dal comandante come vera sarà ammessa qualsiasi procedimento giuridico come comprovante dei fatti dichiarati nella registrazione. L’ispezione di un Registro Idrocarburi Parte II e il prenderne la copia certificata dall’autorità competente sotto questo paragrafo deve essere eseguita il prima possibile, senza causare alla nave eccessivi ritardi.

The following pages of this section show a comprehensive list of items of cargo and ballast operations which are, when appropriate, to be recorded in the Oil Record Book, in accordance with Regulation 36 of Annex I of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the protocol of 1978 relating thereto to (MARPOL 73/78). The items have been grouped into operational sections, each of which is denoted by a code letter.

When making entries in the Oil Record Book part II, the date, operational code and item number shall be inserted in the appropriate columns and the required particulars shall be recorded chronologically in the blank spaces. Each completed operation shall be signed for and dated by the officer or officers in charge. Each completed page shall be countersigned by the master of the ship.

In respect of the oil tankers engaged in specific trades in accordance with Regulation 2.5 of Annex I of MARPOL 73/78, appropriate entry in the Oil Record Book part II shall be endorsed by the competent Port State authority (*).

The Oil Record Book part II contains many references to oil quantity. The limited accuracy of tank measurement devices, temperature variations and cingapping will affect the accuracy of these readings. The entries in the Oil Record Book Part II should be considered accordingly.

In the event of accidental or other exceptional discharge of oil, a statement shall be made in the Oil Record Book Part II of the circumstances of, and the reasons for, the discharge.

Any failure of the oil discharge monitoring and control system shall be noted in the Oil Record Book Part II.

The entries in the Oil Record Book Part II, for ships holding an IOPP Certificate, shall be at least in English, French or Spanish. Where entries in an official language of the State whose flag the ship is entitled to fly are also used, this shall prevail in case of a dispute or discrepancy.

The Oil Record Book Part II shall be kept in such a place as to be readily available for inspection at all reasonable times and, except in the case of unmanned ships under tow, shall be kept on board the ship. It shall be preserved for a period of three years after the last entry has been made.

The competent authority of the Government of a Party to the Convention may inspect the Oil Record Book Part II on board the ship to which this Annex applies while the ship is in its port or offshore terminals and may make a copy of any entry in that book and may require the master of the ship to certify that the copy is a true copy of such entry. Any copy so made which has been certified by the master of the ship as a true copy of an entry in the Oil Record Book Part II shall be made admissible in any judicial proceedings as evidence of the facts stated in the entry. The inspection of an Oil Record Book Part II and taking of a certified copy by the competent authority under this paragraph shall be performed as expeditiously as possible without causing the ship to be unduly delayed.

(*) Questa frase dovrà essere inserita soltanto per il Registro Idrocarburi di una nave petroliera impiegata per un traffico specifico.

(*) This sentence should only be inserted for the Oil Record Book of a tanker in a specific trade.
LISTA DELLE VOCI DA REGISTRARE
LIST OF ITEMS TO BE RECORDED

(A) IMBARCO DEL CARICO.
LOADING OF OIL CARGO.
1.: Luogo di caricamento.
Place of loading.
2.: Tipo di carico e cisterna/e interessata/e.
Type of oil loaded and identity of tank(s). 
3.: Quantità totale di olio caricato [specificare quantità in metri cubi a 15°C aggiunta e contenuto totale della cisterna in metri cubi (e)].
Total quantity of oil loaded [state quantity added in cubic meters at 15°C and the total content of tank(s) in cubic meters].

(B) MOVIMENTAZIONE DEL CARICO DURANTE IL VIAGGIO.
INTERNAL TRANSFER OF OIL CARGO DURING VOYAGE.
4.: Cisterna/e interessata/e.
Identity of tank(s):
.1 Da:
Prom:
.2 A: [specificare quantità trasferita a quantità totale della cisterna in metri cubi (e)].
To: [state quantity transferred and total quantity of tank(s) in cubic meters].
5.: È stata/sono state svuotata/e la/e cisterna/e indicata/e in 4.1? (in caso negativo specificare la quantità trattenuta in metri cubi)
Was/were the tank/s in 4.1 emptied? (if not, state the quantity retained in cubic meters)

(C) SBARCO DEL CARICO.
UNLOADING OF OIL CARGO.
6.: Luogo di disscarica.
Place of discharging.
7.: Cisterna/e scaricata/e.
Identity of tank(s) unloaded.
8.: È stata/sono state svuotata/e la/e cisterna/e ? (in caso negativo specificare la quantità trattenuta in metri cubi)
Was/were the tank/s emptied? (if not, state quantity retained in cubic meters)

(D) LAVAGGIO CON GREZZO (SOLO PER NAVI COW)
(da completare per ciascuna cisterna lavata con grezzo).
CRUDE OIL WASHING (COW TANKERS ONLY)
(To be completed for each tank being crude oil washed).
9.: Porto dove è stato effettuato il lavaggio con grezzo o la posizione della nave se il lavaggio viene fatto tra due porti di disscarica.
Port where crude oil washing was carried out or ship’s position if carried out between two discharge ports.
10.: Cisterna/e lavata/e (1).
Identity of tank/s washed (1).
11.: Numero delle macchine utilizzate.
Number of machines in use.
12.: Data ed ora di inizio del lavaggio.
Time of start of washing.
13.: Programma di lavaggio usato (2).
Washing pattern employed (2).
14.: Pressione nella linea di lavaggio.
Washing line pressure.
15.: Indicare se il tempo del lavaggio è stato completato o arrestato.
Time washing was completed or stopped.
16.: Indicare i metodi seguiti per accertare che la/e cisterna/e era/erano asciutta/e.
State method of establishing that tank/s was/were dry.
17.: Note (3)
Remarks (3)

(1) Quando una cisterna ha più macchine che possono essere messe in funzione contemporaneamente come indicato nel manuale operativo, deve essere definita la sezione da lavare con grezzo (per esempio, n. 2 centrale, sezione di prora).
When an individual tank has more machines that can be operated simultaneously, as described in the Operations and Equipment Manual, then the section being crude oil washed should be identified, e.g. n. 2 centre, forward section.

(2) In conformità con il Manuale Operativo, annotare se il programma di lavaggio è ed uno stadio o multistadio. Se si utilizza il multistadio occorre indicare l’arco verticale coperto dalle macchine ed il numero di volte che questo arco viene utilizzato per quel particolare stadio del programma.
In accordance with the Operations and Equipment Manual enter whether single stage or multi-stage method of washing is employed. If multi-stage method is used, give the vertical arc covered by the machines and the number of times that arc is covered for that particular stage of the program.

(3) Se i programmi indicati nel Manuale Operativo non sono seguiti, annotare le ragioni nella colonna delle Note.
If the programs given in the Operations and Equipment Manual are not followed, then the reasons must be given under Remarks.
(E) ZAVORRAMENTO DELLE CISTERNE DEL CARICO.
BALLASTING OF CARGO TANKS.

18.: Posizione della nave all’inizio ed alla fine del zavorramento. 
Position of ship at start and end of ballasting.

19.: Procedura di zavorramento:
Ballasting process:
.1 Cisterna/e zavorrata/e.
Identity of tank(s) ballasted.
.2 Data e ora di inizio e fine.
Time of start and end.
.3 Quantità di zavorra ricevuta. Indicare la quantità totale di zavorra in metri cubi per ciascuna cisterna coinvolta nell’operazione.
Quantity of ballast received. Indicate total quantity of ballast for each tank involved in the operation in cubic meters.

(F) ZAVORRAMENTO DELLE CISTERNE DESTINATE A ZAVORRA PULITA [SOLO NAVI CBT].
BALLASTING OF DEDICATED CLEAN BALLAST TANKS (CBT TANKERS ONLY).

20.: Cisterna/e zavorrata/e.
Identity of tank/s ballasted.

21.: Posizione della nave al momento dell’imbarco dell’acqua di flussoaggio o porto in cui è stata imbarcata la
zavorra nella/e cisterna/e destinata/e a zavorra pulita.
Position of ship when water intended for flushing or port ballast was taken to dedicated clean ballast tank/s.

22.: Posizione della nave al momento del flussoaggio della/e pompe/e e delle linee alla cisterna Slop.
Position of ship when pump/s and lines were flushed to slop tank.

23.: Quantità di acqua oleosa che, dopo il flussoaggio, è stata transferita allo/agli slop tank(s) o cisterna/e carico in cui gli slop sono
previamente raccolti (identificare le cisterne). Specificare la quantità totale in metri cubi.
Quantity of the oily water which after line flushing, is transferred to the slop tank(s) or cargo tank(s) in which slop is preliminarily stored (identify tank(s)). State the total quantity in cubic meters.

24.: Posizione della nave al momento dell’immissione della zavorra aggiuntiva nella/e cisterna/e destinata/e a
contenere zavorra pulita.
Position of ship when additional ballast water was taken to dedicated clean ballast tank/s.

25.: Data, ora e posizione della nave al momento della chiusura delle valvole che separano le cisterne destinate a
zavorra pulita dalle linee del carico e dello stripping.
Time and position of ship when valves separating the dedicated clean ballast tanks from cargo and stripping lines were closed.

26.: Quantità in metri cubi della zavorra pulita imbarcata.
Quantity of clean ballast taken on board in cubic meters.

(G) PULIZIA DELLE CISTERNE DEL CARICO.
CLEANING OF CARGO TANKS.

27.: Cisterna/e interessata/e.
Identity tank/s cleaned.

28.: Porto o posizione della nave.
Port or ship’s position.

29.: Durata della pulizia.
Duration of cleaning.

30.: Metodi della pulizia (4).
Method of cleaning (4).

31.: Acque di lavaggio delle cisterne trasferite a:
Tank washings transferred to:
.1 Impianto di ricezione (specificare porto e quantità in metri cubi) (5)
Reception facilities (state port and quantity in cubic meters) (5)
.2 Cisterna/e slop o cisterna/e carico adibita/e a cisterna/e slop (indicare la/e cisterna/e); specificare
quantità trasferita e quantità totale in metri cubi.
Slop tanks or cargo tank/s designated as slop tank/s (identify tank/s); state quantity transferred and total
quantity in cubic meters.

(4) Manichette portatili, macchine di lavaggio e/o lavaggio chimico. Quando si utilizza il lavaggio chimico, dovrà essere indicato il
tipo e la quantità della sostanza chimica impiegata in metri cubi.

(4) Hand hosing, machine washing and/or chemical cleaning. Were chemically cleaned, the chemical concerned and amount used
should be stated in cubic meters.

(5) Il Comandante della nave deve farci rilasciare dall’operatore degli impianti di ricezione, includendo bottiglie e autocioterne, una ricevuta
od un certificato che specifichi la quantità totale delle acque di lavaggio, di zavorra sporca, di residui e di oli trasferiti, con la data e l’ora
del trasferimento. La ricevuta o il certificato, se, allegato al Registro degli Idrocarburi, può
aiutare il Comandante della nave a dimostrare che la sua nave non può essere coinvolta in supposte
situazioni di inquinamento. La ricevuta od il certificato dovrebbe essere allegato al Registro degli Idrocarburi.

Ships’ masters should obtain from the operator of the reception facilities, which includes barges and tank trucks, a receipt
or certificate detailing the quantity of tank washings, dirty ballast, residues or oily mixtures transferred. Together with the
and date of the transfer. This receipt or certificate, if attached to the Oil Record Book Part II, may aid the master of the ship in proving
that his ship was not involved in an alleged pollution incident.

The receipt or certificate should be kept together with the Oil Record Book Part II.
DISCARICA DELLA ZAVORRA SPORCA.
DISCHARGE OF DIRTY BALLAST.

32.: Cisterna/e da scaricare.

33.: Ora e Posizione della nave all'inizio della discarica in mare.

34.: Ora e Posizione della nave alla fine della discarica in mare.

35.: Quantità scaricata in mare in metri cubi.

36.: Velocità della nave durante la discarica.

37.: È stato mantenuto in funzione il sistema di monitoraggio e di controllo della discarica?

38.: È stato effettuato un regolare controllo dell'effluente e della superficie dell'acqua nella zona di

39.: Quantità in metri cubi di acque oleose trasferite alla/i cisterna/e slop (indicare la/i cisterna/e slop)

40.: Scaricata agli impianti di riciclo a terra (indicare il porto e la quantità scaricata in metri cubi) (5).

Discharged to shore reception facilities (identify port and quantity involved in cubic meters) (5).

DISCARICA IN MARE DELL'ACQUA DELLE CISTERNE SLOP.
DISCHARGE OF WATER FROM SLOP TANKS INTO THE SEA.

41.: Identificazione delle cisterne slop.

42.: Tempo di decantazione dall'ultima raccolta dei residui.

43.: Tempo di decantazione dall'ultima discarica.

44.: Data ora e posizione della nave all'inizio della discarica.

45.: Misura del vuoto nella cisterna con il contenuto totale ad inizio della discarica.

46.: Ufficialmente totale at start of discharge.

47.: Quantità in metri cubi scaricata e rata della discarica prima del drenaggio finale in metri cubi/era.

48.: Quantità in metri cubi scaricata e rata di discarica durante il drenaggio in metri cubi/era.

49.: Data, ora e posizione della nave alla fine della discarica.

50.: La discarica è stata effettuata con il sistema di monitoraggio e di controllo in funzione?

51.: Vuoto dell'interfaccia acqua olio alla fine della discarica in metri.

52.: Velocità della nave durante la discarica.

53.: È stato effettuato un regolare controllo dell'effluente e della superficie dell'acqua nella zona di
discarica?

54.: Conferma che tutte le valvole interessate dell'impianto siano state chiuse alla fine della discarica dalle
cisterne slop.

Confirm all applicable valves in the ship's piping system have been closed on completion of
discharge from the slop tanks.

RACCOLTA, TRASFERIMENTO ED ELIMINAZIONE DEI RESIDUI E DELLE MISCELE OLEOSE NON
DIVERSAMENTE TRATTATE.
COLLECTION, TRANSFER AND DISPOSAL OF RESIDUES AND OILY MIXTURES NOT OTHERWISE DEALT WITH.

55.: Cisterne interessate.

56.: Quantità trasferita od eliminata da ciascuna cisterna (specificare la quantità trattenuta in M³).

57.: Metodo di trasferimento o eliminazione:

Method of transfer or disposal:

1. Agli impianti di ricezione (indicare il porto e quantità trasferita) (5).

2. Mescolati con il carico (specificare quantità).

3. Trasferiti da o verso altra/e cisterna/e inclusa trasferimento da cisterne per residuo oleoso di macchinari

(morchie) e/o per acqua di sentina (indicare la/i cisterna/e; specificare quantità trasferita e quantità totale
in cisterna/e in M³).

4. Altri metodi (indicare quale); specificare quantità trasferita in metri cubi.

Other method (state which); (state quantity disposed in M³).
DISCARICA DELLA ZAVORRA PULITA CONTENUTA NELLE CISTERNE DEL CARICO.
DISCHARGE OF CLEAN BALLAST CONTAINED IN CARGO TANKS.

58.: Posizione della nave all'inizio della discarica della zavorra pulita.
Position of ship at start of discharge of clean ballast.

59.: Cisterna/e scaricata/e.
Identity of tank/s discharged.

60.: La/e cisterna/e è/sono stata/e vuota/e completamente?
Was/were the tank/s empty on completion?

61.: Posizione della nave alla fine della discarica se diversa da quella del punto 58.
Position of ship on completion if different from 58.

62.: È stato effettuato un regolare controllo dell'effluente e della superficie dell'acqua circostante il punto della discarica?
Was a regular check kept on the effluent and the surface of the water in the locality of the discharge?

DISCARICA DELLA ZAVORRA DALLE CISTERNE DESTINATE A ZAVORRA PULITA
(SOLO PETROLIERE CBT).
DISCHARGE OF BALLAST FROM DEDICATED CLEAN BALLAST TANKS (CBT TANKERS ONLY).

63.: Cisterna/e interessata/e.
Identity of tank/s discharged.

64.: Data, ora e posizione della nave all'inizio della discarica della zavorra pulita in mare.
Time and position of ship at start of discharge of clean ballast into the sea.

65.: Data, ora e posizione della nave sul finire della discarica in mare.
Time and position of ship on completion of discharge into the sea.

66.: Quantità scaricata (in metri cubi):
Quantity discharged (in cubic meters):

   1. In mare; o,
   Into the sea; or,
   
   2. In impianti di ricezione (indicare il porto).
   In reception facilities (identify port).

67.: Vi è stata qualche indicazione di contaminazione da olio dell'acqua di zavorra prima o durante la discarica in mare?
Was there any indication of oil contamination of the ballast water before or during discharge into the sea?

68.: La discarica è stata monitorizzata dal rilevatore di olio?
Was the discharge monitored by an oil content meter?

69.: Data, ora e posizione della nave al momento della chiusura delle valvole che separano le cisterne destinate a contenere la zavorra pulita, dalle linee carico e stripping, alla fine della discarica della zavorra.
Time and position of ship when valves separating dedicated clean ballast tanks from the cargo and stripping lines were closed on completion of deballasting.

CONDIZIONE DEL SISTEMA DI CONTROLLO E MONITORAGGIO DELLA DISCARICA DI Olio.
CONDITION OF OIL DISCHARGE MONITORING AND CONTROL SYSTEM.

70.: Data e ora dell'avaria al sistema.
Time of system failure.

71.: Data e ora in cui il sistema è ridiventato operativo.
Time when system has been made operational.

72.: Causa dell'avaria.
Reasons for failure.

SCARICA ACCIDENTALE O ECCEZIONALE DI Olio.
ACCIDENTAL OR OTHER EXCEPTIONAL DISCHARGES OF OIL.

73.: Data e ora dell'evento.
Time of occurrence.

74.: Porto o posizione della nave al momento dell'evento.
Port or ship's position at time of occurrence.

75.: Quantità approssimata in metri cubi e tipo di olio.
Approximate quantity in cubic meters and type of oil.

76.: Circostanze della discarica o della fuoriuscita, le cause e le considerazioni generali.
Circumstances of discharge or escape, the reasons therefor and general remarks.

PROCEDURE OPERATIVE ADDIZIONALI ED ANNOTAZIONI GENERALI.
ADDITIONAL OPERATIONAL PROCEDURES AND GENERAL REMARKS.
NAVI PETROLIERE IMPIEGATE SU VIAGGI SPECIFICI
TANKERS ENGAGED IN SPECIFIC TRADES

(P) IMBARCO DELL'ACQUA DI ZAVORRA.
LOADING OF BALLAST WATER.

77.: Cisterne/e zavorrata/e.
Identity of tanks ballasted.

78.: Posizione della nave quando ha zavorrato.
Position of ship when ballasted.

79.: Quantità totale della zavorra imbarcata in metri cubi.
Total quantity of ballast loaded in cubic meters.

80.: Annotazioni.
Remarks.

(Q) RIDISTRIBUZIONE DELL'ACQUA DI ZAVORRA NELLA NAVE.
RE-ALLOCATION OF BALLAST WATER WITHIN THE SHIP.

81.: Ragioni per la ridistribuzione.
Reasons for reallocation.

(R) DISCARICA DELL'ACQUA DI ZAVORRA ALL'IMPIANTO DI RICEZIONE.
BALLAST WATER DISCHARGE TO RECEPTION FACILITY.

82.: Porto/i dove l'acqua di zavorra è stata scaricata.
Port where ballast water was discharged.

83.: Nome o identificazione dell'impianto di ricezione.
Name or designation of reception facility.

84.: Quantità totale dell'acqua di zavorra scaricata in metri cubi.
Total quantity of ballast water discharged in cubic meters.

85.: Data, ora, timbro e firma dell'Autorità Marittima Mercantile.
Date, signature and stamp of port authority official.

(5) Il Comandante della nave deve farsi rilasciare dall'operatore della stazione di ricezione una ricevuta od un certificato che specifichi la quantità delle acque di lavaggio, di zavorra sporca, di residui e miscele di oli trasferiti, con la data e l'ora del trasferimento. La ricevuta o il certificato, se allegato al Registro degli Idrocarburi Parte II, può aiutare il Comandante della nave a dimostrare che la sua nave non può essere coinvolta in supposte situazioni di inquinamento. La ricevuta od il certificato dovrebbe essere allegato al Registro degli Idrocarburi Parte II.

(5) Ships' masters should obtain from the operator of the reception facilities, which includes barges and tank trucks, a receipt or certificate detailing the quantity of tank washings, dirty ballast, residues or oily mixtures transferred, together with the time and date of the transfer. This receipt or certificate, if attached to the Oil Record Book Part II, may aid the master of the ship in clarifying that his ship was not involved in an alleged pollution incident. The receipt or certificate should be kept together with the Oil Record Book Part II.
**NOME DELLA NAVE:**
NAME OF SHIP: .................................

**SIGLA O NUMERO DI REGISTRAZIONE:**
DISTINCTIVE NUMBER OR LETTERS: .................................

**OPERAZIONI DI CARICO/ZAVORRA (NAVI PETROLIERE)**
CARGO/BALLAST OPERATIONS (OIL TANKERS)

<table>
<thead>
<tr>
<th>Data (Date)</th>
<th>Codice (Code)</th>
<th>Voce (Item)</th>
<th>Registrazione delle operazioni/firma dell' Ufficiale incaricato (Record of operations/signature of officer in charge)</th>
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**Firma del Comandante**
Signature of Master .................................
REGISTRO DEL CARICO PER LE NAVE CHE TRASPORTANO SOSTANZE LIQUIDE NOCIVE

Cargo record Book for ship carrying noxious liquid substances in bulk

Nave
Ship ..............................................................

Com.te
Master ..........................................................

Dal Al
From .......... To .....................................

Revised as per Marpol Consolidated edition 2006
REGISTRO DEL CARICO PER LE NAVI CHE TRASPORTANO SOSTANZE LIQUIDE NOCIVE
(Cargo Record Book for ships carrying noxious liquid substances in bulk)

Il presente registro, composto di n. ................ pagine, ognuna delle quali è firmata e bollata con timbro d'ufficio, è stato oggi rilasciato alla sottoindicata nave, al comando del .................................................................
........................................................................................................... addi ............................... 20......

Il .............................................................................................................

Nome della nave ...................................................................................
(Name of ship)

Matricola e compartimento di iscrizione ............................................
(Distinctive number or letters - Port of Registry)

Stazza lorda, tonn. ................................................................................
(Gross Tonnage)

Periodo dal ......................................................................................... al .................................................................
(Period from) (to)

Soggetto a rigoroso rendiconto
Liable to strict check

Revised as per Marpol Consolidated Edition 2006

Nota
(Note)

Ogni nave che trasporta sostanze liquide nocive alla rinfusa deve essere munita del Registro del carico per registrare le relative operazioni concernenti il carico e la zavorra.
Every ship carrying noxious liquid substances in bulk shall be provided with a Cargo Record Book to record relevant cargo/ballast operations.
VISTA IN PIANTA DELLE CISTERNE DEL CARICO E DELLE CISTERNE PER GLI SLOPS
(da completarsi a bordo)

(Plan view of Cargo and Slop Tanks)
(To be completed on board)

<table>
<thead>
<tr>
<th>Identificazione delle cisterne</th>
<th>Capacità delle cisterne</th>
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(Dare la capacità di ciascuna cisterna in metri cubi)
(Give the capacity of each tank in cubic meters)
Le pagine seguenti mostrano un elenco di voci delle operazioni concernenti il carico e la zavorra le quali, quando appropriato, devono essere registrate nel Registro del carico per ciascuna cisterna secondo la regola 15.2 dell’Annesso II della Convenzione internazionale per la prevenzione dell’inquinamento causato da navi, 1973, come modificata dal Protocollo 1978 ad essa relativo così come emendato.
Nel fare annotazioni nel Registro del carico, devono essere inserite nelle appropriate colonne la data, il numero di codice e la voce dell’operazione ed i prescritti particolari devono essere registrati cronologicamente negli spazi in bianco.
Ciascuna operazione condotta a termine deve essere firmata e datata dall’ufficiale o degli ufficiali incaricati e, se il caso, da un ispettore autorizzato dalla competente autorità dello Stato nel quale la nave stà scaricando. Ciascuna pagina deve essere controfirmata dal comandante della nave.

The following pages show a comprehensive list of items of cargo and ballast operations which are, when appropriate, to be recorded in the Cargo Record Book on a tank-to-tank basis in accordance with regulation 15.2 of Annex II of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto, as amended. The items have been grouped into operational sections, each of which is denoted by a letter.

When making entries in the Cargo Record Book, the date, operational code and item number shall be inserted in the appropriate columns and the required particulars shall be recorded chronologically in the blank spaces.

Each completed operation shall be signed for and dated by the officer or officers in charge and, if applicable, by a surveyor authorized by the competent authority of the State in which the ship is unloading. Each completed page shall be countersigned by the master of the ship.
ELENCO DELLE VOCI DA REGISTRARE
(List of items to be recorded)

Le annotazioni sono prescritte per operazioni concernenti le sostanze di tutte le categorie.
Entries are required only for operations involving all categories of substances.

(A) CARICAMENTO DEL CARICO
LOADING OF CARGO

1. Luogo del caricamento.
   Place of loading.

2. Identificazione della cisterna/e, nome della sostanza/e, categoria/e.
   Identify tank(s), name of substance(s) and category(ies).

(B) TRAVASO INTERNO DEL CARICO
INTERNAL TRANSFER OF CARGO

3. Nome e categoria del carico/i trasvasato/i.
   Name and category of cargo(ies) transferred.

4. Identificazione delle cisterne.
   Identity of tanks
   .1 Dalla:
     From:
   .2 Alla:
     To:

5. E' stata (sono state) vuotata/e la cisterna/e indicata/e in 4.1?
   Was (were) tank(s) in 4.1 emptied?

6. In caso contrario, specificare la quantità rimasta nella cisterna/e.
   If not, quantity remaining in tank(s).

(C) SCARICO DEL CARICO
UNLOADING OF CARGO

7. Luogo dello scarico.
   Place of unloading.

8. Identificazione della cisterna/e scaricata/e.
   Identity of tank(s) unloaded.

9. E' stata vuotata (sono state vuotate) le cisterna/e?
   Was (were) tank(s) emptied?
   .1 In caso affermativo, confermare che la procedura per lo svuotamento ed il prosciugamento sia stata
       eseguita secondo il Manuale delle procedure e delle sistemazioni della nave (cioè l’assetto longitudinale
       l’assetto trasversale, la temperatura di prosciugamento).
       If yes, confirm that the procedure for emptying and stripping has been performed in accordance with the
       ship’s Procedures and Arrangements Manual (i.e. list, trim, stripping temperature).

   .2 In caso contrario, specificare la quantità rimasta nella cisterna/e.
       If not, quantity remaining in tank(s).

10. Il manuale delle procedure e delle sistemazioni della nave prescrive un prelavaggio con successiva discarica a
    stazioni di ricezione?
    Does the ship’s Procedures and Arrangements Manual require a prewash with subsequent disposal to reception
    facilities?
11. Avaria dell'impianto di pompaggio e/o di prosciugamento:
*Failure of pumping and/or stripping system:*

1. Data e natura dell'avaria.
*Time and nature of failure.*

2. Cause dell'avaria.
*Reasons for failure.*

3. Data in cui l'impianto è stato reso operativo.
*Time when system has been made operational.*

(D) **PRELAVAVGIO OBBLIGATORIO SECONDO IL MANUALE DELLE PROCEDURE E DELLE SISTEMAZIONI DELLA NAVE.**
*MANDATORY PREWASH IN ACCORDANCE WITH THE SHIP'S PROCEDURES AND ARRANGEMENTS MANUAL.*

12. Identificazione della cisterna/e, sostanza/e, categoria/e.
*Identify tank(s), substance(s) and category(ies).*

13. Metodi di lavaggio:
*Washing method:*

1. Numero delle macchine per il lavaggio per cisterna.
*Number of cleaning machines per tank.*

2. Durata del lavaggio / dei cicli di lavaggio.
*Duration of wash / washing cycles.*

3. Lavaggio a caldo / a freddo.
*Hot / Cold wash.*

14. Slops di prelavaggio travasati a:
*Prewash slops transferred to:*

1. Stazione di ricezione nel porto di scarico del carico (indicare il porto).
*Reception Facility in unloading port (identify port). [*]*

2. Stazione di ricezione ubicata altrove (indicare il porto).
*Reception facility otherwise (identify port).*

(E) **PULIZIA DELLE CISTERNE ECCETTO IL PRELAVAVGIO OBBLIGATORIO**
(altre operazioni di prelavaggio, lavaggio finale, ventilazione, ecc.)
*CLEANING OF CARGO TANKS EXCEPT MANDATORY PREWASH* (other prewash operations, final wash, ventilation, etc.)

15. Dichiarare il tempo, identificare la cisterna/e, la sostanza/e, la categoria/e. Dichiarare:
*State time, identify tank(s), substance(s), category(ies) and state:*

1. La procedura di lavaggio impiegata.
*Washing procedure used.*

2. Prodotto/i detergente/i (identificare il prodotto/i e la quantità).
*Cleaning agent(s) (identify agent(s) and quantity(ies)).*

3. Procedura di ventilazione seguita (indicare il numero dei ventilatori impiegati e la durata della ventilazione).
*Ventilation procedure used (state number of fans used, duration of ventilation).*
   
   Tank washings transferred.
   
   .1 In mare.
   
   Into the sea.
   
   .2 Ad una stazione di ricezione (indicare il porto).
   
   To reception facility (identify port). [*]
   
   .3 A cisterna di raccolta degli slops (identificare la cisterna).
   
   To slopes collection tank (identify tank).

(F) DISCARICA IN MARE DELLE ACQUE DI LAVAGGIO
DISCHARGE INTO THE SEA OF TANK WASHINGS

17. Identificare la cisterna/e:
    Identify tank(s):
    
    .1 Le acque di lavaggio della cisterna/e sono state scaricate durante il lavaggio della cisterna/e?
    In tal caso, in quale quantità?
    
    Were tank washings discharged during cleaning of tank(s)?
    
    If so, at what rate?
    
    .2 L'acqua/e di lavaggio sono state scaricate da una cisterna di raccolta di slops?
    In tal caso, indicare la quantità e la quantità di discarica.
    
    Were tank washing(s) discharged from a slopes collecting tank?
    
    If so, state quantity and rate of discharge.

18. Data e ora alla quale è stato iniziato ed è stato fermato il pompaggio.
    Time pumping commenced and stopped.

19. Velocità della nave durante la discarica.
    Ship's speed during discharge.

(G) ZAVORRAMENTO DELLE CISTERNE DEL CARICO
BALLASTING OF CARGO TANKS

20. Identificazione della cisterna/e zavorrata/e.
    Identity of tank(s) ballasted.

    Time at start of ballasting.

(H) DISCARICA DELL'ACQUA DI ZAVORRA DALLE CISTERNE DEL CARICO
DISCHARGE OF BALLAST WATER FROM CARGO TANKS

22. Identificazione della cisterna/e
    Identity of tank(s).

23. Discarica della zavorra:
    Discharge of ballast:
    
    .1 In mare.
    
    Into the sea.
    
    .2 A stazioni di ricezione (identificare il porto).
    
    To reception facilities (identify port).

24. Data e ora alla quale è stata iniziata ed è stata fermata la discarica della zavorra.
    Time ballast discharge commenced and stopped.

25. Velocità della nave durante la discarica.
    Ship's speed during discharge.
DISCARICA ACCIDENTALE OD ALTRA DISCARICA ECCEZIONALE
ACCIDENTAL OR OTHER EXCEPTIONAL DISCHARGE

26. Data in cui è avvenuta.
   Time of occurrence.

27. Quantità approssimata, sostanza/e, categoria/e.
   Approximate quantity; substance(s) and category(ies).

   Circumstances of discharge or escape and general remarks.

CONTROLLO DA ISPETTORI AUTORIZZATI.
CONTROL BY AUTHORIZED SURVEYORS

29. Identificazione del porto.
   Identify port.

30. Identificazione della cisterna/e, sostanza/e, categoria/e scaricate a terra
   Identify tank(s), substance(s), category(ies) discharged ashore.

31. La cisterna/e, pompa/e, sistema/i di pompaggio sono stati svuotati?
   Have tank(s), pump(s) and piping system(s) been emptied?

32. E' stato eseguito il prelavaggio secondo il Manuale delle procedure e delle sistemazioni della nave?
   Has a prewash in accordance with the ship's Procedures and arrangements Manual been carried out?

33. Le acque di lavaggio risultanti dal prelavaggio sono state scaricate a terra e le cisterne sono vuote?
   Have tank washings resulting from the prewash been discharged ashore and is the tank empty?

34. E' stata concessa una esenzione al prelavaggio obbligatorio.
   An exemption has been granted for mandatory prewash.

35. Motivi dell’esenzione.
   Reasons for exemption.

36. Nome e firma dell’ispettore autorizzato.
   Name and signature of authorized surveyor.

37. L'organizzazione, la compagnia e l’agenzia del governo per cui il perito lavora
   Organization, company, government agency for which surveyor works

PROCEDURE OPERATIVE AGGIUNTIVE ED OSSERVAZIONI
ADDITIONAL OPERATIONAL PROCEDURES AND REMARKS

[*]:

Ship's Masters should obtain from the operator of the reception facilities, which include barges and tank trucks, a receipt or certificate specifying the quantity of tank washings transferred, together with the time and date of the transfer. The receipt or certificate should be kept together with the Cargo Record Book.

Il comandante della nave dovrebbe ottenere dall’operatore degli impianti d’accoglienza, includendo barche e autocisterni, una ricevuta o un certificato che specifica la quantità trasferita del lavaggio del serbatoio, insieme al tempo e alla data del trasferimento. La ricevuta o il certificato deve essere tenuto insieme al Registro delle Sostanze Nocive.
NUMERO IMO:
IMO NUMBER: ...........................................

NOME DELLA NAVE:
NAME OF SHIP: ...........................................

MATRICOLA E COMPARTIMENTO DI ISCRIZIONE:
DISTINCTIVE NUMBER OF LETTERS: ...........................................

OPERAZIONI DI CARICO/ZAVORRAMENTO:
CARGO/BALLAST OPERATIONS:

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<tr>
<th>Data</th>
<th>Lettera di codice</th>
<th>Numero della voce</th>
<th>Registrazione di operazioni/firma dell’ufficiale responsabile e nome e firma dell’ispettore autorizzato</th>
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<td>Code (Letter)</td>
<td>Item (Number)</td>
<td>Record of operations/signature of officer in charge/name and signature of authorized surveyor</td>
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Firma del Comandante della nave .................................................................
Signature of Master
M13 - e-Certificates definition
(Appendix 16)

30 APRIL 2016
REGULATION (EU) 2015/757 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 29 April 2015
on the monitoring, reporting and verification of carbon dioxide emissions from maritime
transport, and amending Directive 2009/16/EC

(Text with EEA relevance)

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty on the Functioning of the European Union, and in particular Article 192(1) thereof,

Having regard to the proposal from the European Commission,

After transmission of the draft legislative act to the national parliaments,

Having regard to the opinion of the European Economic and Social Committee (1),

After consulting the Committee of the Regions,

Acting in accordance with the ordinary legislative procedure (2),

Whereas:

European Parliament and of the Council (4) which call for contributions from all sectors of the economy to
achieve emission reductions, including the international maritime shipping sector, provide that in the event that
no international agreement which includes international maritime emissions in its reduction targets through the
International Maritime Organisation (IMO) has been approved by Member States or no such agreement through
the United Nations Framework Convention on Climate Change has been approved by the Community by
31 December 2011, the Commission should make a proposal to include international maritime emissions in the
Community reduction commitment, with the aim of the proposed act entering into force by 2013. Such a
proposal should minimise any negative impact on the Community’s competitiveness while taking into account
the potential environmental benefits.

(2) Maritime transport has an impact on the global climate and on air quality, as a result of the carbon dioxide (CO₂)
emissions and other emissions that it generates, such as nitrogen oxides (NOₓ), sulphur oxides (SO₂), methane
(CH₄), particulate matter (PM) and black carbon (BC).

(3) International maritime shipping remains the only means of transportation not included in the Union’s
commitment to reduce greenhouse gas emissions. According to the impact assessment accompanying the
proposal for this Regulation, Union-related CO₂ emissions from international shipping increased by 48 %

(4) In the light of the rapidly developing scientific understanding of the impact of non-CO₂ related emissions from
maritime transport on the global climate, an updated assessment of that impact should be carried out regularly in
the context of this Regulation. Based on its assessments, the Commission should analyse the implications for
policies and measures, in order to reduce those emissions.

(5) The European Parliament’s Resolution of 5 February 2014 on a 2030 framework for climate and energy policies
called on the Commission and the Member States to set a binding EU 2030 target of reducing domestic
greenhouse gas emissions by at least 40 % compared to 1990 levels. The European Parliament also pointed out
that all sectors of the economy would need to contribute to reducing greenhouse gas emissions if the Union is to
deliver its fair share of global efforts.

(2) Position of the European Parliament of 16 April 2014 (not yet published in the Official Journal) and position of the Council at first
reading of 5 March 2015 (not yet published in the Official Journal), Position of the European Parliament of 28 April 2015 (not yet
published in the Official Journal).
their greenhouse gas emissions to meet the Community’s greenhouse gas emission reduction commitments up to 2020 (OJ L 140,
In its Conclusions of 23 and 24 October 2014, the European Council endorsed a binding EU target of at least 40 % domestic reduction in greenhouse gas emissions by 2030 compared to 1990. The European Council also stated the importance of reducing greenhouse gas emissions and risks related to fossil fuel dependency in the transport sector and invited the Commission to further examine instruments and measures for a comprehensive and technology-neutral approach, inter alia, for the promotion of emissions reduction and energy efficiency in transport.

The 7th Environment Action Programme (EAP) (1) underlines that all sectors of the economy will need to contribute to reducing greenhouse gas emissions if the Union is to deliver its fair share of global efforts. In this context the 7th EAP highlights that the White paper on transport of 2011 needs to be underpinned by a strong policy framework.

In July 2011, the IMO adopted technical and operational measures, in particular the Energy Efficiency Design Index (EEDI) for new ships and the Ship Energy Efficiency Management Plan (SEEMP), which will bring improvement in terms of reducing the expected increase in greenhouse gas emissions, but alone cannot lead to the necessary absolute reductions of greenhouse gas emissions from international shipping to keep efforts in line with the global objective of limiting increases in global temperatures to 2 °C.

According to data provided by the IMO, the specific energy consumption and CO₂ emissions of ships could be reduced by up to 75 % by applying operational measures and implementing existing technologies; a significant part of those measures can be regarded as cost-effective and being such that they could offer net benefits to the sector, as the reduced fuel costs ensure the pay-back of any operational or investment costs.

In order to reduce CO₂ emissions from shipping at Union level, the best possible option remains setting up a system for monitoring, reporting and verification (MRV system) of CO₂ emissions based on the fuel consumption of ships as a first step of a staged approach for the inclusion of maritime transport emissions in the Union's greenhouse gas reduction commitment, alongside emissions from other sectors that are already contributing to that commitment. Public access to the emissions data will contribute to removing market barriers that prevent the uptake of many cost-negative measures which would reduce greenhouse gas emissions from maritime transport.

The adoption of measures to reduce greenhouse gas emissions and fuel consumption is hampered by the existence of market barriers such as a lack of reliable information on the fuel efficiency of ships or of technologies available for retrofitting ships, a lack of access to finance for investments in ship efficiency, and split incentives, as shipowners would not benefit from their investments in ship efficiency when fuel bills are paid by operators.

The results of the stakeholder consultation and discussions with international partners indicate that a staged approach for the inclusion of maritime transport emissions in the Union's greenhouse gas reduction commitment should be applied with the implementation of a robust MRV system for CO₂ emissions from maritime transport as a first step and the pricing of those emissions at a later stage. This approach facilitates the making of significant progress at international level on the agreement of greenhouse gas emission reduction targets and further measures to achieve those reductions at minimum cost.

The introduction of a Union MRV system is expected to lead to emission reductions of up to 2 % compared to business-as-usual, and aggregated net costs reductions of up to EUR 1,2 billion by 2030 as it could contribute to the removal of market barriers, in particular those related to the lack of information about ship efficiency, by providing comparable and reliable information on fuel consumption and energy efficiency to the relevant markets. This reduction of transport costs should facilitate international trade. Furthermore, a robust MRV system is a prerequisite for any market-based measure, efficiency standard or other measure, whether applied at Union level or globally. It also provides reliable data to set precise emission reduction targets and to assess the progress of maritime transport's contribution towards achieving a low carbon economy. Given the international nature of shipping, the preferred and most effective method of reducing greenhouse gas emissions in international maritime transport would be by global agreement.

19.5.2015

(14) All intra-Union voyages, all incoming voyages from the last non-Union port to the first Union port of call and all outgoing voyages from a Union port to the next non-Union port of call, including ballast voyages, should be considered relevant for the purposes of monitoring CO₂ emissions in Union ports, including emissions arising from ships at berth or moving within a port, should also be covered, particularly as specific measures for their reduction or avoidance are available. These rules should be applied in a non-discriminatory manner to all ships regardless of their flag. However, since this Regulation focuses on maritime transport, it should not establish monitoring, reporting and verification requirements for ship movements and activities not serving the purpose of transporting cargo or passengers for commercial purposes, such as dredging, ice-breaking, pipe laying or offshore installation activities.

(15) To ensure a level-playing field for ships operating in less favourable climate conditions, it should be possible to include specific information relating to a ship’s ice class, and to its navigation through ice, in the data monitored on the basis of this Regulation.

(16) The proposed MRV system should take the form of a Regulation on account of the complex and highly technical nature of provisions to be introduced, the need for uniform rules applicable throughout the Union to reflect the international nature of maritime transport with numerous ships being expected to call at ports in different Member States, and to facilitate implementation throughout the Union.

(17) A robust ship-specific Union MRV system should be based on the calculation of emissions from fuel consumed on voyages to and from Union ports, as fuel sales data could not provide appropriately accurate estimates for the fuel consumption within this specific scope, due to the large tank capacities of ships.

(18) The Union MRV system should also cover other relevant information allowing for the determination of ships’ efficiency or for the further analysis of the drivers for the development of emissions, while preserving the confidentiality of commercial or industrial information. This scope also aligns the Union MRV system with international initiatives to introduce efficiency standards for existing ships, also covering operational measures, and contributes to the removal of market barriers related to the lack of information.

(19) In order to minimise the administrative burden for shipowners and operators, in particular for small and medium-sized enterprises, and to optimise the cost-benefit ratio of the MRV system without jeopardising the objective of covering a widely predominant share of greenhouse gas emissions from maritime transport, the rules for MRV should only apply to large emitters. A threshold of 5 000 gross tonnage (GT) has been selected after detailed objective analysis of sizes and emissions of ships going to and coming from Union ports. Ships above 5 000 GT account for around 55 % of the number of ships calling into Union ports and represent around 90 % of the related emissions. This non-discriminatory threshold would ensure that that the most relevant emitters are covered. A lower threshold would result in a higher administrative burden while a higher threshold would limit the coverage of emissions and thus the environmental effectiveness of the MRV system.

(20) To further reduce the administrative burden for shipowners and operators, the monitoring rules should focus on CO₂, as the most relevant greenhouse gas emitted by maritime transport.

(21) The rules should take into account existing requirements and data already available on board ships; therefore, companies should be given the opportunity to select one of the following four monitoring methods: the use of Bunker Fuel Delivery Notes, bunker fuel tank monitoring on-board, flow meters for applicable combustion processes or direct emission measurements. A monitoring plan specific to each ship should document the choice made and provide further details on the application of the selected method.

(22) Any company with responsibility for an entire reporting period over a ship performing shipping activities should be considered responsible for all monitoring and reporting obligations arising in relation to that reporting period, including the submission of a satisfactorily verified emissions report. In the event of a change of company, the new company should only be responsible for the monitoring and reporting obligations related to the reporting period during which the change of company has taken place. To facilitate the fulfilment of these obligations, the new company should receive a copy of the latest monitoring plan and document of compliance, if applicable.
(23) Other greenhouse gases, climate forcers or air pollutants should not be covered by the Union MRV system at this stage to avoid requirements to install not sufficiently reliable or commercially available measuring equipment, which could impede the implementation of the Union MRV system.

(24) The IMO International Convention for the Prevention of Pollution from Ships (MARPOL) provides for the mandatory application of the EEDI to new ships and the use of SEEMPs throughout the entire world fleet.

(25) To minimise the administrative burden for shipowners and operators, reporting and publication of reported information should be organised on an annual basis. By restricting the publication of emissions, fuel consumption and efficiency-related information to annual averages and aggregated figures, confidentiality issues should be addressed. In order to ensure that the protection of legitimate economic interests overriding the public interest in disclosure is not undermined, a different level of aggregation of data should be applied in exceptional cases at the request of the company. The data reported to the Commission should be integrated with statistics to the extent that those data are relevant for the development, production and dissemination of European statistics in accordance with Commission Decision 2012/504/EU (1). 

(26) Verification by accredited verifiers should ensure that monitoring plans and emissions reports are correct and in compliance with the requirements set out in this Regulation. As an important element to simplify verification, verifiers should check data credibility by comparing reported data with estimated data based on ship tracking data and characteristics. Such estimates could be provided by the Commission. In order to ensure impartiality, verifiers should be independent and competent legal entities and should be accredited by national accreditation bodies established pursuant to Regulation (EC) No 765/2008 of the European Parliament and of the Council (2).

(27) A document of compliance issued by a verifier should be kept on board ships to demonstrate compliance with the obligations for monitoring, reporting and verification. Verifiers should inform the Commission of the issuance of such documents.

(28) Based on experience from similar tasks related to maritime safety, the European Maritime Safety Agency (EMSA) should, within the framework of its mandate, support the Commission by carrying out certain tasks.

(29) Enforcement of the obligations relating to the MRV system should be based on existing instruments, namely those established under Directive 2009/16/EC of the European Parliament and of the Council (3) and Directive 2009/21/EC of the European Parliament and of the Council (4), and on information on the issuance of documents of compliance. The document confirming compliance of the ship with the monitoring and reporting obligations should be added to the list of certificates and documents referred to in Annex IV to Directive 2009/16/EC.

(30) Member States should endeavour to inspect ships which enter ports under their jurisdiction and for which certain required information concerning the document of compliance is not available.

(31) Non-compliance with the provisions of this Regulation should result in the application of penalties. Member States should lay down rules on those penalties. Those penalties should be effective, proportionate and dissuasive.

(32) In the case of ships having failed to comply with monitoring and reporting requirements for two or more consecutive reporting periods and where other enforcement measures have failed to ensure compliance, it is appropriate to provide for the possibility of expulsion. Such a measure should be applied in such a way as to allow the situation of non-compliance to be rectified within a reasonable period of time.

(33) Member States that have no maritime ports in their territory and which have no ships flying their flag and falling under the scope of this Regulation, or which have closed their national ship registers, should be able to derogate from the provisions of this Regulation relating to penalties, as long as no such ships are flying their flag.


(34) The Union MRV system should serve as a model for the implementation of a global MRV system. A global MRV system is preferable as it could be regarded as more effective due to its broader scope. In this context, and with a view to facilitating the development of international rules within the IMO for the monitoring, reporting and verification of greenhouse gas emissions from maritime transport, the Commission should share relevant information on the implementation of this Regulation with the IMO and other relevant international bodies on a regular basis and relevant submissions should be made to the IMO. Where an agreement on a global MRV system is reached, the Commission should review the Union MRV system with a view to aligning it to the global MRV system.

(35) In order to take account of relevant international rules and international and European standards as well as technological and scientific developments, the power to adopt acts in accordance with Article 290 of the Treaty on the Functioning of the European Union should be delegated to the Commission in respect of reviewing certain technical aspects of monitoring and reporting of CO2 emissions from ships and of further specifying the rules for the verification activities and the methods of accreditation of verifiers. It is of particular importance that the Commission carry out appropriate consultations during its preparatory work, including at expert level. The Commission, when preparing and drawing-up delegated acts, should ensure a simultaneous, timely and appropriate transmission of relevant documents to the European Parliament and to the Council.

(36) In order to ensure uniform conditions for the use of standard templates for the monitoring of CO2 emissions and other relevant information, for the use of automated systems and standard electronic templates for the coherent reporting of CO2 emissions and other relevant information to the Commission and the authorities of the flag States concerned, for the specification of technical rules specifying the parameters applicable to categories of ships other than passenger, ro-ro and container ships and for the revision of those parameters, implementing powers should be conferred on the Commission. Those powers should be exercised in accordance with Regulation (EU) No 182/2011 of the European Parliament and of the Council (1).

(37) Since the objective of this Regulation, namely to monitor, report and verify CO2 emissions from ships as the first step of a staged approach to reduce greenhouse gas emissions, cannot be sufficiently achieved by the Member States, due to the international nature of maritime transport, but can rather, by reason of its scale and effects, be better achieved at Union level, the Union may adopt measures, in accordance with the principle of subsidiarity as set out in Article 5 of the Treaty on European Union. In accordance with the principle of proportionality as set out in that Article, this Regulation does not go beyond what is necessary in order to achieve that objective.


(39) This Regulation should enter into force on 1 July 2015 to ensure that the Member States and relevant stakeholders have sufficient time to take the necessary measures for the effective application of this Regulation before the first reporting period starting on 1 January 2018.

HAVE ADOPTED THIS REGULATION:

CHAPTER I

GENERAL PROVISIONS

Article 1

Subject matter

This Regulation lays down rules for the accurate monitoring, reporting and verification of carbon dioxide (CO2) emissions and of other relevant information from ships arriving at, within or departing from ports under the jurisdiction of a Member State, in order to promote the reduction of CO2 emissions from maritime transport in a cost effective manner.


Article 2

Scope

1. This Regulation applies to ships above 5 000 gross tonnage in respect of CO₂ emissions released during their voyages from their last port of call to a port of call under the jurisdiction of a Member State and from a port of call under the jurisdiction of a Member State to their next port of call, as well as within ports of call under the jurisdiction of a Member State.

2. This Regulation does not apply to warships, naval auxiliaries, fish-catching or fish-processing ships, wooden ships of a primitive build, ships not propelled by mechanical means, or government ships used for non-commercial purposes.

Article 3

Definitions

For the purposes of this Regulation, the following definitions apply:

(a) ‘CO₂ emissions’ means the release of CO₂ into the atmosphere by ships;

(b) ‘port of call’ means the port where a ship stops to load or unload cargo or to embark or disembark passengers; consequently, stops for the sole purposes of refuelling, obtaining supplies, relieving the crew, going into dry-dock or making repairs to the ship and/or its equipment, stops in port because the ship is in need of assistance or in distress, ship-to-ship transfers carried out outside ports, and stops for the sole purpose of taking shelter from adverse weather or rendered necessary by search and rescue activities are excluded;

(c) ‘voyage’ means any movement of a ship that originates from or terminates in a port of call and that serves the purpose of transporting passengers or cargo for commercial purposes;

(d) ‘company’ means the shipowner or any other organisation or person, such as the manager or the bareboat charterer, which has assumed the responsibility for the operation of the ship from the shipowner;

(e) ‘gross tonnage’ (GT) means the gross tonnage calculated in accordance with the tonnage measurement regulations contained in Annex I to the International Convention on Tonnage Measurement of Ships, adopted by the International Maritime Organization (IMO) in London on 23 June 1969, or any successor convention;

(f) ‘verifier’ means a legal entity carrying out verification activities which is accredited by a national accreditation body pursuant to Regulation (EC) No 765/2008 and this Regulation;

(g) ‘verification’ means the activities carried out by a verifier to assess the conformity of the documents transmitted by the company with the requirements of this Regulation;

(h) ‘document of compliance’ means a document specific to a ship, issued to a company by a verifier, which confirms that that ship has complied with the requirements of this Regulation for a specific reporting period;

(i) ‘other relevant information’ means information related to CO₂ emissions from the consumption of fuels, to transport work and to the energy efficiency of ships, which enables the analysis of emission trends and the assessment of ships’ performances;

(j) ‘emission factor’ means the average emission rate of a greenhouse gas relative to the activity data of a source stream, assuming complete oxidation for combustion and complete conversion for all other chemical reactions;

(k) ‘uncertainty’ means a parameter, associated with the result of the determination of a quantity, that characterises the dispersion of the values that could reasonably be attributed to the particular quantity, including the effects of systematic as well as of random factors, expressed as a percentage, and describes a confidence interval around the mean value comprising 95% of inferred values taking into account any asymmetry of the distribution of values;

(l) ‘conservative’ means that a set of assumptions is defined in order to ensure that no under-estimation of annual emissions or over-estimation of distances or amounts of cargo carried occurs;

(m) ‘reporting period’ means one calendar year during which CO₂ emissions have to be monitored and reported. For voyages starting and ending in two different calendar years, the monitoring and reporting data shall be accounted under the first calendar year concerned;
(n) ‘ship at berth’ means a ship which is securely moored or anchored in a port falling under the jurisdiction of a Member State while it is loading, unloading or hotelling, including the time spent when not engaged in cargo operations;

(o) ‘ice class’ means the notation assigned to the ship by the competent national authorities of the flag State or an organisation recognised by that State, showing that the ship has been designed for navigation in sea-ice conditions.

CHAPTER II
MONITORING AND REPORTING

SECTION 1

Principles and methods for monitoring and reporting

Article 4

Common principles for monitoring and reporting

1. In accordance with Articles 8 to 12, companies shall, for each of their ships, monitor and report on the relevant parameters during a reporting period. They shall carry out that monitoring and reporting within all ports under the jurisdiction of a Member State and for any voyages to or from a port under the jurisdiction of a Member State.

2. Monitoring and reporting shall be complete and cover CO₂ emissions from the combustion of fuels, while the ships are at sea as well as at berth. Companies shall apply appropriate measures to prevent any data gaps within the reporting period.

3. Monitoring and reporting shall be consistent and comparable over time. To that end, companies shall use the same monitoring methodologies and data sets subject to modifications assessed by the verifier.

4. Companies shall obtain, record, compile, analyse and document monitoring data, including assumptions, references, emission factors and activity data, in a transparent manner that enables the reproduction of the determination of CO₂ emissions by the verifier.

5. Companies shall ensure that the determination of CO₂ emissions is neither systematically nor knowingly inaccurate. They shall identify and reduce any source of inaccuracies.

6. Companies shall enable reasonable assurance of the integrity of the CO₂ emission data to be monitored and reported.

7. Companies shall endeavour to take account of the recommendations included in the verification reports issued pursuant to Article 13(3) or (4) in their subsequent monitoring and reporting.

Article 5

Methods for monitoring CO₂ emissions and other relevant information

1. For the purposes of Article 4(1), (2) and (3), companies shall, for each of their ships, determine the CO₂ emissions in accordance with any of the methods set out in Annex I, and monitor other relevant information in accordance with the rules set out in Annex II or adopted pursuant to it.

2. The Commission shall be empowered to adopt delegated acts in accordance with Article 23 to amend the methods set out in Annex I and the rules set out in Annex II, in order to take into account relevant international rules as well as international and European standards. The Commission shall be also empowered to adopt delegated acts in accordance with Article 23 to amend Annexes I and II in order to refine the elements of the monitoring methods set out therein, in the light of technological and scientific developments.

SECTION 2

Monitoring plan

Article 6

Content and submission of the monitoring plan

1. By 31 August 2017, companies shall submit to the verifiers a monitoring plan for each of their ships indicating the method chosen to monitor and report CO₂ emissions and other relevant information.
2. Notwithstanding paragraph 1, for ships falling under the scope of this Regulation for the first time after 31 August 2017, the company shall submit a monitoring plan to the verifier without undue delay and no later than two months after each ship's first call in a port under the jurisdiction of a Member State.

3. The monitoring plan shall consist of a complete and transparent documentation of the monitoring method for the ship concerned and shall contain at least the following elements:

(a) the identification and type of the ship, including its name, its IMO identification number, its port of registry or home port, and the name of the shipowner;

(b) the name of the company and the address, telephone and e-mail details of a contact person;

(c) a description of the following CO₂ emission sources on board the ship: main engines, auxiliary engines, gas turbines, boilers and inert gas generators, and the fuel types used;

(d) a description of the procedures, systems and responsibilities used to update the list of CO₂ emission sources over the reporting period;

(e) a description of the procedures used to monitor the completeness of the list of voyages;

(f) a description of the procedures for monitoring the fuel consumption of the ship, including:

(i) the method chosen from among those set out in Annex 1 for calculating the fuel consumption of each CO₂ emission source, including, where applicable, a description of the measuring equipment used,

(ii) the procedures for the measurement of fuel uplifts and fuel in tanks, a description of the measuring equipment used and the procedures for recording, retrieving, transmitting and storing information regarding measurements, as applicable,

(iii) the method chosen for the determination of density, where applicable;

(iv) a procedure to ensure that the total uncertainty of fuel measurements is consistent with the requirements of this Regulation, where possible referring to national laws, clauses in customer contracts or fuel supplier accuracy standards;

(g) single emission factors used for each fuel type, or in the case of alternative fuels, the methodologies for determining the emission factors, including the methodology for sampling, methods of analysis and a description of the laboratories used, with the ISO 17025 accreditation of those laboratories, if any;

(h) a description of the procedures used for determining activity data per voyage, including:

(i) the procedures, responsibilities and data sources for determining and recording the distance,

(ii) the procedures, responsibilities, formulae and data sources for determining and recording the cargo carried and the number of passengers, as applicable,

(iii) the procedures, responsibilities, formulae and data sources for determining and recording the time spent at sea between the port of departure and the port of arrival;

(i) a description of the method to be used to determine surrogate data for closing data gaps;

(j) a revision record sheet to record all the details of the revision history.

4. The monitoring plan may also contain information on the ice class of the ship and/or the procedures, responsibilities, formulae and data sources for determining and recording the distance travelled and the time spent at sea when navigating through ice.

5. Companies shall use standardised monitoring plans based on templates. Those templates, including the technical rules for their uniform application, shall be determined by the Commission by means of implementing acts. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 24(2).

Article 7

Modifications of the monitoring plan

1. Companies shall check regularly, and at least annually, whether a ship's monitoring plan reflects the nature and functioning of the ship and whether the monitoring methodology can be improved.
2. Companies shall modify the monitoring plan in any of the following situations:

(a) where a change of company occurs;

(b) where new CO₂ emissions occur due to new emission sources or due to the use of new fuels not yet contained in the monitoring plan;

(c) where a change in availability of data, due to the use of new types of measuring equipment, new sampling methods or analysis methods, or for other reasons, may affect the accuracy of the determination of CO₂ emissions;

(d) where data resulting from the monitoring method applied has been found to be incorrect;

(e) where any part of the monitoring plan is identified as not being in conformity with the requirements of this Regulation and the company is required to revise it pursuant to Article 13(1).

3. Companies shall notify to the verifiers without undue delay any proposals for modification of the monitoring plan.

4. Modifications of the monitoring plan under points (b), (c) and (d) of paragraph 2 of this Article shall be subject to assessment by the verifier in accordance with Article 13(1). Following the assessment, the verifier shall notify the company whether those modifications are in conformity.

SECTION 3

Monitoring of CO₂ emissions and other relevant information

Article 8

Monitoring of activities within a reporting period

From 1 January 2018, companies shall, based on the monitoring plan assessed in accordance with Article 13(1), monitor CO₂ emissions for each ship on a per-voyage and an annual basis by applying the appropriate method for determining CO₂ emissions among those set out in Part B of Annex I and by calculating CO₂ emissions in accordance with Part A of Annex I.

Article 9

Monitoring on a per-voyage basis

1. Based on the monitoring plan assessed in accordance with Article 13(1), for each ship arriving in or departing from, and for each voyage to or from, a port under a Member State’s jurisdiction, companies shall monitor in accordance with Part A of Annex I and Part A of Annex II the following parameters:

(a) port of departure and port of arrival including the date and hour of departure and arrival;

(b) amount and emission factor for each type of fuel consumed in total;

(c) CO₂ emitted;

(d) distance travelled;

(e) time spent at sea;

(f) cargo carried;

(g) transport work.

Companies may also monitor information relating to the ship’s ice class and to navigation through ice, where applicable.

2. By way of derogation from paragraph 1 of this Article and without prejudice to Article 10, a company shall be exempt from the obligation to monitor the information referred to in paragraph 1 of this Article on a per-voyage basis in respect of a specified ship, if:

(a) all of the ship’s voyages during the reporting period either start from or end at a port under the jurisdiction of a Member State; and

(b) the ship, according to its schedule, performs more than 300 voyages during the reporting period.
Article 10

Monitoring on an annual basis

Based on the monitoring plan assessed in accordance with Article 13(1), for each ship and for each calendar year, companies shall monitor in accordance with Part A of Annex I and with Part B of Annex II the following parameters:

(a) amount and emission factor for each type of fuel consumed in total;
(b) total aggregated CO₂ emitted within the scope of this Regulation;
(c) aggregated CO₂ emissions from all voyages between ports under a Member State's jurisdiction;
(d) aggregated CO₂ emissions from all voyages which departed from ports under a Member State’s jurisdiction;
(e) aggregated CO₂ emissions from all voyages to ports under a Member State's jurisdiction;
(f) CO₂ emissions which occurred from all voyages within ports under a Member State's jurisdiction at berth;
(g) total distance travelled;
(h) total time spent at sea;
(i) total transport work;
(j) average energy efficiency.

Companies may monitor information relating to the ship’s ice class and to navigation through ice, where applicable.

Companies may also monitor fuel consumed and CO₂ emitted, differentiating on the basis of other criteria defined in the monitoring plan.

SECTION 4

Reporting

Article 11

Content of the emissions report

1. From 2019, by 30 April of each year, companies shall submit to the Commission and to the authorities of the flag States concerned, an emissions report concerning the CO₂ emissions and other relevant information for the entire reporting period for each ship under their responsibility, which has been verified as satisfactory by a verifier in accordance with Article 13.

2. Where there is a change of company, the new company shall ensure that each ship under its responsibility complies with the requirements of this Regulation in relation to the entire reporting period during which it takes responsibility for the ship concerned.

3. Companies shall include in the emissions report the following information:

(a) data identifying the ship and the company, including:

   (i) name of the ship,
   (ii) IMO identification number,
   (iii) port of registry or home port,
   (iv) ice class of the ship, if included in the monitoring plan,
   (v) technical efficiency of the ship (the Energy Efficiency Design Index (EEDI) or the Estimated Index Value (EIV) in accordance with IMO Resolution MEPC.215 (63), where applicable),
   (vi) name of the shipowner,
   (vii) address of the shipowner and its principal place of business,
(viii) name of the company (if not the shipowner),
(ix) address of the company (if not the shipowner) and its principal place of business,
(x) address, telephone and e-mail details of a contact person;

(b) the identity of the verifier that assessed the emissions report;
(c) information on the monitoring method used and the related level of uncertainty;
(d) the results from annual monitoring of the parameters in accordance with Article 10.

Article 12
Format of the emissions report

1. The emissions report shall be submitted using automated systems and data exchange formats, including electronic templates.

2. The Commission shall determine, by means of implementing acts, technical rules establishing the data exchange formats, including the electronic templates. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 24(2).

CHAPTER III
VERIFICATION AND ACCREDITATION

Article 13
Scope of verification activities and verification report

1. The verifier shall assess the conformity of the monitoring plan with the requirements laid down in Articles 6 and 7. Where the verifier's assessment identifies non-conformities with those requirements, the company concerned shall revise its monitoring plan accordingly and submit the revised plan for a final assessment by the verifier before the reporting period starts. The company shall agree with the verifier on the timeframe necessary to introduce those revisions. That timeframe shall in any event not extend beyond the beginning of the reporting period.

2. The verifier shall assess the conformity of the emissions report with the requirements laid down in Articles 8 to 12 and Annexes I and II.

In particular the verifier shall assess whether the CO₂ emissions and other relevant information included in the emissions report have been determined in accordance with Articles 8, 9 and 10 and the monitoring plan.

3. Where the verification assessment concludes, with reasonable assurance from the verifier, that the emissions report is free from material misstatements, the verifier shall issue a verification report stating that the emissions report has been verified as satisfactory. The verification report shall specify all issues relevant to the work carried out by the verifier.

4. Where the verification assessment concludes that the emissions report includes misstatements or non-conformities with the requirements of this Regulation, the verifier shall inform the company thereof in a timely manner. The company shall then correct the misstatements or non-conformities so as to enable the verification process to be completed in time and shall submit to the verifier the revised emissions report and any other information that was necessary to correct the non-conformities identified. In its verification report, the verifier shall state whether the misstatements or non-conformities identified during the verification assessment have been corrected by the company. Where the communicated misstatements or non-conformities have not been corrected and, individually or combined, lead to material misstatements, the verifier shall issue a verification report stating that the emissions report does not comply with this Regulation.

Article 14
General obligations and principles for the verifiers

1. The verifier shall be independent from the company or from the operator of a ship and shall carry out the activities required under this Regulation in the public interest. For that purpose, neither the verifier nor any part of the same legal entity shall be a company or ship operator, the owner of a company, or be owned by them, nor shall the verifier have relations with the company that could affect its independence and impartiality.
2. When considering the verification of the emissions report and of the monitoring procedures applied by the company, the verifier shall assess the reliability, credibility and accuracy of the monitoring systems and of the reported data and information relating to CO₂ emissions, in particular:

(a) the attribution of fuel consumption to voyages;
(b) the reported fuel consumption data and related measurements and calculations;
(c) the choice and the employment of emission factors;
(d) the calculations leading to the determination of the overall CO₂ emissions;
(e) the calculations leading to the determination of the energy efficiency.

3. The verifier shall only consider emissions reports submitted in accordance with Article 12 if reliable and credible data and information enable the CO₂ emissions to be determined with a reasonable degree of certainty and provided that the following are ensured:

(a) the reported data are coherent in relation to estimated data that are based on ship tracking data and characteristics such as the installed engine power;
(b) the reported data are free of inconsistencies, in particular when comparing the total volume of fuel purchased annually by each ship and the aggregate fuel consumption during voyages;
(c) the collection of the data has been carried out in accordance with the applicable rules; and
(d) the relevant records of the ship are complete and consistent.

Article 15

Verification procedures

1. The verifier shall identify potential risks related to the monitoring and reporting process by comparing reported CO₂ emissions with estimated data based on ship tracking data and characteristics such as the installed engine power. Where significant deviations are found, the verifier shall carry out further analyses.

2. The verifier shall identify potential risks related to the different calculation steps by reviewing all data sources and methodologies used.

3. The verifier shall take into consideration any effective risk control methods applied by the company to reduce levels of uncertainty associated with the accuracy specific to the monitoring methods used.

4. The company shall provide the verifier with any additional information that enables it to carry out the verification procedures. The verifier may conduct spot-checks during the verification process to determine the reliability of reported data and information.

5. The Commission shall be empowered to adopt delegated acts in accordance with Article 23, in order to further specify the rules for the verification activities referred to in this Regulation. When adopting these acts, the Commission shall take into account the elements set out in Part A of Annex III. The rules specified in those delegated acts shall be based on the principles for verification provided for in Article 14 and on relevant internationally accepted standards.

Article 16

Accreditation of verifiers

1. Verifiers that assess the monitoring plans and the emissions reports, and issue verification reports and documents of compliance referred to in this Regulation shall be accredited for activities under the scope of this Regulation by a national accreditation body pursuant to Regulation (EC) No 765/2008.

2. Where no specific provisions concerning the accreditation of verifiers are laid down in this Regulation, the relevant provisions of Regulation (EC) No 765/2008 shall apply.

3. The Commission shall be empowered to adopt delegated acts in accordance with Article 23, in order to further specify the methods of accreditation of verifiers. When adopting these acts, the Commission shall take into account the elements set out in Part B of Annex III. The methods specified in those delegated acts shall be based on the principles for verification provided for in Article 14 and on relevant internationally accepted standards.
CHAPTER IV

COMPLIANCE AND PUBLICATION OF INFORMATION

Article 17

Document of compliance

1. Where the emissions report fulfils the requirements set out in Articles 11 to 15 and those in Annexes I and II, the verifier shall issue, on the basis of the verification report, a document of compliance for the ship concerned.

2. The document of compliance shall include the following information:
   (a) identity of the ship (name, IMO identification number and port of registry or home port);
   (b) name, address and principal place of business of the shipowner;
   (c) identity of the verifier;
   (d) date of issue of the document of compliance, its period of validity and the reporting period it refers to.

3. Documents of compliance shall be valid for the period of 18 months after the end of the reporting period.

4. The verifier shall inform the Commission and the authority of the flag State, without delay, of the issuance of any document of compliance. The verifier shall transmit the information referred to in paragraph 2 using automated systems and data exchange formats, including electronic templates.

5. The Commission shall determine, by means of implementing acts, technical rules for the data exchange formats, including the electronic templates. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 24(2).

Article 18

Obligation to carry a valid document of compliance on board

By 30 June of the year following the end of a reporting period, ships arriving at, within or departing from a port under the jurisdiction of a Member State, and which have carried out voyages during that reporting period, shall carry on board a valid document of compliance.

Article 19

Compliance with monitoring and reporting requirements and inspections

1. Based on the information published in accordance with Article 21(1), each Member State shall take all the measures necessary to ensure compliance with the monitoring and reporting requirements set out in Articles 8 to 12 by ships flying its flag. Member States shall regard the fact that a document of compliance has been issued for the ship concerned, in accordance with Article 17(4), as evidence of such compliance.

2. Each Member State shall ensure that any inspection of a ship in a port under its jurisdiction carried out in accordance with Directive 2009/16/EC includes checking that a valid document of compliance is carried on board.

3. For each ship in respect of which the information referred to in points (i) and (j) of Article 21(2), is not available at the time when it enters a port under the jurisdiction of a Member State, the Member State concerned may check that a valid document of compliance is carried on board.

Article 20

Penalties, information exchange and expulsion order

1. Member States shall set up a system of penalties for failure to comply with the monitoring and reporting obligations set out in Articles 8 to 12 and shall take all the measures necessary to ensure that those penalties are imposed. The penalties provided for shall be effective, proportionate and dissuasive. Member States shall notify those provisions to the Commission by 1 July 2017, and shall notify to the Commission without delay any subsequent amendments.
2. Member States shall establish an effective exchange of information and effective cooperation between their national authorities responsible for ensuring compliance with monitoring and reporting obligations or, where applicable, their authorities entrusted with penalty procedures. National penalty procedures against a specified ship by any Member State shall be notified to the Commission, the European Maritime Safety Agency (EMSA), to the other Member States and to the flag State concerned.

3. In the case of ships that have failed to comply with the monitoring and reporting requirements for two or more consecutive reporting periods and where other enforcement measures have failed to ensure compliance, the competent authority of the Member State of the port of entry may issue an expulsion order which shall be notified to the Commission, EMSA, the other Member States and the flag State concerned. As a result of the issuing of such an expulsion order, every Member State shall refuse entry of the ship concerned into any of its ports until the company fulfils its monitoring and reporting obligations in accordance with Articles 11 and 18. The fulfilment of those obligations shall be confirmed by the notification of a valid document of compliance to the competent national authority which issued the expulsion order. This paragraph shall be without prejudice to international maritime rules applicable in the case of ships in distress.

4. The shipowner or operator of a ship or its representative in the Member States shall have the right to an effective remedy before a court or tribunal against an expulsion order and shall be properly informed thereof by the competent authority of the Member State of the port of entry. Member States shall establish and maintain appropriate procedures for this purpose.

5. Any Member State without maritime ports in its territory and which has closed its national ship register or has no ships flying its flag that fall within the scope of this Regulation, and as long as no such ships are flying its flag, may derogate from the provisions of this Article. Any Member State that intends to avail itself of that derogation shall notify the Commission at the latest on 1 July 2015. Any subsequent change shall also be communicated to the Commission.

Article 21
Publication of information and Commission report

1. By 30 June each year, the Commission shall make publicly available the information on CO₂ emissions reported in accordance with Article 11 as well as the information set out in paragraph 2 of this Article.

2. The Commission shall include the following in the information to be made publicly available:
   (a) the identity of the ship (name, IMO identification number and port of registry or home port);
   (b) the technical efficiency of the ship (EEDI or EIV, where applicable);
   (c) the annual CO₂ emissions;
   (d) the annual total fuel consumption for voyages;
   (e) the annual average fuel consumption and CO₂ emissions per distance travelled of voyages;
   (f) the annual average fuel consumption and CO₂ emissions per distance travelled and cargo carried on voyages;
   (g) the annual total time spent at sea in voyages;
   (h) the method applied for monitoring;
   (i) the date of issue and the expiry date of the document of compliance;
   (j) the identity of the verifier that assessed the emissions report;
   (k) any other information monitored and reported on a voluntary basis in accordance with Article 10.

3. Where, due to specific circumstances, disclosure of a category of aggregated data under paragraph 2, which does not relate to CO₂ emissions, would exceptionally undermine the protection of commercial interests deserving protection as a legitimate economic interest overriding the public interest in disclosure pursuant to Regulation (EC) No 1367/2006 of the European Parliament and of the Council (1), a different level of aggregation of that specific data shall be applied, at the request of the company, so as to protect such interests. Where application of a different level of aggregation is not possible, the Commission shall not make those data publicly available.

4. The Commission shall publish an annual report on CO₂ emissions and other relevant information from maritime transport, including aggregated and explained results, with the aim of informing the public and allowing for an assessment of the CO₂ emissions and the energy efficiency of maritime transport per size, type of ships, activity, or any other category deemed relevant.

5. The Commission shall assess every two years the maritime transport sector’s overall impact on the global climate including through non-CO₂-related emissions or effects.

6. Within the framework of its mandate, EMSA shall assist the Commission in its work to comply with this Article and Articles 12 and 17 of this Regulation, in accordance with Regulation (EC) No 1406/2002 of the European Parliament and of the Council (¹).

CHAPTER V
INTERNATIONAL COOPERATION

Article 22

International cooperation

1. The Commission shall inform the IMO and other relevant international bodies on a regular basis of the implementation of this Regulation, without prejudice to the distribution of competences or to decision-making procedures as provided for in the Treaties.

2. The Commission and, where relevant, the Member States shall maintain technical exchange with third countries, in particular the further development of monitoring methods, the organisation of reporting and the verification of emissions reports.

3. In the event that an international agreement on a global monitoring, reporting and verification system for greenhouse gas emissions or on global measures to reduce greenhouse gas emissions from maritime transport is reached, the Commission shall review this Regulation and shall, if appropriate, propose amendments to this Regulation in order to ensure alignment with that international agreement.

CHAPTER VI
DELEGATED AND IMPLEMENTING POWERS AND FINAL PROVISIONS

Article 23

Exercise of delegation

1. The power to adopt delegated acts is conferred on the Commission subject to the conditions laid down in this Article. It is of particular importance that the Commission follow its usual practice and carry out consultations with experts, including Member States’ experts, before adopting those delegated acts.

2. The power to adopt delegated acts referred to in Articles 5(2), 15(5) and 16(3) shall be conferred on the Commission for a period of five years from 1 July 2015. The Commission shall draw up a report in respect of the delegation of power not later than nine months before the end of the five-year period. The delegation of power shall be tacitly extended for periods of an identical duration, unless the European Parliament or the Council opposes such extension not later than three months before the end of each period.

3. The delegation of power referred to in Articles 5(2), 15(5) and 16(3) may be revoked at any time by the European Parliament or by the Council. A decision to revoke shall put an end to the delegation of the power specified in that decision. It shall take effect the day following the publication of the decision in the Official Journal of the European Union or at a later date specified therein. It shall not affect the validity of any delegated acts already in force.

4. As soon as it adopts a delegated act, the Commission shall notify it simultaneously to the European Parliament and to the Council.

5. A delegated act adopted pursuant to Articles 5(2), 15(5) and 16(3) shall enter into force only if no objection has been expressed either by the European Parliament or the Council within a period of two months of notification of that act to the European Parliament and the Council or if, before the expiry of that period, the European Parliament and the Council have both informed the Commission that they will not object. That period shall be extended by two months at the initiative of the European Parliament or of the Council.

Article 24

Committee procedure

1. The Commission shall be assisted by the Committee established by Article 26 of Regulation (EU) No 525/2013 of the European Parliament and of the Council (*). That Committee shall be a committee within the meaning of Regulation (EU) No 182/2011.

2. Where reference is made to this paragraph, Article 5 of Regulation (EU) No 182/2011 shall apply. Where the committee delivers no opinion, the Commission shall not adopt the draft implementing act and the third subparagraph of Article 5(4) of Regulation (EU) No 182/2011 shall apply.

Article 25

Amendments to Directive 2009/16/EC

The following point shall be added to the list set out in Annex IV to Directive 2009/16/EC:


(*) OJ L 123, 19.5.2015, p. 55.’

Article 26

Entry into force

This Regulation shall enter into force on 1 July 2015.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Strasbourg, 29 April 2015.

For the European Parliament

The President

M. SCHULZ

For the Council

The President

Z. KALNINA-LUKASEVICA

ANNEX I

Methods for monitoring CO₂ emissions

A. CALCULATION OF CO₂ EMISSIONS (ARTICLE 9)

For the purposes of calculating CO₂ emissions companies shall apply the following formula:

Fuel consumption × emission factor

Fuel consumption shall include fuel consumed by main engines, auxiliary engines, gas turbines, boilers and inert gas generators.

Fuel consumption within ports at berth shall be calculated separately.

In principle, default values for emission factors of fuels shall be used unless the company decides to use data on fuel quality set out in the Bunker Fuel Delivery Notes (BDN) and used for demonstrating compliance with applicable regulations of sulphur emissions.

Those default values for emission factors shall be based on the latest available values of the Intergovernmental Panel for Climate Change (IPCC). Those values can be derived from Annex VI to Commission Regulation (EU) No 601/2012 (1).

Appropriate emission factors shall be applied in respect of biofuels and alternative non-fossil fuels.

B. METHODS FOR DETERMINING CO₂ EMISSIONS

The company shall define in the monitoring plan which monitoring method is to be used to calculate fuel consumption for each ship under its responsibility and ensure that once the method has been chosen, it is consistently applied.

Actual fuel consumption for each voyage shall be used and be calculated using one of the following methods:

(a) Bunker Fuel Delivery Note (BDN) and periodic stocktakings of fuel tanks;
(b) Bunker fuel tank monitoring on board;
(c) Flow meters for applicable combustion processes;
(d) Direct CO₂ emissions measurements.

Any combination of these methods, once assessed by the verifier, may be used if it enhances the overall accuracy of the measurement.

1. Method A: BDN and periodic stocktakings of fuel tanks

This method is based on the quantity and type of fuel as defined on the BDN combined with periodic stocktakings of fuel tanks based on tank readings. The fuel at the beginning of the period, plus deliveries, minus fuel available at the end of the period and de-bunkered fuel between the beginning of the period and the end of the period together constitute the fuel consumed over the period.

The period means the time between two port calls or time within a port. For the fuel used during a period, the fuel type and the sulphur content need to be specified.

This method shall not be used when BDN are not available on board ships, especially when cargo is used as a fuel, for example, liquefied natural gas (LNG) boil-off.

Under existing MARPOL Annex VI regulations, the BDN is mandatory, is to be retained on board for three years after the delivery of the bunker fuel and is to be readily available. The periodic stocktake of fuel tanks on-board is based on fuel tank readings. It uses tank tables relevant to each fuel tank to determine the volume at the time of the fuel tank reading. The uncertainty associated with the BDN shall be specified in the monitoring plan. Fuel tank readings shall be carried out by appropriate methods such as automated systems, soundings and dip tapes. The method for tank sounding and uncertainty associated shall be specified in the monitoring plan.

Where the amount of fuel uplift or the amount of fuel remaining in the tanks is determined in units of volume, expressed in litres, the company shall convert that amount from volume to mass by using actual density values. The company shall determine the actual density by using one of the following:

(a) on-board measurement systems;

(b) the density measured by the fuel supplier at fuel uplift and recorded on the fuel invoice or BDN.

The actual density shall be expressed in kg/l and determined for the applicable temperature for a specific measurement. In cases for which actual density values are not available, a standard density factor for the relevant fuel type shall be applied once assessed by the verifier.

2. Method B: Bunker fuel tank monitoring on-board

This method is based on fuel tank readings for all fuel tanks on-board. The tank readings shall occur daily when the ship is at sea and each time the ship is bunkering or de-bunkering.

The cumulative variations of the fuel tank level between two readings constitute the fuel consumed over the period.

The period means the time between two port calls or time within a port. For the fuel used during a period, the fuel type and the sulphur content need to be specified.

Fuel tank readings shall be carried out by appropriate methods such as automated systems, soundings and dip tapes. The method for tank sounding and uncertainty associated shall be specified in the monitoring plan.

Where the amount of fuel uplift or the amount of fuel remaining in the tanks is determined in units of volume, expressed in litres, the company shall convert that amount from volume to mass by using actual density values. The company shall determine the actual density by using one of the following:

(a) on-board measurement systems;

(b) the density measured by the fuel supplier at fuel uplift and recorded on the fuel invoice or BDN;

(c) the density measured in a test analysis conducted in an accredited fuel test laboratory, where available.

The actual density shall be expressed in kg/l and determined for the applicable temperature for a specific measurement. In cases for which actual density values are not available, a standard density factor for the relevant fuel type shall be applied once assessed by the verifier.

3. Method C: Flow meters for applicable combustion processes

This method is based on measured fuel flows on-board. The data from all flow meters linked to relevant CO₂ emission sources shall be combined to determine all fuel consumption for a specific period.

The period means the time between two port calls or time within a port. For the fuel used during a period, the fuel type and the sulphur content need to be monitored.

The calibration methods applied and the uncertainty associated with flow meters used shall be specified in the monitoring plan.

Where the amount of fuel consumed is determined in units of volume, expressed in litres, the company shall convert that amount from volume to mass by using actual density values. The company shall determine the actual density by using one of the following:

(a) on-board measurement systems;

(b) the density measured by the fuel supplier at fuel uplift and recorded on the fuel invoice or BDN.

The actual density shall be expressed in kg/l and determined for the applicable temperature for a specific measurement. In cases for which actual density values are not available, a standard density factor for the relevant fuel type shall be applied once assessed by the verifier.
4. Method D: Direct CO\(_2\) emissions measurement

The direct CO\(_2\) emissions measurements may be used for voyages and for CO\(_2\) emissions occurring in ports located in a Member State’s jurisdiction. CO\(_2\) emitted shall include CO\(_2\) emitted by main engines, auxiliary engines, gas turbines, boilers and inert gas generators. For ships for which reporting is based on this method, the fuel consumption shall be calculated using the measured CO\(_2\) emissions and the applicable emission factor of the relevant fuels.

This method is based on the determination of CO\(_2\) emission flows in exhaust gas stacks (funnels) by multiplying the CO\(_2\) concentration of the exhaust gas with the exhaust gas flow.

The calibration methods applied and the uncertainty associated with the devices used shall be specified in the monitoring plan.
ANNEX II

Monitoring of other relevant information

A. MONITORING ON A PER VOYAGE BASIS (ARTICLE 9)

1. For the purposes of monitoring other relevant information on a per-voyage basis (Article 9(1)), companies shall respect the following rules:

(a) the date and hour of departure and arrival shall be considered using Greenwich Mean Time (GMT). The time spent at sea shall be calculated based on port departure and arrival information and shall exclude anchoring;

(b) the distance travelled may be either the distance of the most direct route between the port of departure and the port of arrival or the real distance travelled. In the event of the use of the distance of the most direct route between the port of departure and the port of arrival, a conservative correction factor should be taken into account to ensure that the distance travelled is not significantly underestimated. The monitoring plan shall specify which distance calculation is used and, if necessary, the correction factor used. The distance travelled shall be expressed in nautical miles;

(c) transport work shall be determined by multiplying the distance travelled with the amount of cargo carried;

(d) for passenger ships, the number of passengers shall be used to express cargo carried. For all other categories of ships, the amount of cargo carried shall be expressed either as metric tonnes or as standard cubic metres of cargo, as appropriate;

(e) for ro-ro ships, cargo carried shall be defined as the number of cargo units (trucks, cars, etc.) or lane-metres multiplied by default values for their weight. Where cargo carried by ro-ro ships has been defined based on Annex B to the CEN standard EN 16258 (2012), covering 'Methodology for calculation and declaration of energy consumption and GHG emissions of transport services (freight and passengers)', that definition shall be deemed to comply with this Regulation.

For the purposes of this Regulation, 'ro-ro ship' means a ship designed for the carriage of roll-on-roll-off cargo transportation units or with roll-on-roll-off cargo spaces;

(f) for container ships, cargo carried shall be defined as the total weight in metric tonnes of the cargo or, failing that, the amount of 20-foot equivalent units (TEU) multiplied by default values for their weight. Where cargo carried by a container ship is defined in accordance with applicable IMO Guidelines or instruments pursuant to the Convention for the Safety of Life at Sea (SOLAS Convention), that definition shall be deemed to comply with this Regulation.

For the purposes of this Regulation, 'container ship' means a ship designed exclusively for the carriage of containers in holds and on deck;

(g) the determination of cargo carried for categories of ships other than passenger ships, ro-ro ships and container ships shall enable the taking into account, where applicable, of the weight and volume of cargo carried and the number of passengers carried. Those categories shall include, inter alia, tankers, bulk carriers, general cargo ships, refrigerated cargo ships, vehicle carriers and combination carriers.

2. In order to ensure uniform conditions for the application of point (g) of paragraph 1, the Commission shall adopt, by means of implementing acts, technical rules specifying the parameters applicable to each of the other categories of ships referred to under that point.

Those implementing acts shall be adopted not later than 31 December 2016 in accordance with the examination procedure referred to in Article 24(2).

The Commission, by means of implementing acts, may revise, where appropriate, the applicable parameters referred to in point (g) of paragraph 1. Where relevant, the Commission shall also revise those parameters to take account of amendments to this Annex pursuant to Article 5(2). Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 24(2).

3. In complying with the rules referred to in paragraphs 1 and 2, companies may also choose to include specific information relating to the ship's ice class and to navigation through ice.
B. MONITORING ON AN ANNUAL BASIS (ARTICLE 10)

For the purposes of monitoring other relevant information on an annual basis, companies shall respect the following rules:

The values to be monitored under Article 10 shall be determined by aggregation of the respective per voyage data.

Average energy efficiency shall be monitored by using at least four indicators: fuel consumption per distance, fuel consumption per transport work, CO₂ emissions per distance and CO₂ emissions per transport work, which shall be calculated as follows:

Fuel consumption per distance = total annual fuel consumption/total distance travelled

Fuel consumption per transport work = total annual fuel consumption/total transport work

CO₂ emissions per distance = total annual CO₂ emissions/total distance travelled

CO₂ emissions per transport work = total annual CO₂ emissions/total transport work.

In complying with these rules, companies may also choose to include specific information relating to the ship's ice class and to navigation through ice, as well as other information related to the fuel consumed and CO₂ emitted, differentiating on the basis of other criteria defined in the monitoring plan.
ANNEX III

Elements to be taken into account for the delegated acts provided for in Articles 15 and 16

A. VERIFICATION PROCEDURES

— Competencies of verifiers,
— documents to be provided by companies to verifiers,
— risk assessment to be carried out by verifiers,
— assessment of the conformity of the monitoring plan,
— verification of the emissions report,
— materiality level,
— reasonable assurance of verifiers,
— misstatements and non-conformities,
— content of the verification report,
— recommendations for improvements,
— communication between companies, verifiers and the Commission.

B. ACCREDITATION OF VERIFIERS

— How accreditation for shipping activities can be requested,
— how verifiers will be assessed by the national accreditation bodies in order to issue an accreditation certificate,
— how the national accreditation bodies will perform the surveillance needed to confirm the continuation of the accreditation,
— requirements for national accreditation bodies in order to be competent to provide accreditation to verifiers for shipping activities, including reference to harmonised standards.
M13- e-Certificates
definition
(APPENDIX 17)

30 APRIL 2016
CONTENTS

• Introduction – Scope of this document

• Part 1 – Composition of SCF Information and Scope of Application

• Part 2 - Management of SCF Information

• Supporting documents
Introduction – Scope of this document

Goal-Based Ship Construction Standards for Bulk carriers and Oil Tankers (GBS) define high-level safety objectives to be achieved through “functional requirements” and “detailed requirements”. The conformity of rules and regulations of classification societies with the “functional requirements” are to be verified by procedures.

In order to ensure design transparency, one of the “functional requirements” of GBS, each Ship is required by the International Convention for the Safety of Life at Sea (SOLAS) to have specific information and documentation on ship design and construction onboard the Ship throughout the Ship’s life. This set of documents, drawings and information is collectively called the Ship Construction File (SCF).

SCF IS is to promote common understanding of the industry issues involved, and to facilitate agreement on individual projects.

The document highlights the information necessary for the safe operation, maintenance, inspections and repairs of the ship, as well as in emergency situations.
PART 1 – COMPOSITION of SCF Information and Scope of Application

SCF Information is a set of documents, drawings and information composed of the SCF Onboard and SCF Supplement Ashore and collectively refers to information that is sufficient to demonstrate that the Ship meets the GBS functional requirements concerning the hull structure. Such information is needed for the Ship’s safe operation, maintenance, inspections and repair as well as in emergency situations.

The list of information to be included in the SCF is provided in Table 1 (see Annex 1 – App17.02MSC 96-INFY)
PART 1 – COMPOSITION of SCF Information and Scope of Application

IP sensitivity, operational needs and standard access: procedures

• Ordinary IP Level
• High IP Level

These standard IP Levels be modified for specific Ships subject to agreement between the Shipowner and IP-Holders concerned. Storage locations indicated in Table 2 may be changed subject to agreement between the Shipowner and IP-Holder concerned. However, any item required to be on board by IMO Conventions, and those items listed as being on board in the table are to be on board as a minimum to ensure that they are transferred with the Ship whenever a change of Shipowner takes place. All SCF Information will need appropriate care to be taken to safeguard the relevant IP.
Digital SCF documents need to be stored in a format (software and hardware) that ensures compatibility with standard hardware/software (standard PC operating systems) and that can be upgraded in the future to cater for IT technology advancement. Recognized global standards are expected to be used as far as practical so that there will be no critical access failure when hardware such as personal computers and/or software such as operating systems and browsers are updated or renewed, or when the Shipowner or the Archive Center is changed.
PART 2 - MANAGEMENT OF SCF Information

Upon delivery of the newly built ship, the Shipbuilder – functioning as co-ordinator of all IP-Holders – provides SCF Information in accordance with the IMO requirements as described below:

1. The SCF Onboard to the Ship;
2. Copy of the SCF Onboard to the Shipowner’s Office Ashore; and
3. Copy of the SCF Onboard and SCF Supplement Ashore to the Archive Center

In principle, the applicable access and safekeeping procedures are to be:

1. strict enough to ensure IP protection;
2. simple enough for smooth access;
3. robust enough for onboard utilization;
4. durable enough for lifetime service;
5. compatible with standard hardware/software systems in the market; and
6. cost effective.
The Archive Center is operated in accordance with the following basic operational requirements:

1. Takes a nonpartisan stance;
2. Provides services 24 hours and 365 days in accordance with a predetermined operational plan in order to respond to any global and urgent requirement to provide scf information kept at the archive center;
3. Provides services at least in english;
4. Makes and keeps secure backup copies of the digital documents it keeps;
5. Provides the information on necessary hardware and software, and on relevant software updates/upgrades, so that accessing individual may access SCF information kept at the archive center; and
6. Provides tools such as browser software to view SCF information that should be compatible with standard PC operating systems.
PART 2 - MANAGEMENT OF SCF Information

The Archive Center securely keeps SCF Information and arranges appropriate measures for access to and IP protection of SCF Information, in accordance with the principles shown in the SCF IS. In the event that the IMO requirement is amended or a relevant issue concerning IT progress or use of this SCF IS arises and a proposal is made by any member of the cross industry group (see the Introduction for its definition) for the revision of this SCF IS, the cross industry group will consider the need for a revision to the SCF IS.

Following agreement of such a need, this SCF IS may be revised as appropriate. In addition it is anticipated that in the absence of significant issues arising, a general review will be initiated by the cross industry group within 24 months from the sufficient application of this SCF IS to take account of experience gained in the initial use of this SCF IS.
PART 2 - MANAGEMENT OF SCF Information

Data Storage and Information Management

• The Archive Center may outsource the data storage tasks to a data handling professionals, such as IT companies, subject to agreement by the IP-Holder and the Shipowner.

• The Archive Center provides the necessary information to the Shipowner and the IP-Holder if it changes sub-contractor for outsourcing data storage tasks.

• The Archive Center may not outsource its information management tasks. Information management includes, for example, preparing the appropriate scope of partial information that will satisfy the requirements of the Access Holder.
Supporting documents

- App 17.01 MSC 96-25 pg 31 SCF
- App 17.02 MSC 96-INF.Y - Annex 1
- App 17.03 MSC 96-INF.Y - Annex 2
- App 17.04 SCF ClassNK
# REPORT OF THE MARITIME SAFETY COMMITTEE ON ITS NINETY-SIXTH SESSION

## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>INTRODUCTION – ADOPTION OF THE AGENDA</td>
</tr>
<tr>
<td>2</td>
<td>DECISIONS OF OTHER IMO BODIES</td>
</tr>
<tr>
<td>3</td>
<td>CONSIDERATION AND ADOPTION OF AMENDMENTS TO MANDATORY INSTRUMENTS</td>
</tr>
<tr>
<td>4</td>
<td>MEASURES TO ENHANCE MARITIME SECURITY</td>
</tr>
<tr>
<td>5</td>
<td>GOAL-BASED NEW SHIP CONSTRUCTION STANDARDS</td>
</tr>
<tr>
<td>6</td>
<td>PASSENGER SHIP SAFETY</td>
</tr>
<tr>
<td>7</td>
<td>MANDATORY INSTRUMENT AND/OR PROVISIONS ADDRESSING SAFETY STANDARDS FOR THE CARRIAGE OF MORE THAN 12 INDUSTRIAL PERSONNEL ON BOARD VESSELS ENGAGED ON INTERNATIONAL VOYAGES</td>
</tr>
<tr>
<td>8</td>
<td>SHIP SYSTEMS AND EQUIPMENT</td>
</tr>
<tr>
<td></td>
<td>(report of the second session and urgent matters emanating from the third session of the Sub-Committee)</td>
</tr>
<tr>
<td>9</td>
<td>IMPLEMENTATION OF IMO INSTRUMENTS</td>
</tr>
<tr>
<td></td>
<td>(report of the second session of the Sub-Committee)</td>
</tr>
<tr>
<td>10</td>
<td>CARRIAGE OF CARGOES AND CONTAINERS</td>
</tr>
<tr>
<td></td>
<td>(report of the second session of the Sub-Committee)</td>
</tr>
<tr>
<td>11</td>
<td>SHIP DESIGN AND CONSTRUCTION</td>
</tr>
<tr>
<td></td>
<td>(report of the third session of the Sub-Committee)</td>
</tr>
<tr>
<td>12</td>
<td>HUMAN ELEMENT, TRAINING AND WATCHKEEPING</td>
</tr>
<tr>
<td></td>
<td>(report of the third session of the Sub-Committee)</td>
</tr>
<tr>
<td></td>
<td>POLLUTION PREVENTION AND RESPONSE (report of the third session of the Sub-Committee)</td>
</tr>
<tr>
<td>---</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>13</td>
<td>NAVIGATION, COMMUNICATIONS, SEARCH AND RESCUE (urgent matters emanating from the third session of the Sub-Committee)</td>
</tr>
<tr>
<td>14</td>
<td>CAPACITY BUILDING FOR THE IMPLEMENTATION OF NEW MEASURES</td>
</tr>
<tr>
<td>15</td>
<td>FORMAL SAFETY ASSESSMENT, INCLUDING GENERAL CARGO SHIP SAFETY</td>
</tr>
<tr>
<td>16</td>
<td>PIRACY AND ARMED ROBBERY AGAINST SHIPS</td>
</tr>
<tr>
<td>17</td>
<td>UNSAFE MIXED MIGRATION BY SEA</td>
</tr>
<tr>
<td>18</td>
<td>ANALYSIS AND CONSIDERATION OF RECOMMENDATIONS TO REDUCE ADMINISTRATIVE BURDEN IN IMO INSTRUMENTS INCLUDING THOSE IDENTIFIED BY THE SG-RAR</td>
</tr>
<tr>
<td>19</td>
<td>IMPLEMENTATION OF INSTRUMENTS AND RELATED MATTERS</td>
</tr>
<tr>
<td>20</td>
<td>RELATIONS WITH OTHER ORGANIZATIONS</td>
</tr>
<tr>
<td>21</td>
<td>APPLICATION OF THE COMMITTEE’S GUIDELINES</td>
</tr>
<tr>
<td>22</td>
<td>WORK PROGRAMME</td>
</tr>
<tr>
<td>23</td>
<td>ANY OTHER BUSINESS</td>
</tr>
<tr>
<td>24</td>
<td>ACTION REQUESTED OF OTHER IMO ORGANS</td>
</tr>
</tbody>
</table>

**LIST OF ANNEXES**

**ANNEX 1** RESOLUTION MSC.402(96) – REQUIREMENTS FOR MAINTENANCE, THOROUGH EXAMINATION, OPERATIONAL TESTING, OVERHAUL AND REPAIR OF LIFEBOATS AND RESCUE BOATS, LAUNCHING APPLIANCES AND RELEASE GEAR

**ANNEX 2** RESOLUTION MSC.403(96) – AMENDMENTS TO THE INTERNATIONAL CODE FOR FIRE SAFETY SYSTEMS (FSS CODE)

**ANNEX 3** RESOLUTION MSC.404(96) – AMENDMENTS TO THE INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974, AS AMENDED

**ANNEX 4** RESOLUTION MSC.405(96) – AMENDMENTS TO THE INTERNATIONAL CODE ON THE ENHANCED PROGRAMME OF INSPECTIONS DURING SURVEYS OF BULK CARRIERS AND OIL TANKERS, 2011 (2011 ESP CODE)

**ANNEX 5** RESOLUTION MSC.406(96) – AMENDMENTS TO THE INTERNATIONAL MARITIME DANGEROUS GOODS (IMDG) CODE
<table>
<thead>
<tr>
<th>ANNEX</th>
<th>DRAFT RESOLUTION ON AMENDMENTS TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>CONVENTION ON STANDARDS OF TRAINING, CERTIFICATION AND WATCHKEEPING FOR SEAFARERS (STCW), 1978, AS AMENDED</td>
</tr>
<tr>
<td>9</td>
<td>DRAFT RESOLUTION ON AMENDMENTS TO PART A OF THE SEAFARERS’ TRAINING, CERTIFICATION AND WATCHKEEPING (STCW) CODE</td>
</tr>
<tr>
<td>10</td>
<td>DRAFT STCW.6 CIRCULAR ON AMENDMENTS TO PART B OF THE SEAFARERS’ TRAINING, CERTIFICATION AND WATCHKEEPING (STCW) CODE</td>
</tr>
<tr>
<td>11</td>
<td>RESOLUTION MSC.407(96) – AMENDMENTS TO THE CODE FOR THE CONSTRUCTION AND EQUIPMENT OF MOBILE OFFSHORE DRILLING UNITS, 2009 (2009 MODU CODE)</td>
</tr>
<tr>
<td>12</td>
<td>REVISED TIMETABLE AND SCHEDULE OF ACTIVITIES FOR THE IMPLEMENTATION OF THE GBS VERIFICATION SCHEME</td>
</tr>
<tr>
<td>13</td>
<td>DRAFT AMENDMENTS TO SOLAS REGULATIONS II-2/1 AND II-2/10</td>
</tr>
<tr>
<td>14</td>
<td>DRAFT NEW SOLAS REGULATION XI-1/2-1</td>
</tr>
<tr>
<td>15</td>
<td>DRAFT AMENDMENTS TO THE IGC CODE</td>
</tr>
<tr>
<td>16</td>
<td>DRAFT AMENDMENTS TO SOLAS CHAPTER II-1</td>
</tr>
<tr>
<td>17</td>
<td>RESOLUTION MSC.408(96) – AMENDMENTS TO CHAPTER 2 OF THE CODE OF SAFETY FOR SPECIAL PURPOSE SHIPS, 2008 (2008 SPS CODE)</td>
</tr>
<tr>
<td>18</td>
<td>DRAFT AMENDMENTS TO THE FSS CODE</td>
</tr>
<tr>
<td>19</td>
<td>DRAFT AMENDMENTS TO SOLAS CHAPTER III</td>
</tr>
<tr>
<td>20</td>
<td>DRAFT AMENDMENTS TO THE 2011 ESP CODE</td>
</tr>
<tr>
<td>21</td>
<td>DRAFT MSC-MEPC.5 CIRCULAR ON UNIFIED INTERPRETATION RELATING TO THE IBC CODE</td>
</tr>
<tr>
<td>22</td>
<td>DRAFT ASSEMBLY RESOLUTION ON REVISED GUIDELINES ON THE IMPLEMENTATION OF THE INTERNATIONAL SAFETY MANAGEMENT (ISM) CODE BY ADMINISTRATIONS</td>
</tr>
</tbody>
</table>
ANNEX 23  DRAFT MSC-MEPC.2 CIRCULAR ON EXAMPLE OF A CERTIFICATE OF PROTECTION FOR PRODUCTS REQUIRING OXYGEN-DEPENDENT INHIBITORS

ANNEX 24  DRAFT MSC-MEPC.1 CIRCULAR ON ORGANIZATION AND METHOD OF WORK OF THE MARITIME SAFETY COMMITTEE AND THE MARINE ENVIRONMENT PROTECTION COMMITTEE AND THEIR SUBSIDIARY BODIES

ANNEX 25  BIENNIAL STATUS REPORT OF THE SUB-COMMITTEES

ANNEX 26  PROVISIONAL AGENDAS FOR THE SUB-COMMITTEES

ANNEX 27  BIENNIAL STATUS REPORT OF THE MARITIME SAFETY COMMITTEE

ANNEX 28  POST-BIENNIAL AGENDA OF THE MARITIME SAFETY COMMITTEE

ANNEX 29  STATEMENTS BY DELEGATIONS AND OBSERVERS
1 INTRODUCTION – ADOPTION OF THE AGENDA

1.1 The ninety-sixth session of the Maritime Safety Committee was held at IMO Headquarters from 11 to 20 May 2016, under the chairmanship of Mr. Brad Groves (Australia). The Vice-Chairman of the Committee, Mr. Juan Carlos Cubisino (Argentina), was also present.

1.2 The session was attended by delegations from Members and Associate Members; by representatives from the United Nations Programmes, specialized agencies and other entities; by observers from intergovernmental organizations with agreements of cooperation; and by observers from non-governmental organizations in consultative status; as listed in document MSC 96/INF.1.

1.3 The session was also attended by the Chairman of the Council, Mr. Jeffrey G. Lantz (United States), the Chairman of the Marine Environment Protection Committee, Mr. Arsenio Dominguez (Panama) and the Chairman of the Facilitation Committee, Mr. Yury Melenas (Russian Federation).

Opening address of the Secretary-General

1.4 The Secretary-General welcomed participants and delivered his opening address, the full text of which can be downloaded from the IMO website at the following address: http://www.imo.org/MediaCentre/SecretaryGeneral/Secretary-GeneralsSpeechesToMeetings

Chairman’s remarks

1.5 The Chairman thanked the Secretary-General for his opening address and stated that his advice and requests would be given every consideration in the deliberations of the Committee.

Adoption of the agenda and related matters

1.6 The Committee adopted the agenda (MSC 96/1) and agreed to be guided in its work, in general, by the annotations contained in document MSC 96/1/1 (Secretariat) and the arrangements in document MSC 96/1/2. The agenda, as adopted, with a list of documents considered under each agenda item, is set out in document MSC 96/INF.13.

Credentials

1.7 The Committee noted that credentials of the delegations attending the session were in due and proper form.

2 DECISIONS OF OTHER IMO BODIES

Outcomes of C 114, C 115, C/ES.28, A 29, TC 65, FAL 40 and MEPC 69

2.1 The Committee noted the decisions of C 114, C 115 and C/ES.28 (MSC 96/2), A 29 (MSC 96/2/1), TC 65 (MSC 96/2/2), FAL 40 (MSC 96/2/3) and MEPC 69 (MSC 96/2/4), and took appropriate action under the relevant agenda items.
3 CONSIDERATION AND ADOPTION OF AMENDMENTS TO MANDATORY INSTRUMENTS

General

3.1 Contracting Governments to the 1974 SOLAS Convention were invited to consider and adopt proposed amendments to:

.1 chapters II-2 and III of the annex to the 1974 SOLAS Convention, as amended, in accordance with the provisions of article VIII of the Convention;

.2 the International Code for Fire Safety Systems (FSS Code), in accordance with the provisions of article VIII and regulation II-2/3.22 of the Convention;

.3 the International Code on Intact Stability, 2008 (2008 IS Code), in accordance with the provision of article VIII and regulation II-1/2.27 of the Convention;

.4 the International Code on the Enhanced Programme of Inspections during Surveys of Bulk Carriers and Oil Tankers, 2011 (2011 ESP Code), in accordance with the provisions of article VIII and regulation XI-1/2 of the Convention; and

.5 the International Maritime Dangerous Goods (IMDG) Code, in accordance with the provisions of article VIII and regulation VII/1.1 of the Convention.

3.2 More than one third of the Contracting Governments to the 1974 SOLAS Convention were present during the consideration and adoption of the said amendments by the expanded Maritime Safety Committee, in accordance with articles VIII(b)(iii) and VIII(b)(iv) of the Convention. The proposed amendments to the 1974 SOLAS Convention and the Codes mandatory under the Convention had been circulated, in accordance with SOLAS article VIII(b)(i), to all IMO Members and Contracting Governments to the Convention by Circular Letters No.3405 of 30 September 2013, No.3555 of 21 August 2015 and No.3598 of 5 November 2015.

3.3 Parties to the Protocol of 1988 relating to the International Convention on Load Lines, 1966 (1988 Load Lines Protocol) were invited to consider and adopt proposed amendments to the International Code on Intact Stability, 2008 (2008 IS Code), as amended, in accordance with the provisions of article VI of the 1988 Load Lines Protocol and regulation 3(16) of annex I to the International Convention on Load Lines, 1966, as modified by the 1988 Load Lines Protocol, as amended. Parties constituting more than one third of the total of Parties to the Protocol were present during the consideration and adoption of the said amendments by the expanded Maritime Safety Committee, in accordance with the provisions of paragraphs 2(c) and 2(d) of article VI of the 1988 Load Lines Protocol. The proposed amendments to the 2008 IS Code had been circulated, in accordance with paragraph 2(a) of article VI of the 1988 Load Lines Protocol, to all IMO Members and Parties to the Protocol by Circular Letter No.3599 of 22 October 2015.

3.4 Parties to the 1978 STCW Convention were invited to participate in the consideration and adoption of proposed amendments to chapters I and V of the 1978 STCW Convention, as amended, chapters I and V of part A of the STCW Code and chapter I of part B of the STCW Code. More than one third of the Parties to the 1978 STCW Convention were present during the consideration and adoption of the said amendments by the expanded Maritime Safety Committee, in accordance with the provisions of article XII(1)(a)(iv) and regulation I/1.2.3 of
the Convention. The proposed amendments to the 1978 STCW Convention and parts A and B of the STCW Code had been circulated in accordance with article XII(1)(a)(i) of the Convention to all IMO Members and Parties to the Convention, by Circular Letter No.3556 of 28 July 2015.

3.5 The Committee was also invited to consider and:

.1 adopt a draft MSC resolution on Amendments to the Code for the Construction and Equipment of Mobile Offshore Drilling Units, 2009 (2009 MODU Code) (resolution A.1023(26));

.2 approve a draft MSC circular on Guidelines on consolidated IMO provisions for the safe carriage of dangerous goods in packaged form by sea;

.3 approve a draft MSC circular on Amendments to the Inspection programmes for cargo transport units carrying dangerous goods (MSC.1/Circ.1442);

.4 approve a draft MSC circular on Amendments to the Emergency Response Procedures for Ships Carrying Dangerous Goods (EmS) Guide (MSC/Circ.1025, as amended);

.5 approve a draft MSC circular on Early implementation of the new chapter 17 of the FSS Code; and

.6 approve a draft MSC circular on Amendments to the Recommendation on helicopter landing areas on ro-ro passenger ships (MSC/Circ.895).

PROPOSED AMENDMENTS TO THE 1974 SOLAS CONVENTION; PROPOSED NEW CHAPTER 17 TO THE FSS CODE; AND PROPOSED MSC RESOLUTION ON REQUIREMENTS FOR MAINTENANCE, THOROUGH EXAMINATION, OPERATIONAL TESTING, OVERHAUL AND REPAIR OF LIFEBOATS AND RESCUE BOATS, LAUNCHING APPLIANCES AND RELEASE GEAR

Proposed amendments to SOLAS chapter II-2

Regulation 13 – Means of escape

3.6 The Committee recalled that the draft amendments to SOLAS regulation II-2/13 on evacuation analysis (MSC 96/3, annex 1; and MSC 96/WP.5, annex 1) had been prepared by SDC 2 and approved by MSC 95.

3.7 The Committee also recalled that SDC 2 had noted that the draft SOLAS amendments mandating evacuation analysis should apply to ro-ro passenger ships constructed on or after the date on which regulation II-2/13.7.4 applies, and other passenger ships carrying more than 36 passengers constructed on or after the date of entry into force of the amendments. In this regard, the Committee considered draft SOLAS regulation II-2/13.3.2.7.1.1, which contained square brackets around a placeholder for the date of construction of ro-ro passenger ships (i.e. [DD/MM/YY]).

3.8 In this context, the Committee noted that the requirements of:

.1 draft SOLAS regulation II-2/13.3.2.7 on Evacuation analysis;

.2 the earlier SOLAS regulation II-2/28-1.3 on Requirements applicable to ro-ro passenger ships constructed on or after 1 July 1999 (adopted by resolution 1 of the 1995 Conference of Contracting Governments to the International Convention for the Safety of Life at Sea); and
SOLAS regulation II-2/13.7.4 on Evacuation analysis (adopted by resolution MSC.99(73) with an entry-into-force date of 1 July 2002), which replaced SOLAS regulation II-2/28-1.3 following a comprehensive revision of SOLAS chapter II-2.

were identical with regard to the evaluation of escape routes on ro-ro passenger ships by an evacuation analysis. Consequently, the Committee agreed to replace the date placeholder in draft SOLAS regulation II-2/13.3.2.7.1.1 with the date "1 July 1999" and delete the square brackets.

3.9 Following the above decision and having considered the comments by the IACS observer with regard to ro-ro passenger ships that have already undergone an evacuation analysis, the Committee concurred that ro-ro passenger ships constructed on or after 1 July 1999 and before the date of entry into force of the proposed amendments to SOLAS regulation II-2/13, which have already been evaluated, need not be re-evaluated. In this context, the Committee instructed the drafting group to ensure that draft SOLAS regulation II-2/13.3.2.7 was correct in this respect.

3.10 The Committee confirmed the contents of the proposed amendments to SOLAS regulation II-2/13, as set out in annex 1 to document MSC 96/WP.5, subject to the modifications indicated in paragraphs 3.8 and 3.9 above and editorial improvements, if any.

Regulation 18 – Helicopter facilities
Associated draft new chapter 17 to the FSS Code

3.11 The Committee recalled that the draft amendments to SOLAS regulation II-2/18 had been approved by MSC 92 and, at the adoption stage, MSC 93 decided to refer the draft amendments back to SSE 2 for further consideration, with one session needed to finalize them.

3.12 The Committee also recalled that, in connection with the draft amendments to SOLAS regulation II-2/18, SSE 2 had prepared a draft new chapter 17 to the FSS Code, for approval by MSC 95, with a view to subsequent adoption by MSC 96. As a result of the decision to prepare a draft new chapter 17 to the FSS Code, SSE 2 had requested MSC 95 to consider the consequential modification to the draft amendments to SOLAS regulation II-2/18, with a view to adoption by MSC 96, in conjunction with the adoption of the new chapter 17 of the FSS Code.

3.13 The Committee further recalled that MSC 95 had approved the draft new chapter 17 of the FSS Code (MSC 96/3, annex 3), and having considered the consequential modification to the draft amendments to SOLAS regulation II-2/18 approved at MSC 92 (MSC 96/3, annex 1), agreed to further consider them at MSC 96, with a view to adoption in conjunction with the new chapter 17 of the FSS Code.

3.14 The Committee had for its consideration document MSC 96/3/5 (IACS), proposing the following modifications to the draft amendments to SOLAS regulation II-2/18 and the draft new chapter 17 of the FSS Code (also indicated as notes in annexes 1 and 3 to document MSC 96/WP.5, respectively):

.1 in light of the current definition of helideck in SOLAS regulation II-2/3.26 and the different definition of helideck being proposed for inclusion in paragraph 17.2.5 of FSS Code, IACS considers that the latter be revised to refer to the definition in SOLAS regulation II-2/3.26;
.2 the text in paragraph 17.2.4 of the FSS Code, proposing a definition of "helicopter landing area", should be relocated to SOLAS regulation II-2/3 and a reference to this SOLAS definition should be made in paragraph 17.2.4;

.3 the text in paragraph 17.2.10 of the FSS Code, proposing a definition of "winching area", should be relocated to SOLAS regulation II-2/3 since, as explained in paragraph 3.14.4 below, paragraph 17.3.5 of the FSS Code (specification for winching area) should be deleted and consequently a definition of "winching area" in the FSS Code is unnecessary;

.4 the proposed specification for winching area in paragraph 17.3.5 of the FSS Code (which simply refers SOLAS regulation II-2/18.2.2) appears unnecessary and should be deleted; and

.5 notwithstanding the title and application statement ("This chapter details the specifications for foam firefighting appliances for the protection of helicopter facilities as required by chapter II-2 of the Convention") of the proposed chapter 17 of the FSS Code, it includes provisions relating to foam firefighting specifications for "helidecks" and "helicopter landing areas", but does not address "refuelling and hangar facilities" (which, by the definition of a "helicopter facility" in SOLAS regulation II-2/3.27, are separate from a "helideck"). Based on the understanding that the proposed chapter 17 of the FSS Code applies to helidecks and helicopter landing areas only, the wording "helicopter facilities" in paragraph 17.1 of the FSS Code should be replaced with "helidecks and helicopter landing areas", in order to clarify the scope of application of the chapter.

3.15 Following discussion, the Committee agreed to the modifications proposed in the above document.

3.16 Subsequently, the Committee confirmed the contents of the proposed amendments to SOLAS regulation II-2/18 and the draft new chapter 17 of the FSS Code, as set out in annexes 1 and 3 of document MSC 96/WP.5, respectively, subject to the modifications proposed in document MSC 96/3/5 (IACS) and editorial improvements, if any.

Proposed amendments to SOLAS chapter III

Regulation 3 – Definitions
Regulation 20 – Operational readiness, maintenance and inspections
Requirements for maintenance, thorough examination, operational testing, overhaul and repair of lifeboats and rescue boats, launching appliances and release gear

3.17 The Committee recalled that the draft amendments to SOLAS regulations III/3 and III/20 had been developed by DE 57, approved by MSC 92 and circulated to all IMO Members and Contracting Governments to the Convention by Circular Letter No.3405 of 30 September 2013. MSC 92 had also approved the associated draft MSC resolution on Requirements for periodic servicing and maintenance of lifeboats and rescue boats, launching appliances and release gear, to be adopted in conjunction with draft amendments to SOLAS regulations III/3 and III/20.
3.18 The Committee also recalled that, at the adoption stage, MSC 93, noting the number of inconsistencies between the requirements of the draft amendments to SOLAS regulations III/3 and III/20, and the draft MSC resolution on Requirements for periodic servicing and maintenance of lifeboats and rescue boats, launching appliances and release gear, had decided to refer the above-mentioned drafts to SSE 2 for further consideration.

3.19 The Committee further recalled that following the request by SSE 2 for clear instructions on who is allowed to carry out annual examinations and five-year operational tests, MSC 95 had agreed that, based on the practical experience of application circulars MSC.1/Circ.1206/Rev.1 and MSC.1/Circ.1277, the annual thorough examination should be carried out by the manufacturer or a service provider authorized by the Administration, taking into account the understanding that a service provider may be an entity other than the manufacturer (e.g. ship operator complying with the relevant criteria). Additionally, MSC 95, in discussing whether the SSE Sub-Committee is authorized to propose further amendments to SOLAS chapter III while finalizing the draft MSC resolution on Requirements for periodic servicing and maintenance of lifeboats and rescue boats, launching appliances and release gear, had endorsed, in principle, the suggestion that the SOLAS regulations should address the questions "What is to be done?" and "When is it to be done?" and the draft MSC resolution should address "How is it to be done?" and "Who does it?"; and had agreed that SOLAS regulations III/20 and III/36 as well as the Guidelines for developing operation and maintenance manuals for lifeboat systems (MSC.1/Circ.1205) should be further reviewed, for the purpose of consistency, but without introducing any amendments not specifically related to this matter.

3.20 The Committee recalled further that SSE 3 had endorsed the modified draft amendments to SOLAS regulations III/3 and III/20 (SSE 3/16, annex 2; and MSC 96/WP.5, annex 1) for adoption at MSC 96 in conjunction with the adoption of the modified draft MSC resolution on Requirements for maintenance, thorough examination, operational testing, overhaul and repair of lifeboats and rescue boats, launching appliances and release gear (SSE 3/16, annex 3; and MSC 96/WP.5, annex 8).

3.21 During consideration of the draft MSC resolution on Requirements for maintenance, thorough examination, operational testing, overhaul and repair of lifeboats and rescue boats, launching appliances and release gear, and the draft amendments to SOLAS regulations III/3 and III/20, as modified and endorsed by SSE 3, the Committee, taking into account that the term "manufacturer" was defined in the draft Requirements, agreed, for the purpose of consistency, to instruct the drafting group to replace all instances of the words "equipment manufacturer" with the word "manufacturer" in the annex to the draft MSC resolution. The Committee also agreed to replace the words "where possible" in paragraph 6.2.10 of the annex to the draft MSC resolution with the words "where the structure permits the reinspection".

3.22 In considering the comments made by the IACS observer with regard to paragraph 3.2 of the annex to the aforementioned draft MSC resolution being unclear as to whether manufacturers need to be authorized by Administrations to carry out thorough examination, operational testing, repair and overhaul of equipment, the Committee noted the following views expressed on this matter:

.1 an original equipment manufacturer (OEM) need not be authorized but only when servicing its own equipment;

.2 an OEM is considered to be a service provider and needs to be authorized when servicing equipment that is not its own;
although not discussed at SSE 3, producers of equipment under licensing agreements from original equipment manufacturers who remain in existence may be considered manufacturers if they have taken legal and legitimate responsibilities for that equipment; and

paragraph 3.2 of the annex to the draft MSC resolution on Requirements for maintenance, thorough examination, operational testing, overhaul and repair of lifeboats and rescue boats, launching appliances and release gear is clear, but additional information could be provided in a footnote, if necessary.

Having considered the above views, the Committee agreed that paragraph 3.2 of the annex to the draft MSC resolution on Requirements for maintenance, thorough examination, operational testing, overhaul and repair of lifeboats and rescue boats, launching appliances and release gear clearly addressed the matter of authorization of manufacturers without a need for modifications or a footnote.

Subsequently, the Committee confirmed the contents of the proposed amendments to SOLAS regulations III/3 and III/20 and the above draft MSC resolution, as set out in annexes 1 and 8 to document MSC 96/WP.5, respectively, subject to the modifications indicated in paragraph 3.21 and editorial improvements, if any.

**Date of entry into force of the proposed amendments**

Having noted that, in accordance with the Guidance on entry into force of amendments to the 1974 SOLAS Convention and related mandatory instruments (MSC.1/Circ.1481), the first four-year cycle commenced on 1 January 2016 with a corresponding entry-into-force date of 1 January 2020, the Committee agreed that the SOLAS amendments to chapters II-2 and III, proposed for adoption at the current session, should be deemed to have been accepted on 1 July 2019 and enter into force on 1 January 2020.

With regard to new chapter 17 of the FSS Code associated with the amendments to SOLAS regulation II-2/18, the Committee agreed that it should also enter into force on 1 January 2020, which is the date of entry into force of the associated SOLAS amendments.

Similarly, the Committee agreed that the Requirements for maintenance, thorough examination, operational testing, overhaul and repair of lifeboats and rescue boats, launching appliances and release gear, associated with the amendments to SOLAS chapter III, should become effective on the date of entry into force of the associated SOLAS amendments (i.e. 1 January 2020).

**Proposed amendments to the FSS, 2011 ESP and IMDG Codes, mandatory under the 1974 SOLAS Convention**

**Proposed amendments to the FSS Code**

Having considered the draft new chapter 17 of the FSS Code in conjunction with the draft amendments to SOLAS regulation II-2/18 (see paragraphs 3.11 to 3.16, 3.25 and 3.26), the Committee proceeded with consideration of the draft amendments to chapter 8 of the FSS Code (MSC 96/3, annex 3; and MSC 96/WP.5, annex 3), which had been developed by SSE 2 and approved by MSC 95.
3.29 The Committee agreed to the proposal made by the delegation of the Bahamas to replace the words "corrosion and clogging of sprinklers" in draft paragraph 2.4.1.2 of chapter 8 of the FSS Code with the words "corrosion of sprinklers and clogging or blockage arising from products of corrosion or scale-forming minerals" in order to draw attention to the fact that the effects of the deposition of scale-forming minerals which come out of solution are as important as the effects of corrosion.

3.30 Having noted no other comments on the proposed amendments to chapter 8 of the FSS Code, as set out in annex 3 to document MSC 96/WP.5, the Committee confirmed their contents, subject to the modification indicated in paragraph 3.29 above and editorial improvements, if any.

**Date of entry into force of the proposed amendments**

3.31 The Committee agreed that the above amendments to the FSS Code, proposed for adoption at the current session, should be deemed to have been accepted on 1 July 2019 and enter into force on 1 January 2020.

**Proposed amendments to the 2011 ESP Code**

3.32 The Committee recalled that the draft amendments to the 2011 ESP Code (MSC 96/3, annex 2; and MSC 96/WP.5, annex 2) had been developed by SDC 2 and approved by MSC 95.

3.33 Having noted that no comments had been submitted on the proposed amendments to the 2011 ESP Code, the Committee confirmed their contents, as set out in annex 2 to document MSC 96/WP.5, subject to editorial improvements, if any.

**Date of entry into force of the proposed amendments**

3.34 Having recalled that the 2011 ESP Code is updated regularly in order for the Code to be aligned with IACS Unified Requirements Z10 series, the Committee decided that the four-year cycle for the entry into force of amendments to the 1974 SOLAS Convention and related mandatory instruments should not be adhered to in the case of the 2011 ESP Code, and specifically that the entry-into-force date of draft amendments to the 2011 ESP Code should be set to the earliest allowable date (i.e. 18 months following adoption by a two-thirds majority of the SOLAS Contracting Governments present and voting in the expanded Maritime Safety Committee).

3.35 Consequently, the Committee agreed that the amendments to the 2011 ESP Code, proposed for adoption at the current session, should be deemed to have been accepted on 1 July 2017 and enter into force on 1 January 2018.

**Proposed amendments to the IMDG Code**

3.36 The Committee recalled that the draft amendments to the IMDG Code had been agreed by CCC 2, finalized by E&T 24, and the complete draft text of the IMDG Code, incorporating the draft amendments finalized by E&T 24, had been circulated in accordance with article VIII of the 1974 SOLAS Convention and the amendment procedure for the IMDG Code agreed by MSC 75 (MSC 75/24, paragraph 7.36.3).

3.37 Having noted that no comments had been submitted on the proposed amendments, the Committee confirmed their contents, as set out in annex 7 to document MSC 96/WP.5 and annexes 1 and 2 to Circular Letter No.3598, subject to editorial improvements, if any.
Date of entry into force of the proposed amendments

3.38 The Committee agreed that the above amendments to the IMDG Code, proposed for adoption at the current session, should be deemed to have been accepted on 1 July 2017 and enter into force on 1 January 2018 and that SOLAS Contracting Governments could apply the amendments in whole or in part on a voluntary basis from 1 January 2017.


Proposed amendments to the introduction of the 2008 IS Code, regarding ships engaged in anchor handling operations

3.39 The Committee recalled that the draft amendments to the introduction of the 2008 IS Code regarding ships engaged in anchor handling operations (MSC 96/3/1, annexes 1 and 2; and MSC 96/WP.5, annexes 4 and 5) had been developed by SDC 2 and approved by MSC 95, with a view to subsequent adoption at MSC 96.

3.40 The Committee noted that SDC 3 had modified the chapeau of paragraph 1.2 of the introduction to the 2008 IS Code and requested the Committee to include the modified chapeau while adopting the amendments to the introduction of the 2008 IS Code regarding vessels engaged in anchor handling operations (see also paragraph 11.11).

3.41 Following consideration, the Committee agreed with the modification to the chapeau of paragraph 1.2 of the introduction to the 2008 IS Code proposed by SDC 3.

3.42 Subsequently, the Committee confirmed the contents of the proposed amendments to the introduction to the 2008 IS Code, as set out in annexes 4 and 5 to document MSC 96/WP.5, subject to the modification indicated in paragraph 3.40 above, and further editorial improvements, if any, by the Drafting Group on Consideration and Adoption of Amendments to Mandatory Instruments.

3.43 The Committee noted that, separately from the proposed amendments to the introduction of the 2008 IS Code regarding ships engaged in anchor handling operations, which are being considered for adoption at this session, SDC 3 had endorsed additional draft amendments to the introduction of the 2008 IS Code regarding vessels engaged in lifting and towing operations, including escort towing (SDC 3/21, annex 4), which were submitted for approval under agenda item 11 (Ship Design and Construction), with a view to subsequent adoption at MSC 97 (see also paragraphs 11.11 and 11.12).

3.44 The Committee also noted that the draft amendments to the introduction of the 2008 IS Code regarding ships engaged in lifting and towing operations, including escort towing (SDC 3/21, annex 4), as endorsed by SDC 3, include draft new paragraphs 1.2.8 and 2.28, which should be introduced after new paragraphs 1.2.7 and 2.27, as contained in the proposed amendments to the introduction of the 2008 IS Code being considered for adoption at this session (MSC 96/WP.5, annexes 4 and 5).

3.45 Taking into account paragraph 3.3.1.1 of the Guidance on drafting of amendments to the 1974 SOLAS Convention and related mandatory instruments (MSC.1/Circ.1500), which states that "A further amendment to an already adopted amendment which is still pending entry into force may be approved by the Committee but should not be adopted until the previous adopted amendment enters into force.", the Committee noted that, if the proposed amendments to the introduction of the 2008 IS Code regarding ships engaged in anchor handling operations had been adopted at this session, they should be deemed to have been accepted on 1 July 2017 and enter into force on 1 January 2018.
handling operations were to be adopted at this session, then adoption of the draft amendments to the introduction of the 2008 IS Code regarding ships engaged in lifting and towing operations would have to wait until the amendments relating to anchor handling operations have entered into force, or at least been accepted, since paragraphs 1.2.7 and 2.27 of the introduction cannot be considered, from a legal perspective, until they have been accepted.

3.46 Subsequently, the Committee agreed not to adopt at this session the proposed amendments to the introduction of the 2008 IS Code regarding ships engaged in anchor handling operations, and instead forward them to MSC 97, with a view to adoption as a consolidated package, to be prepared by the Secretariat after the session, together with the draft amendments regarding ships engaged in lifting and towing operations, as endorsed by SDC 3, subject to the latter draft amendments being approved under agenda item 11 (see paragraph 11.12).

3.47 The Committee noted that, based on the four-year cycle of entry into force of amendments to the 1974 SOLAS Convention and related mandatory instruments, the expected entry-into-force date of the amendments to the introduction of the 2008 IS Code under consideration should be 1 January 2020, and the Committee’s decision to defer adoption until MSC 97 does not affect that date. Nevertheless, the Committee agreed that if, for any reason, approval or adoption of the draft amendments to the 2008 IS Code related to lifting and towing operations were to be delayed beyond 1 July 2018, the draft amendments to the 2008 IS Code related to anchor handling operations should be adopted separately, in order to ensure that they can enter into force on 1 January 2020.

Proposed amendments to part B of the 2008 IS Code

3.48 The Committee recalled that the draft amendments to part B of the 2008 IS Code regarding ships engaged in anchor handling operations (MSC 96/3/1, annex 3; and MSC 96/WP.5, annex 6) had been developed by SDC 2 and approved by MSC 95, with a view to becoming operative on the same date as the amendments to the introduction of the 2008 IS Code.

3.49 Having considered the draft amendments to part B of the 2008 IS Code, as set out in annex 6 to document MSC 96/WP.5, and having taken into account its previous decision regarding the draft amendments to the introduction of the 2008 IS Code (see paragraph 3.46), the Committee agreed to instruct the drafting group to prepare the final text of the draft amendments to part B of the 2008 IS Code regarding ships engaged in anchor handling operations, together with the associated draft MSC resolution, indicating 1 January 2020 as the date on which the amendments will become effective.

3.50 The Committee also agreed that the final text of the draft amendments to part B of the 2008 IS Code regarding ships engaged in anchor handling operations should be forwarded to MSC 97, with a view to adoption as a consolidated package, to be prepared by the Secretariat after the session, together with the draft amendments relating to ships engaged in lifting and towing operations, including escort towing, subject to the latter draft amendments being approved under agenda item 11 (see paragraphs 11.11 and 11.12).

PROPOSED AMENDMENTS TO THE 1978 STCW CONVENTION, AS AMENDED, AND THE STCW CODE

3.51 The Committee recalled that the draft amendments to the 1978 STCW Convention (MSC 96/3/3, annex 1; and MSC 96/WP.5, annex 9) and parts A and B of the STCW Code (MSC 96/3/3, annexes 2 and 3, respectively; and MSC 96/WP.5, annexes 10 and 11, respectively), which are related to the Polar Code, had been developed by HTW 2 and approved by MSC 95.
Proposed amendments to the STCW Convention

3.52 The Committee noted that the draft amendments to the STCW Convention, under consideration for adoption at this session, introduce new subparagraph .42 in regulation I/1.1 and new regulation V/4 after the existing regulation V/3. However, subparagraph .41 of regulation I/1.1 and regulation V/3, which were adopted by resolution MSC.396(95) and must be in place before subsequent paragraphs or regulations are introduced, cannot be considered, from a legal perspective, until they have entered into force, or at least been accepted on 1 July 2016.

3.53 In light of the above, the Committee agreed not to adopt at this session the draft amendments to the STCW Convention related to the Polar Code, and instead forward them to MSC 97 (November 2016), with a view to adoption as a consolidated package, to be prepared by the Secretariat after the session, together with the draft amendments relating to passenger ship-specific safety training (HTW 3/19, annex 5), as endorsed by HTW 3, subject to the latter draft amendments being approved under agenda item 12 (Human Element, Training and Watchkeeping (Report of the third session of the Sub-Committee)) (see paragraphs 12.5 and 12.6).

3.54 The Committee agreed to a proposal that the drafting group should insert the definition for Polar waters in STCW regulation I/1.1 and, having noted that no additional comments had been submitted on the proposed amendments to the STCW Convention related to the Polar Code, confirmed their contents, subject to editorial improvements, if any.

3.55 The Committee noted that, while its decision to defer adoption until MSC 97 delayed the expected entry into force of the draft amendments to the 1978 STCW Convention related to the Polar Code by six months (i.e. entry into force on 1 July 2018 instead of 1 January 2018, had MSC 96 been able to adopt), operative paragraph 5 of the draft requisite MSC resolution mitigated the delay by urging Parties to the 1978 STCW Convention to implement the amendments at an early stage following their adoption.

3.56 In regard to the draft requisite MSC resolution, the Committee agreed to instruct the drafting group to prepare an operative paragraph requesting Parties to the 1978 STCW Convention to recognize seafarers’ certificates issued at an early stage and prior to the entry into force of the draft amendments.

3.57 The Committee instructed the drafting group to finalize the text of the requisite draft MSC resolution and requested the Secretariat to prepare an appropriate draft resolution for the consolidated draft amendments after the session, using the draft MSC resolution to be prepared by the drafting group as a basis and incorporating the operative paragraphs indicated in paragraphs 3.55 and 3.56 above.

Proposed amendments to part A of the STCW Code

New paragraph 4 in section A-I/11 and new section A-V/4

3.58 The Committee noted that no comments had been submitted on the proposed amendments to part A of the STCW Code related to the Polar Code and confirmed their contents, subject to editorial improvements, if any, by the drafting group.

3.59 Recalling its earlier decision regarding the draft amendments to the STCW Convention (see paragraphs 3.52 to 3.57), the Committee agreed not to adopt at this session the draft amendments to part A of the STCW Code related to the Polar Code, and instead forward them to MSC 97 (November 2016), with a view to adoption as a consolidated package, to be prepared
by the Secretariat after the session, together with the draft amendments relating to passenger ship-specific safety training (HTW 3/19, annex 6), as endorsed by HTW 3, subject to the latter draft amendments being approved under agenda item 12 (see paragraphs 12.5 and 12.6).

3.60 The Committee also agreed to defer finalization of the text of the draft requisite MSC resolution until MSC 97, and requested the Secretariat to prepare an appropriate draft resolution for the consolidated draft amendments to part A of the STCW Code after the session.

Proposed amendments to part B of the STCW Code

Amendments to table B-I/2

3.61 Having considered the draft amendments to part B of the STCW Code related to the Polar Code, the Committee agreed to instruct the drafting group to prepare the final text of the draft STCW.6 circular containing the draft amendments to part B of the STCW Code related to the Polar Code, with a view to forwarding the draft circular to MSC 97 for adoption as a consolidated package, to be prepared by the Secretariat after the session, together with the draft amendments to part B of the STCW Code relating to passenger ship-specific safety training, considered under agenda item 12 (see paragraph 12.6).

NON-MANDATORY INSTRUMENTS

Proposed amendments to chapter 9 of the 2009 MODU Code

3.62 The Committee recalled that the draft amendments to chapter 9 of the 2009 MODU Code (MSC 96/3/3, annex; and MSC 96/WP.5, annex 12) had been developed by SSE 2 and approved, in principle, by MSC 95 with a view to subsequent adoption at MSC 96, in conjunction with the new chapter 17 of the FSS Code (see also paragraphs 3.11 to 3.16, 3.25 and 3.26).

3.63 Having noted that no comments had been submitted on the proposed amendments, the Committee confirmed their contents, subject to editorial improvements, if any, and necessary modifications to ensure consistency between the draft amendments to chapter 9 of the 2009 MODU Code and the draft new chapter 17 of the FSS Code in regard to terminology.

3.64 The Committee agreed that the above amendments to chapter 9 of the 2009 MODU Code, proposed for adoption at the current session, should become effective on the date of entry into force of new chapter 17 of the FSS Code (i.e. 1 January 2020).

Related draft MSC circulars

Draft MSC circular on Revised guidelines on evacuation analyses for new and existing passenger ships

3.65 The Committee agreed to consider the draft MSC circular on Revised guidelines on evacuation analyses for new and existing passenger ships under agenda item 11 (Ship design and construction (Report of the third session of the Sub Committee)) (see paragraph 11.10).

Draft MSC circulars related to the IMDG Code

3.66 The Committee recalled that CCC 2, following the recommendations made by HTW 2, had instructed E&T 24 to finalize the draft MSC circular on Guidelines on consolidated IMO provisions for the safe carriage of dangerous goods in packaged form by sea.
3.67 The Committee also recalled that CCC 2 had instructed E&T 24 to finalize the consequential draft amendments to the following MSC circulars:

.1 Emergency response procedures for ships carrying dangerous goods (EmS Guide) (MSC/Circ.1025, as amended); and

.2 Inspection programmes for cargo transport units carrying dangerous goods (MSC.1/Circ.1442).

3.68 The Committee further recalled that CCC 2 had authorized E&T 24 to submit the aforementioned draft circulars directly to MSC 96 for approval (MSC 96/3/Add.2, annexes 1 to 3; and MSC 96/WP.5, annexes 14 to 16).

3.69 Having noted that no comments on the above proposed draft MSC circulars related to the IMDG Code had been received, the Committee confirmed their contents, subject to editorial improvements, if any.

**Draft MSC circular on Early implementation of the new chapter 17 of the FSS Code**

3.70 The Committee recalled that the draft MSC circular on *Early implementation of the new chapter 17 of the FSS Code* (SSE 2/20, annex 17) had been developed by SSE 2 in order to be approved in conjunction with the adoption of the new chapter 17 of the FSS Code (see also paragraphs 3.11 to 3.16, 3.25 and 3.26).

3.71 Having noted that no comments on the proposed draft MSC circular had been received, the Committee confirmed its contents, subject to editorial improvements, if any.

**Draft MSC circular on Amendments to the Recommendation on helicopter landing areas on ro-ro passenger ships (MSC/Circ.895)**

3.72 The Committee recalled that the draft MSC circular on *Amendments to the Recommendation on helicopter landing areas on ro-ro passenger ships (MSC/Circ.895)* (SSE 2/20, annex 19) had been developed by SSE 2 in order to be approved in conjunction with the adoption of the new chapter 17 of the FSS Code and the amendments to chapter 9 of the 2009 MODU Code (see also paragraphs 3.11 to 3.16, 3.25 and 3.26 and 3.62 to 3.64).

3.73 Having noted that no comments on the proposed draft MSC circular had been received, the Committee confirmed its contents, subject to editorial improvements, if any, and necessary modifications to ensure consistency between the draft MSC circular and the draft new chapter 17 of the FSS Code in regard to terminology.

**MATTERS RELATED TO THE POLAR CODE**

**Report of the Correspondence Group on Development of Guidance on a Methodology for Determining Limitations for Operation in Ice**

3.74 The Committee recalled that MSC 95 had re-established the Correspondence Group on Development of Guidance on a Methodology for Determining Limitations for Operation in Ice, with the terms of reference set out in paragraph 3.91 of document MSC 95/22.

3.75 Having considered the report of the correspondence group (MSC 96/3/4), containing a draft MSC circular on *Guidance on methodologies for assessing operational capabilities and limitations in ice*, as well as additional information and proposals for modifications of the draft MSC circular with regard to the Risk Index of Risk Values (RIVs) for ships under ice-breaking escort for parts of the track that have been reduced to brash ice, the Committee approved the report in general.
3.76 In particular, with regard to the draft MSC circular on *Guidance on methodologies for assessing operational capabilities and limitations in ice*, the Committee noted the intervention by the CLIA observer informing the Committee that CLIA welcomed POLARIS as a valuable option for risk assessments, but advising that recently performed trials with POLARIS had identified some practical limitations on its use. Specifically, the frequency, regional detail, and resolution of currently available ice data was insufficient in the Antarctic for the system to be reliably used in that region for voyage planning purposes. However, the trials suggested that the currently available ice data was sufficient for the Arctic regions for both voyage planning and underway decision-making.

3.77 The Committee also noted the discussion of the correspondence group regarding ships under ice-breaking escort and concluded that further discussion would be required to resolve the issue of the treatment of brash ice in escorted operation, which would delay the approval of the draft Guidance. Subsequently, the Committee, having concurred with the view of the correspondence group that the Guidance should be reviewed four years after the entry into force of the Polar Code, approved MSC.1/Circ.1519 on *Guidance on methodologies for assessing operational capabilities and limitations in ice*. With regard to the future review of the Guidance, which could include discussion on the treatment of brash ice, the Committee agreed that this should be undertaken by the SDC Sub-Committee, without a need for a new output, under the existing output 5.2.1.15 (Consequential work related to the new Code for ships operating in polar waters), in due course.

3.78 With regard to training, the Committee instructed the HTW Sub-Committee to take into consideration the items listed in paragraph 13 of document MSC 96/3/4 when developing a relevant Model Course.

**ESTABLISHMENT OF THE DRAFTING GROUP**

3.79 Having considered the above matters, the Committee established the Drafting Group on Consideration and Adoption of Amendments to Mandatory Instruments and instructed it, taking into account decisions taken in plenary, to prepare, for consideration by the Committee with a view to adoption or approval, as appropriate:

1. the final text of the draft amendments to the 1974 SOLAS Convention, as amended, including the FSS and 2011 ESP Codes, together with the associated MSC resolutions;

2. the final list of draft modifications to the draft IMDG Code, together with the associated MSC resolution;

3. the final text of the draft MSC resolution on *Requirements for maintenance, thorough examination, operational testing, overhaul and repair of lifeboats and rescue boats, launching appliances and release gear*;

4. the final text of the draft amendments to the introduction and part B of the 2008 IS Code relating to ships engaged in anchor handling operations, together with the associated MSC resolutions, with a view to subsequent adoption at MSC 97;

5. the final text of the draft amendments to the 1978 STCW Convention and the associated draft MSC resolution, with a view to subsequent adoption at MSC 97;
the final text of the draft amendments to the STCW Code, with a view to subsequent adoption at MSC 97;

the final text of the draft amendments to the 2009 MODU Code, and the associated draft MSC resolution;

the final text of the draft Guidelines on consolidated IMO provisions for the safe carriage of dangerous goods in packaged form by sea, and the associated draft MSC circular;

the final text of the draft amendments to the Inspection programmes for cargo transport units carrying dangerous goods (MSC.1/Circ.1442), and the associated draft MSC circular;

the final text of the draft amendments to the Emergency Response Procedures for Ships Carrying Dangerous Goods (EmS) Guide (MSC/Circ.1025, as amended by MSC.1/Circ.1025/Add.1, MSC.1/Circ.1262, MSC.1/Circ.1360, MSC.1/Circ.1438 and MSC.1/Circ.1476), and the associated draft MSC circular;

the final text of the draft MSC circular on Early implementation of the new chapter 17 of the FSS Code; and

the final text of the draft MSC circular on Amendments to the Recommendation on helicopter landing areas on ro-ro passenger ships (MSC/Circ.895).

REPORT OF THE DRAFTING GROUP

3.80 Having considered the part of the report of the Drafting Group on Consideration and Adoption of Amendments to Mandatory Instruments (MSC 95/WP.6) dealing with this item, the Committee approved it in general and took action as indicated in paragraphs 3.81 to 3.104.

Adoption of the Requirements for maintenance, thorough examination, operational testing, overhaul and repair of lifeboats and rescue boats, launching appliances and release gear

3.81 The Committee endorsed the group's decision to replace the words "where possible" with the words "where the structure permits the reinspection" in paragraph 6.3.2 in addition to paragraph 6.2.10 of the draft Requirements for maintenance, thorough examination, operational testing, overhaul and repair of lifeboats and rescue boats, launching appliances and release gear, for the purpose of consistency.

3.82 The expanded Committee, including delegations of 98 Contracting Governments to the 1974 SOLAS Convention, considered the final text prepared by the drafting group (MSC 96/WP.6, annex 1) and unanimously adopted resolution MSC.402(96) on Requirements for maintenance, thorough examination, operational testing, overhaul and repair of lifeboats and rescue boats, launching appliances and release gear, as set out in annex 1.
Adoption of amendments to the 1974 SOLAS Convention, as amended, including related mandatory codes

Adoption of amendments to the FSS Code

3.83 The expanded Committee, including delegations of 98 Contracting Governments to the 1974 SOLAS Convention, considered the final text of the draft new chapter 17 and the draft amendments to chapter 8 of the FSS Code, prepared by the drafting group (MSC 96/WP.6, annex 2), and adopted the amendments unanimously by resolution MSC.403(96), as set out in annex 2.

3.84 In adopting resolution MSC.403(96), the expanded Committee determined, in accordance with article VIII(b)(vi)(2)(bb) of the 1974 SOLAS Convention, that the adopted amendments to the FSS Code should be deemed to have been accepted on 1 July 2019 (unless, prior to that date, objections are communicated to the Secretary-General, as provided for in article VIII(b)(vi)(2) of the Convention) and enter into force on 1 January 2020, in accordance with the provisions of SOLAS article VIII.

Adoption of amendments to the 1974 SOLAS Convention

3.85 The Committee concurred with the drafting group's view that ro-ro passenger ships that have had their escape routes evaluated by an evacuation analysis, in accordance with SOLAS regulation II-2/13.7.4 or the earlier SOLAS regulation II-2/28-1.3, need not be re-evaluated, and that no further modifications to SOLAS regulation II 2/13.3.2.7.1.1 were required.

3.86 Subsequently, the expanded Committee, including delegations of 98 Contracting Governments to the 1974 SOLAS Convention, considered the final text of the proposed amendments to the 1974 SOLAS Convention (MSC 96/WP.6, annex 3), and adopted the amendments unanimously by resolution MSC.404(96), as set out in annex 3.

3.87 In adopting resolution MSC.404(96), the expanded Committee determined, in accordance with article VIII(b)(vi)(2)(bb) of the 1974 SOLAS Convention, that the adopted amendments to the Convention should be deemed to have been accepted on 1 July 2019 (unless, prior to that date, objections are communicated to the Secretary-General, as provided for in article VIII(b)(vi)(2) of the Convention) and enter into force on 1 January 2020, in accordance with the provisions of SOLAS article VIII.

Adoption of amendments to the 2011 ESP Code

3.88 The expanded Committee, including delegations of 98 Contracting Governments to the 1974 SOLAS Convention, considered the final text of the proposed amendments to the 2011 ESP Code, prepared by the drafting group (MSC 96/WP.6, annex 4), and adopted the amendments unanimously by resolution MSC.405(96), as set out in annex 4.

3.89 In adopting resolution MSC.405(96), the expanded Committee determined, in accordance with article VIII(b)(vi)(2)(bb) of the 1974 SOLAS Convention, that the adopted amendments to the 2011 ESP Code should be deemed to have been accepted on 1 July 2017 (unless, prior to that date, objections are communicated to the Secretary-General, as provided for in article VIII(b)(vi)(2) of the Convention) and enter into force on 1 January 2018, in accordance with the provisions of SOLAS article VIII.
Adoption of amendments to the IMDG Code

3.90 The expanded Committee, including delegations of 98 Contracting Governments to the 1974 SOLAS Convention, considered the proposed amendments to the IMDG Code, as finalized by E&T 24 and set out in the annexes to Circular Letter No.3598 of 5 November 2015 and in annex 6 to document MSC 96/WP.6, in conjunction with the proposed editorial modifications prepared by the drafting group (MSC 96/WP.6, annex 5), and adopted the amendments to the IMDG Code unanimously by resolution MSC.406(96), as set out in annex 5.

3.91 In adopting resolution MSC.406(96), the expanded Committee determined, in accordance with article VIII(b)(vi)(2)(bb) of the 1974 SOLAS Convention, that the adopted amendments to the IMDG Code should be deemed to have been accepted on 1 July 2017 (unless, prior to that date, objections are communicated to the Secretary-General, as provided for in article VIII(b)(vi)(2) of the Convention) and enter into force on 1 January 2018, in accordance with the provisions of SOLAS article VIII.

3.92 The Committee agreed, in accordance with the procedure adopted by MSC 75 for the adoption of amendments to the IMDG Code with regard to voluntary application of new amendments one year prior to the date of entry into force, as stated in operative paragraph 4 of the above resolution, that Contracting Governments may apply the aforementioned amendments in whole or in part on a voluntary basis from 1 January 2017, pending their entry into force on 1 January 2018.

Proposed amendments to the 2008 IS Code

3.93 The Committee considered the proposed amendments to the introduction of the 2008 IS Code regarding ships engaged in anchor handling operations, and the two requisite draft MSC resolutions (1974 SOLAS Convention and 1988 Load Lines Protocol), prepared by the drafting group (MSC 96/WP.6, annexes 7 and 8, respectively).

3.94 Having approved them, the Committee agreed to forward the above draft amendments, as set out in annexes 6 and 7, respectively, to MSC 97 with a view to adoption, together with the draft amendments regarding ships engaged in lifting and towing operations, approved under agenda item 11 (see paragraph 11.12).

3.95 The Committee approved, in principle, the proposed amendments to part B of the 2008 IS Code regarding ships engaged in anchor handling operations, and the requisite MSC resolution, prepared by the drafting group and set out in annex 9 to document MSC 96/WP.6, with a view to adoption at MSC 97, in conjunction with the adoption of the proposed amendments to the introduction of the Code.

3.96 In this regard, the Committee requested the Secretariat to use the three MSC resolutions referred to in paragraphs 3.93 and 3.95 above and consolidate, as an annex to each draft resolution, the corresponding draft amendments to the 2008 IS Code relating to ships engaged in anchor handling operations, together with the draft amendments relating to vessels engaged in lifting and towing operations, including escort towing, approved under agenda item 11 (see also paragraphs 11.11 and 11.12), to be forwarded to MSC 97.

Proposed amendments to the 1978 STCW Convention, as amended, and the STCW Code

3.97 The Committee considered the final text of the proposed amendments to the 1978 STCW Convention, as amended, and parts A and B of the STCW Code, related to the Polar Code, prepared by the drafting group (MSC 96/WP.6, annexes 10, 11 and 12, respectively).
3.98 Having approved the above proposed amendments to the 1978 STCW Convention and part A of the STCW Code, and approved, in principle, the proposed amendments to part B of the STCW Code, as set out in annexes 8, 9 and 10, respectively, the Committee agreed to forward them to MSC 97 with a view to adoption, together with the draft amendments regarding passenger ship-specific training, approved under agenda item 12 (see paragraphs 12.5 and 12.6), each as an amalgamated set of amendments to the 1978 STCW Convention and the corresponding parts of the STCW Code, respectively.

3.99 In this regard, the Committee authorized the Secretariat to prepare the two draft MSC resolutions and the draft STCW circular to which the draft amendments are annexed, amalgamated as described above.

3.100 Having noted the discussion of the drafting group regarding port State control in relation to STCW regulation V/4, the Committee instructed the III and HTW Sub-Committees to include appropriate information in port State control guidance as to when masters and chief mates may serve on board ships operating in Polar waters without being required to hold a certificate in advanced training.

Adoption/approval of amendments to non-mandatory instruments

3.101 The Committee considered the final text of amendments to non-mandatory instruments prepared by the drafting group (MSC 96/WP.6, annexes 13 to 16) and:

.1 adopted the amendments to the 2009 MODU Code by resolution MSC.407(96), as set out in annex 11; and

.2 approved the following MSC circulars:

   .1 MSC.1/Circ.1520 on Guidelines on consolidated IMO provisions for the safe carriage of dangerous goods in packaged form by sea;

   .2 MSC.1/Circ.1521 on Amendments to the Inspection programmes for cargo transport units carrying dangerous goods;

   .3 MSC.1/Circ.1522 on Amendments to the Emergency Response Procedures for Ships Carrying Dangerous Goods (EmS) Guide;

   .4 MSC.1/Circ.1523 on Early implementation of the amendments to the International Code for Fire Safety Systems (FSS Code); and

   .5 MSC.1/Circ.1524 on Amendments to the Recommendation on helicopter landing areas on ro-ro passenger ships (MSC/Circ.895).

3.102 With regard to MSC.1/Circ.1522 on Amendments to the Emergency Response Procedures for Ships Carrying Dangerous Goods (EmS) Guide, the Committee instructed the CCC Sub-Committee to consider, at the next revision of the EmS Guide, preparing a new draft revised MSC circular containing a consolidated version of the Guide for ease of reference, taking into account that a new MSC circular may result in consequential changes to the IMDG Code.
INSTRUCTIONS TO THE SECRETARIAT

3.103 The Committee authorized the Secretariat, when preparing the authentic texts of the amendments adopted at this session, to make any editorial corrections that may be identified, including updating references to renumbered paragraphs, and to bring to the attention of the Committee any errors or omissions which require action by the Contracting Governments to the 1974 SOLAS Convention or the Contracting Governments to the 1978 STCW Convention.

3.104 The Committee further requested the Secretariat to ensure that the final text of the amendments contained in the annexes of the Committee’s report is presented as clean text (i.e. without track-changes).

4 MEASURES TO ENHANCE MARITIME SECURITY

Guidance for the development of national maritime security legislation

4.1 The Committee recalled that MSC 95 had re-established the Correspondence Group on Guidance for the Development of National Maritime Security Legislation, with the terms of reference set out in paragraph 4.12 of document MSC 95/22.

4.2 In considering the report of the correspondence group (MSC 96/4), the Committee noted the following views expressed during the discussion:

.1 there was general support for the finalization of the guidance at this session;

.2 the draft guidance, as presented in the annex of document MSC 95/22, was supported in general; however, some delegations indicated, inter alia, that:

.1 using the structure presented as a single package, there was a risk of applying recommendatory parts of the ISPS Code as mandatory;

.2 the use of prescriptive language within the guidance should be revised so as to clearly distinguish between mandatory and recommendatory provisions;

.3 relevant security-related provisions from other instruments, such as UNCLOS and/or the IMDG Code, could be included as well as part of the guidance; and

.4 the guidance would have had more relevance if it had had greater focus on "model legislation" and that, as presented, it would be more useful for the development of policy and procedures on maritime security;

.3 the guidance had already been found, by some delegations, to be a valuable tool to facilitate the implementation of their national maritime security legislation and could be of particular assistance to small island States and developing countries; and

.4 once the guidance was finalized and approved, the Organization should consider providing technical assistance to those countries willing to use the guidance for the development of their own national maritime security legislation.
4.3 After some discussion, the Committee, having noted the general support for the finalization of the guidance at the present session and the interest expressed by some delegations to start using the guidance, agreed to forward the draft Guidance to the Working Group on Maritime Security for review and finalization, addressing, in particular, those concerns related to the recommendatory nature of the guidance.

4.4 The delegation of Malta requested that, once the guidance was approved, it should be officially communicated to the International Maritime Law Institute (IMLI) for inclusion in their curriculum for maritime security training courses.

Measures toward enhancing maritime cybersecurity

4.5 The Committee recalled the relevant decisions of MSC 95 in respect to cybersecurity (MSC 95/22, section 4) and noted the outcomes of FAL 40 (FAL 40/19, paragraphs 9.11 and 9.12) related to the consideration of facilitation aspects of protecting the maritime transport network from cyberthreats.

4.6 In this regard, the Committee had for its consideration the following documents:

.1 MSC 96/4/1 (ICS, et al.), containing industry Guidelines on cybersecurity on board ships developed and supported by BIMCO, CLIA, ICS, INTERCARGO and INTERTANKO in response to the vulnerability of ships to cybersecurity risks;

.2 MSC 96/4/2 (Canada, et al.), proposing the development of non-mandatory guidelines for cyber risk management aiming to assist in protecting and enhancing the resiliency of cybersystems supporting the safe, secure, and efficient operations of ships;

.3 MSC 96/4/3 (China), providing information on national regulations published by China and proposals for the development of guidance on maritime cybersecurity;

.4 MSC 96/4/5 (Austria, et al.), supporting the development of guidance on maritime cybersecurity to assist the implementation of appropriate measures onboard ships to prevent acts of cybercriminality, taking into account the information contained in document MSC 96/INF.4;

.5 MSC 96/4/6 (CIRM and BIMCO), providing information on the development of an industry standard on software maintenance of shipboard equipment and its cybersecurity aspect; and

.6 MSC 96/INF.4 (France), providing information on measures aimed at improving cybersecurity on a ship.

4.7 During the ensuing discussions, the following views were expressed:

.1 with the ever increasing use of software, internet and technologies, the importance of cybersecurity would continue to be a challenge;

.2 a single set of high-level guidelines should be developed by the Organization taking into account the outcomes of FAL 40, allowing flexibility for the industry to continue to respond in a dynamic way to new and changing forms of cyberthreats and develop appropriate protection measures;
.3 the draft guidelines set out in document MSC 96/4/2 could be used as the basis for further work, but the guidance should be simplified;

.4 the guidelines should be a live document and should be regularly updated, taking into account the latest identified cyberthreats;

.5 the guidelines should be non-mandatory, user friendly, threat/risk-based, practical, easy to understand and should cover all relevant maritime stakeholders. The guidelines should also ensure that additional administrative burdens are avoided;

.6 the guidelines should be developed in cooperation with the industry, taking into account the work of other organizations on cybersecurity, such as ITU and ISO; and

.7 a policy decision related to the scope of the guidelines should be taken (i.e. whether to focus on management of cyber risks or solely on cybersecurity).

4.8 After some discussion, the Committee, recognizing the importance of the guidance developed by the industry, agreed to develop high-level and non-mandatory guidelines on cyber risk management with a focus on operational aspects and referred the above-mentioned documents to the Working Group on Maritime Security.

4.9 The Committee also agreed that the guidelines should be practical, easy to use, risk-based and should take into account existing standards and the work done by other organizations.

4.10 The observer from ISO indicated that they intended to complement the work on cybersecurity using the ISO/IEC 27000 series and they would submit a progress report to MSC 97.

Other issues

Issues related to the Autonomous Republic of Crimea and the city of Sevastopol, Ukraine

4.11 The Committee had for its consideration the following documents:

.1 MSC 96/4/4 (Ukraine), inviting the Committee to consider a draft Assembly resolution on Safety and security of navigation in maritime areas adjacent to the Autonomous Republic of Crimea and the city of Sevastopol, Ukraine; and

.2 MSC 96/4/7 (Russian Federation), commenting on document MSC 96/4/4 and expressing the view that the proposal contained in document MSC 96/4/4 was outside IMO’s mandate and should not be considered.

4.12 The Committee noted the information provided in documents MSC 96/4/4 (Ukraine) and MSC 96/4/7 (Russian Federation). The introductory statements made by the Russian Federation and Ukraine are set out in annex 29.
4.13 The majority of the delegations that spoke condemned the illegal annexation of the Autonomous Republic of Crimea and the city of Sevastopol by the Russian Federation and shared the concerns expressed by Ukraine. Furthermore, a number of delegations urged UN Member States to consider non-recognition measures in line with the United Nations General Assembly resolution 68/262 and expressed the view that some aspects of the matter were within the remit of the Organization.

4.14 Statements made by Georgia, the Netherlands and the United States are set out in annex 29.

4.15 However, after some discussion, the Committee agreed that IMO was not the appropriate forum to discuss the matter and that the issue was outside the remit of the Organization.

United Nations verification and inspection mechanism for Yemen

4.16 The Committee noted with appreciation the information contained in document MSC 96/INF.8 (Secretariat) related to the work of the United Nations Verification and Inspection Mechanism for Yemen (UNVIM) established pursuant to United Nations Security Council Resolution 2216 (2015). In addition, the Committee was advised that the UNVIM mechanism was now operational. Interested parties should visit the UNVIM website (http://www.vimye.org) to apply for permits to gain permission for commercial shipments to any port not under the direct control of the Government of Yemen (Salif, Mokha, Hudaydah, Nishtun and associated oil terminals). The Yemeni Ministry of Transportation would no longer accept permits for those ports after 5 May 2016. Vessels applying to go to ports under the control of the Government of Yemen (Aden and Mukalla) would need to continue to apply through the Yemeni Ministry of Transportation.

Establishment of the working group

4.17 Having considered the above matters, the Committee established a Working Group on Maritime Security and instructed it, taking into account comments, proposals and decisions made in plenary, to:

1. review the information contained in document MSC 96/4, with particular focus on emphasizing its recommendatory nature, and finalize the Guidance for the development of national maritime security legislation, for the Committee's approval; and

2. consider the information and proposals on maritime cybersecurity, as contained in documents MSC 96/4/1, MSC 96/4/2, MSC 96/4/3, MSC 96/4/5, MSC 96/4/6 and MSC 96/INF.4, and develop high-level guidelines on cyber risk management.

Report of the working group

4.18 Having considered the report of the Working Group (MSC 96/WP.9), the Committee approved it in general and took action as indicated hereunder.
Guidance for the development of national maritime security legislation

4.19 The Committee approved MSC.1/Circ.1525 on Guidance for the development of national maritime security legislation and invited Member States willing to use the Guidelines for the development of their own national maritime security legislation, to request technical assistance from the Organization, if so required.

Guidelines on maritime cyber risk management

4.20 The Committee noted, in general, the discussions of the group in relation to maritime cyber risk management and considered whether the draft Guidelines on maritime cyber risk management should be approved as Interim MSC Guidelines, at this session, with the understanding that they could be subsequently revoked and superseded by a joint FAL/MSC circular once the work of FAL 41 on facilitation aspects was completed, or be forwarded to MSC 97 for further work, as required.

4.21 The Committee, having noting the views of the majority of the delegations that spoke that there is an urgent need to raise awareness on cyber risk threats and vulnerabilities, approved MSC.1/Circ.1526 on Interim guidelines on maritime cyber risk management.

4.22 In doing so, the Committee also noted that Member States and interested international organizations could bring any issues that might be identified with the use of the Interim Guidelines to the attention of MSC 97 under this agenda item.

5 GOAL-BASED NEW SHIP CONSTRUCTION STANDARDS

GENERAL

5.1 The Committee recalled that MSC 95 noted progress on the implementation of the GBS verification audits, in particular that all five audit teams had delivered their interim reports, which included 13 interim reports on the relevant ROs and two interim reports on the IACS Common Packages. The Committee also noted that the five audit teams were scheduled to provide their final reports to the Secretary-General and relevant ROs by the end of June 2015, so that the Secretariat could submit them to MSC 96 for consideration.

5.2 The Committee recalled also that, with regard to the GBS safety level approach (SLA), MSC 95 noted the progress on the draft Interim guidelines for the development and application of IMO goal-based standards safety level approach and invited Member States and international organizations to submit concrete GBS-SLA examples of SOLAS chapter III and comments and proposals on the draft interim guidelines to this session.

5.3 The Committee recalled further that MSC 95 agreed to the work plan for further development of the draft Interim guidelines for development and application of IMO goal-based standards safety level approach, so that, at this session, it would be able to review the interim outcome of the SSE Sub-Committee on the development of functional requirements for SOLAS chapter III, and further develop, with a view to finalization, the Interim guidelines for development and application of IMO goal-based standards safety level approach. In addition, a concrete example related to SOLAS chapter III, by implementing GBS-SLA, would be initiated.

5.4 In regard to the outcome of SSE 3, the Committee decided to consider two urgent matters emanating from SSE 3 under this agenda item, i.e. the draft functional requirements to SOLAS chapter III (SSE 3/16, annex 1) and the preliminary experience gained on the implementation of MSC.1/Circ.1394/Rev.1.

https://edocs.imo.org/Final Documents/English/MSC 96-25 (E).docx
IMPLEMENTATION OF THE GBS VERIFICATION AUDITS

GBS verification audit reports and the Corrective Action Plans

5.5 The Committee had for its consideration the following documents:

.1 MSC 96/5 (Secretariat), providing the GBS verification audit reports submitted by five audit teams, which contain two common reports on IACS Common Package (CP) 1 and 2, including IACS Common Structural Rules (CSR), and 12 individual reports of IACS member recognized organizations (RO);

.2 MSC 96/5/1 (Secretariat), providing the Corrective Action Plans for five non-conformities, which were submitted by IACS (annexes 1 to 5); and the Corrective Action Plan for one non-conformity, which was submitted by Lloyd's Register, as set out in annex 6;

.3 MSC 96/5/1/Add.1 (Secretariat), providing the Corrective Action Plans submitted by IACS in response to the 29 Observations in the two common GBS verification audit reports on the IACS Common Packages 1 and 2 (MSC 96/5, annexes 13 and 14);

.4 MSC 96/5/1/Add.2 (Secretariat), providing Corrective Action Plans submitted by 12 IACS member ROs in response to the observations in their individual reports (MSC 96/5, annexes 1 to 12);

.5 MSC 96/5/5 (IACS), providing further explanations and information relevant to the Corrective Action Plans, in particular, an explanation for the procedural and governance arrangements relating to the development and maintenance of classification society rules;

.6 MSC 96/5/9 (Greece), providing comments on documents MSC 96/5/1 and MSC 96/5/1/Add.1, in particular, addressing areas where the IACS' Corrective Action Plans may not fully address the auditors' specific concerns and may not be sufficient to rectify the non-conformity or address the observation in question, and providing constructive comments with the intention to aid the process towards a successful completion; and

.7 MSC 96/5/10 (Netherlands), providing comments on the GBS verification audit reports submitted by the audit teams and the Corrective Action Plans submitted by IACS and its member organizations, and proposing short- and long-term issues to be addressed.

5.6 Recognizing the structure of submissions from 12 IACS member ROs, in particular the Common Structural Rules as contained in the Common Packages, the Committee decided to consider all of the audit reports together with the Corrective Action Plans, instead of having a detailed dissuasion on each of them separately, in order to reach a common decision which will equally apply to all 12 IACS member ROs.
5.7 During the discussion, the Committee, having expressed its appreciation to the Secretary-General, the Secretariat, the auditors, IACS and its member ROs, noted the following views expressed on this matter:

.1 the outcome of the initial GBS verification audits was satisfactory and the verification audits would contribute to the further improvement of the ROs' rules for bulk carriers and oil tankers and enhance the safety level of these ship types;

.2 the verified rules of the Submitters conform to the GBS Standards;

.3 it was not necessary to endorse every finding of the audit team and there were some inconsistencies and differences between different teams, which could be expected for the first stage of this new audit scheme;

.4 the recommendations of the audit teams should be endorsed, the identified non-conformities should be rectified as soon as possible and the identified observations should also be addressed;

.5 the Corrective Action Plans submitted by IACS and its member ROs and the update provided by IACS were welcomed and the comments on these Plans, in particular the comments contained in document MSC 96/5/9 (Greece), should be taken into account with a view for the further improvement; and

.6 the long-term issues raised in the document MSC 96/5/10 (Netherlands), i.e. a combination of findings and possible impacts on the other ship types, could be discussed in the future.

5.8 After an in-depth discussion, the Committee overwhelmingly confirmed that the information provided by the Submitters (12 IACS member ROs) demonstrates that their rules conform to the GBS Standards. Consequently, the Committee:

.1 requested the Secretary-General to notify the relevant Administrations and recognized organizations that the submitted rules conform to the Tier I goals and Tier II functional requirements of the GBS Standards;

.2 agreed to circulate the results of successful verifications to Member States by means of an MSC circular (see paragraph 5.9), and requested the Secretariat to maintain a list of all rule sets that have been verified for conformity as well as the original copy of the documentation package submitted;

.3 agreed that the identified non-conformities are to be rectified, taking into account the recommendations made by the audit teams and the Corrective Action Plans, together with the comments contained in document MSC 96/5/9, and that the ROs submit new requests for a verification audit on the rectification of non-conformities; and

.4 requested the ROs to address the identified observations in the future, taking into account the recommendations made by the audit teams and the Corrective Action Plans, together with the comments contained in document MSC 96/5/9, and that the ROs should submit the outcomes in the future.
5.9 Having considered the draft MSC circular prepared by the Secretariat (MSC 96/WP.11), the Committee approved MSC.1/Circ.1518 on Promulgation of rules for the design and construction of bulk carriers and oil tankers of an organization, which is recognized by Administrations in accordance with the provisions of SOLAS regulation XI-1/1, confirmed by the Maritime Safety Committee to be in conformity with the goals and functional requirements of the Goal-based Ship Construction Standards for Bulk Carriers and Oil Tankers.

Observations of the GBS audit teams

5.10 The Committee noted document MSC 96/5/2 (Secretariat), providing the report on the observations of the audit process, based on the experience gained during the initial GBS verification audits, in particular that the GBS Guidelines, with necessary interpretations to support the implementation, worked well as the basis for the first GBS verification audit, together with the arrangements made by the Secretariat, based on the Committee’s decisions. Nevertheless, the Committee also noted the opinion of the audit teams that there was room for improvement, as explained in paragraphs 4 to 24 of the aforementioned document.

5.11 Having noted that document MSC 96/5/2 also contained detailed information related to potential amendments to the GBS Guidelines and that there was need for proposals on the amendments to the GBS Guidelines, the Committee referred document MSC 96/5/2 to the GBS Working Group at MSC 97 for detailed consideration and advice, as appropriate. In this context, the Committee also agreed to instruct the GBS Working Group, to be established at this session, to embark on a preliminary discussion, if time permits, with a view to identifying the possible issues to be considered by the GBS Working Group at MSC 97.

Report on GBS Trust Fund

5.12 The Committee noted document MSC 96/5/2 (Secretariat), providing the financial report on the GBS Trust Fund, including income and expenditures, in particular that there is a surplus of $249,066 in the GBS Trust Fund, which will be used on an equal basis for each of the 13 ROs in the future audit and that a discounted fee will be granted to the International Register of Shipping if a request for audit is resubmitted.

Timetable and schedule of activities for implementation of the GBS verification scheme

5.13 The Committee recalled that MSC 87 adopted the Guidelines for verification of conformity with goal-based ship construction standards for bulk carriers and oil tankers (resolution MSC.296(87)) (GBS Guidelines) and also approved the timetable and schedule of activities for the implementation of the GBS verification scheme (MSC 87/26, paragraph 5.34 and annex 13).

5.14 The Committee considered document MSC 96/5/6 (Secretariat), providing the revised timetable and schedule of activities for future implementation of GBS verification scheme, which was prepared by the Secretariat based on the timing of rectification of non-conformities, and the timing of amendment to the GBS Guidelines and the reconsideration of the funding mechanism.

5.15 After some discussion, the Committee agreed that, based on the lessons learned, possible amendments to the GBS Guidelines and the earlier decision of the Committee (see paragraph 5.11), the above-mentioned timetable may need to be further updated as necessary and that the GBS Working Group should revise the timetable and schedule of activities for the implementation of the GBS verification scheme for the Committee’s consideration and approval.
THE SHIP CONSTRUCTION FILE

5.16 The Committee noted documents MSC 96/5/7 and MSC 96/INF.9 (ICS, BIMCO, IACS, OCIMF, CESA, INTERTANKO, INTERCARGO), providing a status report on the development of industry standard and guidance on interpretation and practical implementation of mandatory requirements of SOLAS regulation II-1/3-10 on Ship Construction File (SCF) and related Guidelines for the information to be included in a Ship Construction File (MSC.1/Circ.1343); and providing the full text of the Interim SCF Industry Standard and the Interim SCF Supplementary Guidance.

GOAL-BASED IMO INSTRUMENTS AND FUNCTIONAL REQUIREMENTS FOR SOLAS CHAPTER III

5.17 The Committee recalled that MSC 95 agreed on a new work plan for the development of functional requirements of SOLAS chapter III (MSC 95/22, paragraph 12.7) and requested SSE 3 to report to MSC 96, as an urgent matter, on progress with regard to the development of functional requirements for SOLAS chapter III, together with the comments on the experiences gained on the implementation of MSC.1/Circ.1394/Rev.1, if any.

5.18 In this regard, the Committee was advised that SSE 3 had prepared the draft functional requirements of SOLAS chapter III and the preliminary experiences gained on the implementation of MSC.1/Circ.1394/Rev.1, with a view to the Committee providing instructions, if any, to the Correspondence Group on the Development of Functional Requirements for SOLAS chapter III and the SSE Sub-Committee.

5.19 The Committee had for its consideration the following documents:

.1 MSC 96/5/3 (Germany, Sweden and the Netherlands), providing a detailed example for goal-based IMO instruments for life-saving appliances and describing a structure of a goal-based standard; expressing the view that the development of the goal-based standards structure is a long-term process for which a work plan will need to be developed and, before embarking on this work, some more experience is required with the development of such a goal-based standards structure; and

.2 MSC 96/5/8 (China), providing comments on document MSC 96/5/3 and suggesting to finalize the development of the functional requirements of SOLAS chapter III prior to making the decision on whether to restructure the relevant IMO instruments; and to decide on how to use the experience gained on the implementation of MSC.1/Circ.1394/Rev.1.

5.20 During the discussion, the Committee noted the following views expressed on this matter:

.1 the proposal by Germany, et al., presented an illustration of how a goal-based SOLAS chapter could be structured. For this purpose, SOLAS chapter III was used as an example only. In any case, it was not a proposal to decide on a future structure of SOLAS;

.2 the vast majority of ships are built in accordance with the prescriptive regulations and provide a level playing field for demonstrating compliance. Furthermore, the current SOLAS, through the provisions for exemptions and alternative designs, has provided adequate flexibility within the existing framework;
no compelling need had been demonstrated to extend the provisions of the goal-based standards to areas other than that for the construction of oil tanker and bulk carriers. Furthermore, any future extension to other areas should only be undertaken after a full review of the work carried out so far at MSC 98;

the scope of the work at this session should be limited to the Interim guidelines for development and application of IMO goal-based standards safety level approach, in accordance with the work plan agreed by MSC 95;

there was general support for the proposal of China to be forwarded to the working group for further discussion; and

document MSC 96/5/3 may be further discussed in the GBS Working Group, but only within the scope of development of draft functional requirements of SOLAS chapter III, and without any indication of the restructure of the SOLAS Convention.

5.21 Following the discussion, the Committee agreed that the GBS Working Group should further consider the draft functional requirements of SOLAS chapter III contained in annex 1 to document SSE 3/16, taking into account documents MSC 96/5/3 and MSC 96/5/8, with a view to providing instructions, if any, to the Correspondence Group on the Development of Functional Requirements for SOLAS chapter III and the SSE Sub-Committee and advise the Committee accordingly; and consider the preliminary information on the experience gained during the implementation of MSC.1/Circ.1394/Rev.1, as contained in paragraph 3.15 of document SSE 3/16, taking into account documents MSC 96/5/3 and MSC 96/5/8, and advise the Committee accordingly.

INTERIM GUIDELINES FOR THE GBS SAFETY-LEVEL APPROACH (SLA)

5.22 The Committee noted that there was no documents submitted to this session on the draft Interim guidelines for the GBS safety level approach. In this regard, the Committee recalled the work plan agreed for MSC 96 (MSC 95/22, paragraph 5.18) and that, at this session, it intended to further develop, with a view to finalization, the Interim guidelines. In addition, a concrete example related to SOLAS chapter III, by implementing GBS-SLA, would be initiated. Consequently, the Committee instructed the GBS Working Group to further develop the Interim guidelines for development and application of IMO goal-based standards safety level approach, based on annex 2 to document MSC 95/WP.9.

ESTABLISHMENT OF THE GBS WORKING GROUP

5.23 Having considered the above matters, the Committee established the Working Group on Goal-based Standards and instructed it, taking into account the comments made and decisions taken in plenary, to:

as the highest priority, further revise the timetable and schedule of activities for the implementation of the GBS verification scheme, based on the annex to document MSC 96/5/6;

further develop the Interim guidelines for development and application of IMO goal-based standards safety level approach, based on annex 2 to document MSC 95/WP.9;
.3 further consider the draft functional requirements of SOLAS chapter III contained in annex 1 to document SSE 3/16, taking into account documents MSC 96/5/3 and MSC 96/5/8, and with a view to provide instructions, if any, to the Correspondence Group on the Development of Functional Requirements for SOLAS chapter III and the SSE Sub-Committee and advise the Committee accordingly;

.4 consider the preliminary information on the experience gained during the implementation of MSC.1/Circ.1394/Rev.1, as contained in paragraph 3.15 of document SSE 3/16, taking into account documents MSC 96/5/3 and MSC 96/5/8, and advise the Committee accordingly; and

.5 if time permits, taking into account the information contained in documents MSC 96/5/2 and MSC 96/5/6, identify the possible issues to be considered by the Working Group on Goal-Based Standards to be established at MSC 97.

REPORT OF THE GBS WORKING GROUP

5.24 Having considered the report of the working group (MSC 96/WP.8), the Committee approved it in general and took action as described hereunder.

Timetable and schedule of activities for the implementation of the GBS verification scheme

5.25 The Committee approved the Revised timetable and schedule of activities for the implementation of the GBS verification scheme, as set out in annex 12.

Development of Interim guidelines for the standards safety level approach

5.26 The Committee noted the progress on the further development of draft *Interim guidelines for development and application of IMO goal-based standards safety level approach*. In this regard, the Committee endorsed the group's view on the compelling need for a GBS-SLA example and invited Member States and international organizations to submit concrete GBS-SLA examples to a future session.

5.27 The Committee also invited Member States and international organizations to submit comments and proposals on the draft Interim Guidelines, with a view towards finalization at a future session.

Draft functional requirements of SOLAS chapter III

5.28 The Committee endorsed the draft functional requirements for SOLAS chapter III, as contained in annex 1 to document SSE 3/16, in general, with a view that the final outcome of the development of the functional requirements of SOLAS chapter III would be further considered at MSC 98.

5.29 In this context, the Committee instructed the Correspondence Group on the Development of Functional Requirements for SOLAS chapter III, established by SSE 3 (SSE 3/16, paragraph 3.16), to continue their work, as instructed, and in particular to:

.1 taking into account the related information contained in document MSC 96/5/3, in particular paragraphs 21, 22 and 23, further consider the structure of functional requirements with respect to completeness, hierarchy, categorization and ordering; and

.2 develop the expected performance for each functional requirement.
5.30 The Committee also noted there were no additional instructions to the SSE Sub-Committee on the development of functional requirements for SOLAS chapter III.

Preliminary information on the experience gained during the implementation of MSC.1/Circ.1394/Rev.1

5.31 The Committee noted the preliminary information on the experience gained during the implementation of MSC.1/Circ.1394/Rev.1, as contained in paragraph 3.15 of document SSE 3/16.

Possible issues to be considered by the GBS Working Group at MSC 97

5.32 In considering the views expressed by the Group on the possible issues to be considered by the GBS Working Group at MSC 97, the Committee endorsed that:

.1 the GBS verification Guidelines (resolution MSC.296(87)) were the basis and the most important guidance for the GBS audit scheme during the initial verification audit and, therefore, any amendments on the GBS verification Guidelines should be carefully considered;

.2 work on the development of amendments to the GBS verification Guidelines should be initiated at MSC 97;

.3 amendments to Part A of the GBS verification Guidelines should be the priority, with a view towards finalization at MSC 98;

.4 in order to facilitate future activities, amendments to the GBS verification Guidelines should be considered by the GBS Working Group at MSC 97, taking into account the following aspects in order of priority:

.1 definition/description of key words (MSC 96/5/2, paragraphs 4 to 7);

.2 relationship between Information and documentation requirements and Evaluation criteria (MSC 96/5/2, paragraph 8);

.3 maintenance of verification (MSC 96/5/2, paragraph 10);

.4 other issues raised by individual auditors (MSC 96/5/2, paragraphs 13 to 15);

.5 the need for a continuous improvement process (MSC 96/5/2, paragraph 9);

.6 the need for a proactive approach (MSC 96/5/2, paragraphs 11 and 12); and

.7 consideration of any submissions by Member States and international organizations;

.5 the reconsideration of the funding mechanism for the GBS verification scheme should also be considered by the GBS Working Group at MSC 97;
.6 the possible future amendments to the GBS Guidelines should not impact
the ongoing rectification of identified non-conformities during the initial
verification audits; and

.7 the above-mentioned list of possible issues was not necessarily a
comprehensive list or a limitation on the issues, but a general guidance which
could facilitate possible discussion in the GBS Working Group at MSC 97.

5.33 In this connection, the Committee invited Member States and international
organizations to submit comments and proposals on the GBS verification audit scheme to
MSC 97, taking into account the above-mentioned possible issues to be considered by the
GBS Working Group at MSC 97.

6 PASSENGER SHIP SAFETY

Background

6.1 The Committee recalled that, after the capsizing of the passenger ship
Costa Concordia, it had taken various measures and updated the long-term action plan.

Updated long-term action plan on passenger ship safety

6.2 The Committee considered the updated long-term action plan on passenger ship
safety set out in document MSC 96/6 (Secretariat), which was prepared on the basis of the
outcome of discussions at MSC 95.

6.3 The Committee recalled that MSC 93 had decided to finalize discussion on the
potential work items included in the long-term action plan at this session, which is set out in
table 1 of the annex to document MSC 96/6. Having noted that no proposal was submitted, the
Committee agreed to keep the annex to document MSC 96/6 as the final version of the
long-term action plan on passenger ship safety, which could assist Member States to prepare
proposals for outputs in the future.

Fire protection in category "A" machinery spaces and on covered mooring decks

6.4 The Committee noted the information in document MSC 96/6/1 (CLIA) on the
development of two industry best practices on fire protection to be applied to the global cruise
industry, i.e. one was related to water mist fire suppression systems and the other related to
fire protection measures for covered mooring decks. It was also noted that these industry best
practices were intended to further enhance passenger ship safety with respect to fire detection
and suppression beyond the requirements in SOLAS.

Best Practice guidance on ferry safety for ro-ro passenger ships

6.5 The Committee noted the information provided in document MSC 96/6/2
(INTERFERRY) that, after recent fire incidents on the ro-ro deck of ro-ro passenger ships and
based on a questionnaire and extensive follow-up with the operators, INTERFERRY had
collected seven prioritized best practices that had been shared with the wider ferry community.
It was noted that these best practices were primarily of an operational character as it had been
identified that equipment or structural related issues needed to be further researched in order
for guidance to be issued, and that the key finding in the review was that more attention should
be given on response time in case of an incident.
Deletion of this output from the High-level Action Plan

6.6 Taking into account the agreement to keep the annex to document MSC 96/6 as the final version of the long-term action plan (paragraph 6.1 refers) and that no further work under this agenda item had been identified, the Committee agreed to delete this output from the High-level Action Plan, with the understanding that new outputs could be proposed by Member States in the future, in accordance with the Committees' Guidelines.

7 MANDATORY INSTRUMENT AND/OR PROVISIONS ADDRESSING SAFETY STANDARDS FOR THE CARRIAGE OF MORE THAN 12 INDUSTRIAL PERSONNEL ON BOARD VESSELS ENGAGED ON INTERNATIONAL VOYAGES

GENERAL

7.1 In considering matters related to the carriage of industrial personnel, the Committee recalled that MSC 95:

.1 having considered the draft MSC circular on Definition of industrial personnel, prepared by SDC 2, in conjunction with documents MSC 95/10/2 (Argentina), MSC 95/10/4 (France), MSC 95/10/8 (United States) and MSC 95/10/9 (Vanuatu), and views expressed, had decided to prepare a justification for a new output in accordance with the Committee's Guidelines;

.2 in considering the aforementioned proposed justification for a new output (MSC 95/WP.12, annex 1), had agreed that the scope of application of the work to be undertaken should not be limited to ships of the offshore energy sector, but to all ships engaged on international voyages, and that due consideration should be given to ensure that any proposed standards do not conflict with other requirements of other organizations and/or conventions; and

.3 had agreed to include, in the 2016-2017 biennial agendas of the Committee and the SDC Sub-Committee and provisional agendas for MSC 96 and SDC 3, a new output on "Mandatory instrument and/or provisions addressing safety standards for the carriage of more than 12 industrial personnel on board vessels engaged on international voyages", with a target completion year of 2017. In this context, MSC 95 had also agreed that the Committee should discuss policy issues before any detailed technical work is undertaken by the Sub-Committees (MSC 95/22, paragraph 19.26).

OUTCOME OF SDC 3 AND RELATED SUBMISSIONS

7.2 The Sub-Committee had for its consideration the following documents:

.1 MSC 96/7 (Secretariat), containing the outcome of the experts' group established at SDC 3 regarding a mandatory instrument and/or provisions addressing safety standards for the carriage of more than 12 industrial personnel on board vessels engaged on international voyages;

.2 MSC 96/7/1 (Germany), providing for a further refined proposal of the structure of a possible consistent way forward for a mandatory instrument regarding the transport of more than 12 industrial personnel on international voyages;
.3 MSC 96/7/2 (Vanuatu), seeking to build upon the discussions held at the experts' group and refining the proposals coming from that group;

.4 MSC 96/7/3 (Secretariat), providing legal advice regarding the introduction of mandatory safety standards for the carriage of more than 12 industrial personnel following a request from SDC 3;

.5 MSC 96/7/4 (France and the United Kingdom), containing a condensed summary of the issues raised and reported by the experts' group and reflecting what they believe to be a realistic level of consensus and a compromise that could form the basis of the process for a future way forward on this issue;

.6 MSC 96/7/5 (Antigua and Barbuda, Australia and France), presenting a detailed background, a summary of the eight options developed by the experts' group and analyses of these options; and proposing a way forward;

.7 MSC 96/7/6 (ITF), providing comments on documents MSC 96/7/1 and MSC 96/7/2 (see paragraphs 7.2.2 and 7.2.3), relating to a way forward for a mandatory instrument regarding the transport of more than 12 industrial personnel on international voyages;

.8 MSC 96/7/7 (India), providing comments on the options developed by the experts' group regarding the carriage of industrial personnel on international voyages, and proposing a possible way forward for a mandatory instrument;

.9 MSC 96/7/8 (China), commenting on document MSC 96/7 (see paragraph 7.2.1), and presenting four suggestions for the policy issues that should be discussed by the Committee concerning the carriage of more than 12 industrial personnel on board vessels engaged on international voyages;

.10 MSC 96/7/9 (CESA and IMCA), commenting on the report of the experts' group and providing recommendations on the key policy decisions as well as discussing some of the options for making the solution mandatory under SOLAS; and

.11 MSC 96/7/10 (Argentina), commenting on the outcome of the experts' group and proposing a road map for consideration by the Committee.

7.3 In considering the above documents, the Committee noted the following views expressed during the discussion:

.1 amending SOLAS chapter I was not a practical option because such an amendment required explicit acceptance to bring it into force, which traditionally takes a very long time. Hence, developing a new SOLAS chapter would be the optimal way forward as the new chapter would be adopted under the tacit amendment procedure;

.2 a new code, which could be made mandatory through a new chapter of SOLAS, should be developed to support the carriage of more than 12 industrial personnel;
there was an urgent need for a short-term solution, which should be consistent with the long-term objective in regard to the new regulatory framework;

material that had already been developed on this matter (e.g. the definition of industrial personnel developed by SDC 2 (SDC 2/25, annex 5)) should be used as a basis for further work;

amending the 2008 SPS Code and/or SOLAS chapter X to allow for the transport and accommodation of industrial personnel might be another option for dealing with the short-term solution;

cargo ships under 500 gross tonnage should be taken into account when developing the long-term solution;

the transfer of industrial personnel from the vessel to the offshore facility should be taken into account;

any solution to this matter should not conflict with existing IMO instruments or other international treaties;

industrial personnel transported by helicopters were considered as passengers, and transport by ship is typically carried out from the same port (i.e. it is not an international voyage); and

while some were of the view that the size of the ship should be used as the basis for applying any new IMO requirements, others were of the view that the number of personnel should be used for application purposes.

After an in-depth discussion and taking into account the above views, the Committee agreed that:

a new chapter to SOLAS should be developed solely for the carriage of more than 12 industrial personnel;

the above new chapter should be supported by a new code, which could have elements of the 2008 SPS and 2000 HSC Codes, as appropriate; and

the number of industrial personnel being transported should be the basis for applying the new SOLAS requirements.

Establishment of the Working Group

Subsequently, the Committee established the Working Group on Carriage of Industrial Personnel and instructed it, taking into account the comments made and decisions taken in plenary and documents MSC 96/7, MSC 96/7/1, MSC 96/7/2, MSC 96/7/3, MSC 96/7/4, MSC 96/7/5, MSC 96/7/6, MSC 96/7/7, MSC 96/7/8, MSC 96/7/9 and MSC 96/7/10, to:

further consider the development of a new chapter of SOLAS solely regulating industrial personnel and a new Code addressing the carriage of more than 12 industrial personnel on board vessels engaged on international voyages; and
prepare a road map, identifying the priorities, time frames, responsibilities and long- and short-term objectives, including an interim solution, for the work to be accomplished, for consideration by the Committee.

REPORT OF THE WORKING GROUP

7.6 Having considered the relevant part of the report of the working group (MSC 96/WP.7), the Committee approved it in general and took action as described hereunder.

Draft Recommendation for the carriage of more than 12 industrial personnel on board vessels engaged on international voyages

7.7 In considering the draft Recommendation for the carriage of more than 12 industrial personnel on board vessels engaged on international voyages (MSC 96/WP.7, annex 1), the Committee noted the following views expressed:

.1 with regard to the definition of industrial personnel (MSC 96/WP.7, paragraph 9 and annex 1):

.1 the term "industrial activities" was not defined, therefore, it should be further considered; and

.2 it is not related to offshore activities, but instead has a broader application to industrial activities;

.2 there was a lack of clarity in the text of the cover note of the draft MSC resolution, in particular in paragraph 2, and hence there would be a lack of global and consistent practical implementation of its provisions in relation to what statutory certification will be issued to such vessels;

.3 the use of exemptions and equivalents, under SOLAS regulations I/4 and I/5, respectively, is highly problematic as these regulations were never intended to allow for the replacement of the entire standard to which a ship is built and, more importantly, are not implemented that way by flag State Administrations (see paragraph 7.9);

.4 many of the ships that will transport or accommodate industrial personnel will not be engaged on international voyages and thus they are not covered by international instruments;

.5 the draft Recommendation was ineffective, as an exemption from the passenger definition in SOLAS chapter I would contravene the Convention;

.6 there is an urgent need for a solution to this matter, therefore, it would be appropriate to focus the work on bringing a mandatory long-term solution into effect as soon as possible rather than a recommendatory interim solution;

.7 the draft Recommendation allows for some legal certainties, without lowering SOLAS safety standards, and creates a level playing field until such time that a mandatory instrument for the carriage of industrial personnel enters into force; and

.8 without this interim solution, there is a need to speed up the work on the mandatory instrument, which should enter into force at the earliest.
7.8 The Committee also noted the statements of the delegations of Argentina, Germany, Ireland, the Marshall Islands, the United States and the observer from ITF on the draft Recommendation for the carriage of more than 12 industrial personnel on board vessels engaged on international voyages, and the associated draft MSC resolution. The full text of their statements is set out in annex 29.

7.9 After an in-depth discussion, the Committee, noting the complex nature of the legal issue under consideration, agreed that this matter should be further considered at the next session. In this context, the Committee also agreed that this item should be included in the provisional agenda for MSC 97. Additionally, the Committee requested the Secretariat to provide further legal advice on this matter, taking into account the views expressed in paragraphs 7.3, 7.7 and 7.8.

Outline of the draft new chapter [XV] of SOLAS

7.10 The Committee endorsed the outline of the draft new chapter [XV] of SOLAS (MSC 96/WP.7, annex 2) and instructed SDC 4 to use the outline as the basis for the further development of the draft new chapter [XV] of SOLAS.

Outline of the draft new code

7.11 Having agreed that, as the draft new code is developed, it may require partitioning to address the issue of high-speed ships carrying industrial personnel and non-high speed ships carrying industrial personnel, the Committee endorsed the following recommendations by the Working Group regarding the draft new code:

.1 as it is developed, it will have to address high-speed ships carrying industrial personnel and non-high speed ships carrying industrial personnel;

.2 it should be based on the 2008 SPS and the 2000 HSC Codes;

.3 with regard to the scope of application, the number of persons on board (or the number of industrial personnel on board) should be considered and other parameters such as tonnage and/or length might need to be introduced in the future as thresholds in the different sections, with the understanding that the code would be applicable regardless of ship size;

.4 it should be developed following the goal-based approach; and

.5 ships should always meet the standards of life-saving appliances, irrespective of the number of industrial personnel on board at any time.

7.12 In the context of the above decisions, the Committee endorsed the outline of the draft new code addressing the carriage of more than 12 industrial personnel on board vessels engaged on international voyages (MSC 96/WP.7, annex 3) and instructed SDC 4 to use the outline as the basis for the further development of the draft new code.

Roadmap

7.13 The Committee noted the roadmap (MSC 96/WP.7, annex 4), which includes the priorities, time frames, responsibilities and long- and short-term objectives, for the work to be accomplished on this output. Having also noted the views on the need to speed up this work (see paragraph 7.7.8), the Committee decided to further consider the roadmap at MSC 97, in conjunction with the consideration of the draft Recommendation and the associated draft MSC resolution (see paragraph 7.9).
Impact on other IMO instruments

7.14 The Committee endorsed the Group's recommendation that the SDC Sub-Committee should take into consideration the impact on other IMO instruments while developing the code.

CLASSIFICATION OF OFFSHORE INDUSTRY VESSELS AND A REVIEW OF THE NEED FOR A NON-MANDATORY CODE FOR OFFSHORE CONSTRUCTION SUPPORT VESSELS

7.15 With regard to the output (5.2.1.19) on "Classification of offshore industry vessels and a review of the need for a non-mandatory code for offshore construction support vessels", which was directly related to the work on this output, the Committee agreed to delete the output from the biennial agenda of the SDC Sub-Committee and provisional agenda for SDC 4 and inform the Council accordingly. In this connection, the Committee noted the information provided by the Chairman of the SDC Sub-Committee that the ongoing work under the aforementioned output would be considered under this output (5.2.1.4).

8 SHIP SYSTEMS AND EQUIPMENT

REPORT OF THE SECOND SESSION OF THE SUB-COMMITTEE

General

8.1 The Committee approved, in general, the report of the second session of the Sub-Committee on Ship Systems and Equipment (SSE) (SSE 2/20 and MSC 96/8) and took action as indicated in paragraphs 8.2 to 8.9, recalling that MSC 95 had already taken action on urgent matters emanating from SSE 2 (MSC 95/21, section 12).

Draft amendments to SOLAS regulations II-2/1 and II-2/10

8.2 The Committee approved the draft amendments to SOLAS regulations II-2/1 and II-2/10, as set out in annex 13, and requested the Secretary-General to circulate the above amendments in accordance with SOLAS article VIII, with a view to subsequent adoption at MSC 97.

8.3 Having considered document MSC 96/8/1 (China), proposing to issue an MSC circular to encourage early implementation of the draft amendments to SOLAS regulations II-2/1 and II-2/10, exempting new and existing ships from the requirement to have on board foam-type extinguishers of at least 135 l capacity, the Committee endorsed the proposal, in principle, with a view to further consideration and final approval of the draft MSC circular at MSC 97, in conjunction with the adoption of the draft amendments to SOLAS regulations II-2/1 and II-2/10. Consequently, the Committee requested the Secretariat to prepare the above MSC circular for consideration at MSC 97 under agenda item 3.

Unified interpretations of SOLAS chapter II-2

8.4 The Committee approved MSC.1/Circ.1527 on Unified interpretations of SOLAS chapter II-2 providing more specific guidance on the conditions under which materials other than steel may be permitted for components mounted on engines, turbines and gearboxes; arrangements for fixed hydrocarbon gas detection systems in double-hull and double-bottom spaces of oil tankers; and non-combustible material as "steel or equivalent" for ventilation ducts.
Unified interpretations of chapters 5, 6 and 9 of the FSS Code

8.5 The Committee approved MSC.1/Circ.1528 on Unified interpretations of chapters 5, 6 and 9 of the FSS Code providing more specific guidance on fixed gas fire-extinguishing systems and fixed fire detection and fire alarm systems; foam-generating capacity of fixed foam fire-extinguishing systems; and additional indicating unit in the cargo control rooms.

Unified interpretations of paragraph 4.4.7.6 of the LSA Code

8.6 The Committee, following discussion on what materials should be qualified by corrosion test, agreed to reduce the minimum Pitting Resistance Equivalent Number (PREN) from 25 to 22 and approved MSC.1/Circ.1529 on Unified interpretations of paragraph 4.4.7.6 of the LSA Code, as amended by resolution MSC.320(89), related to lifeboat release and retrieval systems.

Unified interpretations of SOLAS regulations III/6.4 and III/6.5 and section 7.2 of the LSA Code

8.7 The Committee approved MSC.1/Circ.1530 on Unified interpretations of SOLAS regulations III/6.4 and III/6.5 and section 7.2 of the LSA Code related to general emergency alarms and public address systems in ro-ro spaces.

Early implementation of the new chapter 17 of the FSS Code

8.8 The Committee recalled that it had dealt with the draft MSC circular on Early implementation of the amendments to the International Code for Fire Safety Systems (FSS Code) under agenda item 3, in conjunction with the adoption of the draft new chapter 17 of the FSS Code (see paragraph 3.16).

Amendments to the Recommendation on helicopter landing areas on ro-ro passenger ships (MSC/Circ.895)

8.9 The Committee recalled that it had dealt with the draft MSC circular on Amendments to the Recommendation on helicopter landing areas on ro-ro passenger ships (MSC/Circ.895) under agenda item 3, in conjunction with the adoption of the draft new chapter 17 of the FSS Code and amendments to chapter 9 of the 2009 MODU Code (see paragraph 3.73).

URGENT MATTERS EMANATING FROM THE THIRD SESSION OF THE SUB-COMMITTEE

General

8.10 The Committee considered urgent issues emanating from the third session of the Sub-Committee (MSC 96/8/2) and took action as indicated hereunder.

Draft functional requirements of SOLAS chapter III

8.11 The Committee recalled that it had dealt with the draft functional requirements of SOLAS chapter III under agenda item 5 (see paragraphs 5.17 to 5.21).
Experience gained during the implementation of MSC.1/Circ.1394/Rev.1

8.12 The Committee recalled that it had considered the preliminary information on the experience gained during the implementation of the Generic guidelines for developing IMO goal-based standards (MSC.1/Circ.1394/Rev.1) under agenda item 5 (see paragraph 5.21).

Requirements for maintenance, thorough examination, operational testing, overhaul and repair of lifeboats and rescue boats, launching appliances and release gear

8.13 The Committee recalled that it had dealt with the draft amendments to SOLAS regulations III/3 and III/20 endorsed by SSE 3 (SSE 3/16, paragraphs 4.13 and 4.17; and annex 2) under agenda item 3 (see paragraph 3.24).

8.14 The Committee recalled that it had dealt with the Requirements for maintenance, thorough examination, operational testing, overhaul and repair of lifeboats and rescue boats, launching appliances and release gear (resolution MSC.402(96)), in conjunction with the adoption of the draft to SOLAS regulations III/3 and III/20, under agenda item 3 (see paragraph 3.82).

Draft MSC circular on Guidelines on safety during abandon ship drills using lifeboats and the draft amendments to the Guidelines for developing operation and maintenance manuals for lifeboat systems (MSC.1/Circ.1205)

8.15 Having noted that SSE 3 had not been in a position to conduct the detailed review either of the draft MSC circular on Guidelines on safety during abandon ship drills using lifeboats or the draft amendments to MSC.1/Circ.1205, the Committee agreed to the Sub-Committee’s decision that they needed to be further reviewed at SSE 4, in order to capture possible inconsistencies emanating from the Requirements for maintenance, thorough examination, operational testing, overhaul and repair of lifeboats and rescue boats, launching appliances and release gear (resolution MSC.402(96)).

Fire pumps in ships designed to carry five or more tiers of containers on or above the weather deck

8.16 The Committee noted that SSE 3, not having achieved a unanimous agreement on IACS UI SC270 relating to fire pumps in ships designed to carry five or more tiers of containers on or above the weather deck, had taken no further action (SSE 3/16, paragraphs 12.35 to 12.37). In this context, the Committee, having recalled that IACS UI SC270 was agreed by SSE 2 (SSE 2/20, paragraph 11.30), but not submitted to MSC 96 for approval pending the consideration of its further modification at SSE 3 (SSE 2/20, paragraph 11.31), noted IACS’ intention to submit the version of UI SC270 agreed by SSE 2 to MSC 97 for approval.

Addition of the new sentence to the end of the interpretation of paragraph 4.4.7.6.9 of the LSA Code

8.17 The Committee recalled that the proposal on the addition of the new sentence to the end of the interpretation of paragraph 4.4.7.6.9 of the LSA Code was considered together with the draft unified interpretations of paragraph 4.4.7.6 of the LSA Code, as amended by resolution MSC.320(89), related to lifeboat release and retrieval systems (see paragraph 8.6 above).
9 IMPLEMENTATION OF IMO INSTRUMENTS

REPORT OF THE SECOND SESSION OF THE SUB-COMMITTEE

General

9.1 The Committee approved, in general, the report of the second session of the Sub-Committee on Implementation of IMO Instruments (III) (III 2/16, III 2/16/Add.1 and MSC 96/9) and, taking into account relevant decisions and comments made by MEPC 69 (MSC 96/2/4), took action as indicated hereunder.

Non-mandatory instruments on regulations for non-convention ships

9.2 The Committee endorsed the Sub-Committee's decision on the dissemination of the Guide for regulating the safety of passenger ships not covered by SOLAS, as set out in annex 1 of document III 2/16 and on IMODOCS, without detailed technical review. The Committee invited interested Member States to use the Guide as a tool containing a generic set of general safety principles and functional requirements, as a potential minimum safety level to be attained, when developing national or regional safety regulations for passenger ships not covered by the 1974 SOLAS Convention, and to provide any relevant feedback.

9.3 In this connection, the Committee also endorsed the Sub-Committee's recommendation not to develop a guide for regulating the safety of other types of ships not covered by SOLAS, since similar work for other types of ships was not considered as being necessary at this stage and a predominant part of the content of any further work for other types of ships could be very similar to the content of the above-mentioned Guide.

9.4 The Committee further endorsed the Sub-Committee's recommendation that an IMO Model Course on the safety of passenger ships not covered by SOLAS be developed on the basis of the existing draft documents, which are currently available in IMODOCS, including the completion of the Procedural Guide, in accordance with MSC-MEPC.2/Circ.15 on Revised guidelines for the development, review and validation of model courses.

Requirements for access to, or electronic versions of, certificates and documents, including record books required to be carried on ships

9.5 Having concurred with MEPC 69, the Committee endorsed the Sub-Committee's conclusion that there is no need to align FAL.2/Circ.127-MEPC.1/Circ.817-MSC.1/Circ.1462 on List of certificates and documents required to be carried on board ships with FAL.5/Circ.39/Rev.1 at this time, as the existing circular is not in conflict with the use of e-certificates.

Countries Survey Questionnaire

9.6 The Committee was advised that MEPC 69 noted the Countries Survey Questionnaire, since it would mainly concern maritime safety aspects of marine casualties. Taking into account that the Countries Survey Questionnaire might assist Member States in identifying potential problem areas for carrying out and reporting on investigations into very serious marine casualties (VSMC), the Committee approved the Countries Survey Questionnaire, as set out in annex 3 of document III 2/16, for dissemination by the Secretariat to Member States.
In-the-field job aid for investigators

9.7 The Committee endorsed the Sub-Committee's decision, which MEPC 69 had noted, to post the in-the-field job aid for investigators, as set out in annex 4 of document III 2/16, on the GISIS marine casualties and incidents (MCI) module and to include it, as reference material, when a training course is delivered, based on IMO Model Course 3.11, as well as in a future revision of the course.

Practical lessons that might be learned from ICAO

9.8 The Committee endorsed the Sub-Committee's finding that there is no pertinent lesson to be learned from the submission and dissemination of accident reports under ICAO's Convention or how accident reports are handled by the ICAO Secretariat.

Guidelines for port State control officers on the ISM Code

9.9 Following an in-depth discussion, the Committee concurred with the decision of MEPC 69 to defer the consideration of the draft MSC-MEPC.4 circular on Guidelines for port State control officers on the ISM Code, pending consideration of the outcome of HTW 2 along with the aforementioned draft circular, to MEPC 70 and MSC 97. In this context, the Committee instructed the Secretariat to provide the outcome of HTW 2 to its next session with a view to approval of the aforementioned circular.

Process for putting forward recommendations to the relevant IMO bodies resulting from the reports of CICs

9.10 The Committee, having noted that MEPC 69 did not endorse the issuing of III.2/Circ.1 on Revised process for putting forward recommendations to the relevant IMO bodies resulting from the reports of Concentrated Inspection Campaigns (CICs), instructed III 3 to review the text of the circular, with a view to addressing the concerns raised by MEPC 69 and to report to the Committee at its the next session.

New SOLAS regulation XI-1/2-1

9.11 The Committee considered the draft new SOLAS regulation XI-1/2-1 on harmonization of survey periods of cargo ships not subject to the ESP Code, together with document MSC 96/9/1 (France, Spain and IACS), proposing an amendment to the draft new SOLAS regulation XI-1/2-1, as prepared by III 2, and the possible review of the consequential draft amendments to the Survey Guidelines under the Harmonized System of Survey and Certification (HSSC), taking into account the check/monitoring sheet and record for regulatory development.

9.12 Following discussion, the Committee approved the draft amendment to SOLAS chapter XI-1 introducing a new regulation XI-1/2-1, as amended by document MSC 96/9/1, as set out in annex 14, and requested the Secretary-General to circulate it in accordance with SOLAS article VIII, with a view to adoption at MSC 97.

9.13 Consequently, the Committee instructed the III Sub-Committee to review consequential amendments to the Survey Guidelines under the output on "Updated Survey Guidelines under the Harmonized System of Survey and Certification (HSSC) (5.2.1.17)", for consistency after the draft new SOLAS regulation XI-1/2-1 is adopted.
Survey Guidelines under the HSSC 2015

9.14 The Committee noted that III 2 had submitted the draft *Survey Guidelines under the Harmonized System of Survey and Certification (HSSC), 2015*, together with the draft requisite Assembly resolution, directly to A 29, as authorized by MEPC 67 and MSC 94; and that the 2015 Survey Guidelines under the HSSC were consequently adopted by the Assembly by resolution A.1104(29).

2015 Non-exhaustive list of obligations under instruments relevant to the III Code

9.15 The Committee noted that III 2 had submitted the draft 2015 *Non-exhaustive list of obligations under instruments relevant to the IMO Instrument Implementation Code* (resolution A.1070(28)), together with the draft requisite Assembly resolution, directly to A 29, as authorized by MEPC 67 and MEPC 94; and that the 2015 *Non-exhaustive List of Obligations* was consequently adopted by the Assembly by resolution A.1105(29).

Lessons learned from marine casualties

9.16 The Committee had for its consideration document MSC 96/9/2 (China and IMLA), proposing possible new ways to improve the dissemination of lessons learned with a view of establishing an effective linkage between casualty investigation and seafarers training. The delegation of China indicated that the terminology “draft” should be deleted from the executive summary, as a typographical error.

9.17 Having noted that the proposal was generally supported and having emphasized that lessons learned from marine casualties should only be drawn from final reports of investigation into casualties, the Committee instructed:

.1 III 3 to consider document MSC 96/9/2 and, in particular, the feasibility and the merits of the identification of typical accidents and lessons learned that might be used for seafarers' training and education, under the agenda item “Lessons learned and safety issues identified from the analysis of marine safety investigation reports” (12.1.2.1), and to report to MSC 97; and

.2 HTW 4, under the existing agenda item “Role of the human element”, and taking into account the relevant outcome of III 3 and MSC 97, to consider document MSC 96/9/2 and, in particular, the development of a methodology on how to utilize lessons learned for seafarers training and education, including the development of further guidance in the relevant model course in this respect; and the way in which they should be received, so that the information could be used more effectively.

Outcome of FAL 40

9.18 The Committee considered issues emanating from FAL 40, as contained in document MSC 96/2/3, which are relevant to this agenda, and, in particular noted the two decisions by FAL 40 related to the use of electronic certificates and its approval of FAL.5/Circ.39/Rev.2 on the same matter.

9.19 With regard to the draft amendments to the *Procedures for port State control, 2011* (resolution A.1052(27)), aimed at promoting wider acceptance of electronic certificates, as approved by FAL 40, the Committee instructed III 3 to consider the above draft amendments in the context of its ongoing comprehensive review thereof.
Statement by the delegation of Denmark

9.20 The delegation of Denmark made a statement, as set out in annex 29, regarding the decision of Denmark to stop issuing paper version flag State certificates shortly. Accordingly, all ships flying the Danish flag will be issued with certificates in an electronic format, as and when such certificates expire and are renewed.

10 CARRIAGE OF CARGOES AND CONTAINERS

REPORT OF THE SECOND SESSION OF THE SUB-COMMITTEE

General

10.1 The Committee approved, in general, the report of the second session of the Sub-Committee on Carriage of Cargoes and Containers (CCC) (CCC 2/15 and MSC 96/10) and took action as indicated in paragraphs 10.2 to 10.15.

Low-flashpoint oil fuels

10.2 The Committee endorsed the Sub-Committee's view that all safety concerns with regard to ships using low-flashpoint oil fuels should be addressed in the context of the IGF Code only, without reopening discussion on the possibility of amending the flashpoint requirements in SOLAS.

LNG bunkering safety checklist

10.3 The Committee agreed to invite ISO to develop a standard LNG bunkering safety checklist, taking into account documents MSC 95/3/20 (United States) and CCC 2/3/2 (Marshall Islands, Panama, United States and ISO), and requested the Secretariat to communicate with ISO accordingly.

Transport of bauxite in bulk

10.4 Having noted that CCC 2 had approved CCC.1/Circ.2 on Carriage of BAUXITE that may liquefy, the Committee endorsed the actions taken by the Sub-Committee in response to safety concerns regarding the transport of bauxite in bulk.

Existing IMO type portable tanks and road tank vehicles for the transport of dangerous goods

10.5 The Committee endorsed the actions taken by the Sub-Committee with regard to the revision of DSC/Circ.12 and noted that CCC 2 had approved CCC.1/Circ.3 on Revised guidance on the continued use of existing IMO type portable tanks and road tank vehicles for the transport of dangerous goods.

Draft amendments (38-16) to the IMDG Code and instructions to the E&T Group

10.6 The Committee noted that the Sub-Committee had:

.1 authorized E&T 24 to finalize the draft amendments (38-16) to the IMDG Code and had requested the Secretary-General to circulate the draft amendments to the IMDG Code in accordance with SOLAS article VIII, for consideration and subsequent adoption by MSC 96; and
instructed E&T 24 to prepare related recommendations and circulars for submission to MSC 96 for approval, together with the adoption of amendments to the IMDG Code,

which were considered under agenda item 3 (see also paragraphs 3.90, 3.101.2 and 3.102).

Approved Continuous Examination Programmes (ACEP)

10.7 The Committee had for its consideration the following draft CSC circulars, prepared by CCC 2, relating to the International Convention for Safe Containers (CSC), 1972, as amended, specifically Approved Continuous Examination Programmes (ACEP):

1. draft CSC circular on Amendments to the Revised Recommendations on harmonized interpretation and implementation of the International Convention for Safe Containers, 1972, as amended (CSC.1/Circ.138/Rev.1), as set out in annex 1 to document CCC 2/15;

2. draft CSC circular on Amendments to the Guidelines for development of an approved continuous examination programme (ACEP) (CSC.1/Circ.143), as set out in annex 2 to document CCC 2/15;

3. draft CSC circular on List of locations of publicly available ACEP information, as set out in annex 3 to document CCC 2/15; and

4. draft CSC circular on Instructions for use and information concerning the Global ACEP Database, as set out in annex 4 to document CCC 2/15.

10.8 Following discussion, the Committee approved:

1. CSC.1/Circ.151 on Amendments to the Revised Recommendations on harmonized interpretation and implementation of the International Convention for Safe Containers, 1972, as amended (CSC.1/Circ.138/Rev.1);

2. CSC.1/Circ.152 on Amendments to the Guidelines for development of an approved continuous examination programme (ACEP) (CSC.1/Circ.143);

3. CSC.1/Circ.153 on List of locations of publicly available ACEP information; and

4. CSC.1/Circ.154 on Instructions for use and information concerning the Global ACEP Database.

10.9 With regard to the List of locations of publicly available ACEP information (CSC.1/Circ.153), the Committee agreed that it should be updated and issued on an annual basis, or when any Administration informs the Organization of changes to their ACEP. In this regard, the Committee urged CSC 1972 Contracting Parties to submit information to the Organization on the location where their ACEP information is publicly available, in order to keep the list of locations of publicly available ACEP information up to date. In this connection, the observer from BIC made a statement, which is set out in annex 29.

Providers of CTU-related services

10.10 The Committee approved MSC.1/Circ.1531 on Due diligence checklist in identifying providers of CTU-related services.
Corrections and draft amendments to the IGC Code

10.11 The Committee noted that CCC 2 had requested the Secretariat to prepare a corrigendum to annex 6 of the report of MSC 93 (MSC 93/22/Add.1), which:

.1 deletes the words "by the Administration" in paragraph 8.2.18 of the IGC Code, as amended by resolution MSC.370(93); and

.2 corrects paragraphs 7.8.4, 13.6.11 and 16.9.5 of the IGC Code, as amended by resolution MSC.370(93), to require the discharge of exhaust gases in a "safe location" rather than a "non-hazardous area",

with a view to incorporating the aforementioned modifications into the authentic text of resolution MSC.370(93)

10.12 Regarding the requirement in the IGC Code for fire rating of wheelhouse windows, having taken into account the check/monitoring sheet and records for regulatory development prepared by the Secretariat (CCC 2/15, annex 6), the Committee approved the draft amendment to paragraph 3.2.5 of the IGC Code, as set out in annex 15, that, in effect, aligns the requirements of the IGC Code with the requirements for fire-rated windows on tankers in SOLAS chapter II-2, which does not apply to wheelhouse windows. Subsequently, the Committee requested the Secretary-General to circulate the aforementioned draft amendments in accordance with SOLAS article VIII, with a view to adoption at MSC 97. In this context, the observer from IACS informed the Committee that the IGF Code contains the same requirement for A-0 fire-rated wheelhouse windows, and that IACS intended to submit a document to MSC 97 in this regard.

10.13 Having taken into account the potential for industry to be unable to meet the requirement of the IGC Code, as amended by resolution MSC.370(93), for A-0 fire-rated wheelhouse windows, which will apply from 1 July 2016, the Committee requested the Secretariat to prepare a draft MSC circular on early implementation of the draft amendment to paragraph 3.2.5 of the IGC Code for consideration by the Committee, with a view to approval at this session. Following consideration of the aforementioned draft MSC circular prepared by the Secretariat (MSC 96/WP.13), the Committee agreed to further consider the draft MSC circular at its next session, in conjunction with the adoption of the associated draft amendments to the IGC Code. In this regard, the Committee requested the Secretariat to submit the draft MSC circular under agenda item 3, taking into account the following proposals for modifications of the draft circular (MSC 96/WP.13):

.1 add the words "AND ACCEPTANCE" after the words "EARLY IMPLEMENTATION" in the title of the draft circular and delete the word "DRAFT";

.2 add the words "as appropriate" after the word "apply" in paragraph 2.1;

.3 add the words "subject the provision of evidence of acceptance by the Flag State" at the end of paragraph 2.2; and

.4 add a new paragraph after paragraph 3 indicating an expiry date for the circular.
Mandatory requirements for classification and declaration of solid cargoes as harmful to the marine environment (HME)

10.14 The Committee noted the progress made on the development of mandatory requirements for classification and declaration of solid bulk cargoes as HME, through the development of draft amendments to MARPOL Annex V, as set out in annex 7 to document CCC 2/15.

10.15 The Committee also noted the draft amendments to the IMSBC Code related to HME substances, as set out in annex 8 to document CCC 2/15, which are expected to be finalized at CCC 3. In this regard, the Committee noted that MEPC 69, having considered several options, agreed to make mandatory under MARPOL Annex V only the criteria for the classification of solid bulk cargoes as HME and the shipper's declaration, without specifying the means for making the declaration. Subject to the subsequent adoption, by MEPC 70, of the draft amendments to MARPOL Annex V, as modified and approved by MEPC 69, the IMSBC Code HME cargo declaration form will not be mandatory under MARPOL but will be mandatory under the IMSBC Code, subject to adoption of the relevant amendments to the IMSBC Code at MSC 98.

11 SHIP DESIGN AND CONSTRUCTION

REPORT OF THE THIRD SESSION OF THE SUB-COMMITTEE

General

11.1 The Committee approved, in general, the report of the third session of the Sub-Committee on Ship Design and Construction (SDC) (SDC 3/21 and Corr.1 and MSC 96/11) and took action as indicated hereunder.

Subdivision and damage stability regulations

11.2 In regard to the draft amendments to SOLAS chapter II-1 on subdivision and damage stability regulations, as set out in annex 1 to document SDC 3/21, the Committee had the following documents for its consideration:

.1 MSC 96/11/2 (Austria, et al.), providing comments on the report of SDC 3, with particular regard to the draft amendments to SOLAS regulation II-1/6 related to the survivability of passenger ships;

.2 MSC 96/11/4 (Japan), providing comments on document SDC 3/21 with regard to required subdivision index "R" for passenger ships. The delegation of Japan analysed an impact on design for the draft SOLAS regulation II-1/6 and based on the impact analysis, the formula proposed by the United States (SDC 3/3/9) is acceptable as it provides the upper limit of the required subdivision index "R" for passenger ships; and

.3 MSC 96/11/6 (Japan), providing comments on document SDC 3/21 with regard to a duplication in the draft amendments to SOLAS chapter II-1 and proposing modifications to the draft amendments to regulation II-1/12.2 to correct this error.
11.3 In considering the above documents, the Committee noted the following views expressed during the discussion:

.1 information from the EMSA curve used for small passenger ships was not justified, as it may have an impact in the design stages of such ships, when applying the draft new required subdivision index "R";

.2 the outcome of SDC 3, regarding the required subdivision index "R" for passenger ships, was a compromise solution, achieved after a lengthy and detailed consideration by the Subdivision and Damage Stability (SDS) Working Group and agreed by SDC 3. This requirement would reduce the safety risk; and

.3 with regard to document MSC 96/11/6 (see paragraph 11.2.3), regulation II-1/12.2 is not related to the ship's damage stability standard. It is purely a design requirement. The new paragraph was included to ensure that the location of the collision bulkhead, required by regulation II-1/12.1, also safeguards a flooding condition. In this context, there was no need to modify the requirement and the same could be addressed by means of the explanatory notes which the Sub-Committee is currently developing.

11.4 Having considered the above views, the Committee approved the draft amendments to SOLAS chapter II-1 on subdivision and damage stability regulations, as set out in annex 16, and requested the Secretary-General to circulate the above amendments in accordance with SOLAS article VIII, with a view to subsequent adoption at MSC 97.

Scope of application of the draft amendments to SOLAS chapter II-1

11.5 The Committee, having considered the application dates of the draft amendments to SOLAS chapter II-1 and taking into account that the four-year delivery window may not be appropriate for large and complex passenger ships, agreed that the application date of the aforementioned amendments should be 1 January 2020.

Early implementation of the acceptance of the use of butterfly valves on cargo ships

11.6 The Committee considered document MSC 96/11/7 (Liberia, Marshall Islands and IACS), providing comments on paragraphs 2.1 and 2.2 of document MSC 96/11 and proposing a draft MSC circular which encourages early implementation of the use of a butterfly valve in the pipe(s) piercing the collision bulkhead in cargo ships, provided the valve is suitably supported by a seat or flanges and capable of being operated from above the freeboard deck; as per draft SOLAS regulation II-1/12 (SDC 3/21, annex 1). Following discussion, the Committee, having agreed, in principle, to the draft MSC circular on Early implementation of the acceptance of the use of butterfly valves on cargo ships (MSC 96/11/7, annex), decided to approve it at its next session, in conjunction with the associated SOLAS amendments. Subsequently, the Secretariat was requested to prepare the above MSC circular for consideration at MSC 97.

11.7 The Committee noted the concerns expressed by the delegation of the Bahamas, supported by others, that this was the third occasion at this session that the Committee had agreed on the issue of an early implementation circular (see paragraphs 3.101, 8.3, 10.13 and 11.6) and had expressed concern that these circulars could provide the opportunity for disagreement between flag States and port States if both did not agree to apply early implementation. The delegation also pointed out the fact that such a circular does not oblige a port State to accept early implementation to which it disagrees, noting that while a mechanism for the promulgation of information existed in cases of equivalence under SOLAS regulation I/5,
no such mechanism currently existed for early implementation. In this context, a further question arose in respect of what evidence a ship would be required to carry to communicate to a port State control officer the fact that its flag State had applied early implementation and had accepted the resulting deviation from the Convention requirements in force at the time. The Committee also noted the view of the delegation of the Bahamas that this was particularly important in cases where an amendment could be viewed as a relaxation of the existing requirements such as, for example, the proposals in documents MSC 96/11/7 and MSC 96/8/1. The Committee further noted the delegation's intention to submit a document to III 3 on this matter and agreed to extend the deadline for submission of documents related to this issue only to III 3 by one week (i.e. 20 May 2016).

Draft amendments to chapter 2 of the 2008 SPS Code

11.8 The Committee adopted resolution MSC.408(96) on Amendments to chapter 2 of the Code of Safety for Special Purpose Ships, 2008 (2008 SPS Code), as set out in annex 17.

Remaining work under output 5.2.1.13 (Amendments to SOLAS regulations II-1/6 and II-1/8-1)

11.9 The Committee, bearing in mind that the instruction of MSC 93 was to only consider "double hull in way of main engine-room" in the remaining work under output 5.2.1.13 (Amendments to SOLAS regulations II-1/6 and II-1/8-1), and the Sub-Committee's opinion that the double hull may not be the only solution and, therefore, other alternative solutions needed to be further considered, endorsed the Sub-Committee's view that the recommended change of the existing scope of the output is acceptable and did not require any specific justification.

Operational information for masters of passenger ships for safe return to port

11.10 The Committee approved MSC.1/Circ.1532 on Revised guidelines on operational information for masters of passenger ships for safe return to port.

2008 Intact Stability Code

11.11 The Committee approved the draft amendments to the introduction of the 2008 IS Code regarding vessels engaged in lifting and towing operations, including escort towing, as set out in annexes 6 and 7 (see paragraphs 3.43 to 3.47 and 11.12), in accordance with SOLAS regulation II-1/2.27 (resolution MSC.269(85)) and regulation 3(16) of the 1988 LL Protocol (resolution MSC.270(85)). In this context, the Committee noted that the modified chapeau of paragraph 1.2 of the introduction to the 2008 IS Code was considered under agenda item 3 (Consideration and adoption of amendments to mandatory instruments) in conjunction with the adoption of the amendments to the introduction of the 2008 IS Code regarding vessels engaged in anchor handling operations (see paragraphs 3.39 to 3.50).

11.12 Having considered the draft amendments to part B of the 2008 IS Code regarding vessels engaged in lifting and towing operations, including escort towing, as set out in annex 5 to document SDC 3/21, together with documents MSC 96/11/3 (Germany), commenting on the definitions of waters that are exposed and waters that are not exposed in the context of lifting operations, and MSC 96/11/8 (Vanuatu), proposing modifications to the draft amendments to clarify the provisions, the Committee agreed to the following:

.1 the addition of the proposed definitions of waters that are exposed and waters that are not exposed in the context of lifting operations (MSC 96/11/3);
.2 in paragraph 2.9.7.1, add the words "should be complied with", as proposed in document MSC 96/11/8;

.3 in paragraph 2.8.5.1, add the words ", excluding emergency access and removal hatches," after the words "Access to the machinery space";

.4 in paragraphs 2.9.2.1 and 2.9.2.2, add the word "a-frame" before the words "or similar"; and

.5 in paragraph 2.9.3.1, add the words "included herein, or the criteria contained in paragraphs 2.9.4, 2.9.5 or 2.9.7, as applicable", after the words "The stability criteria",

and instructed the Secretariat to consolidate the above draft amendments to the introduction and part B of the 2008 IS Code related to lifting and towing, together with the draft amendments to the 2008 IS Code related to anchor handling (see paragraph 3.46), with a view to subsequent adoption at MSC 97.

Evacuation analysis for new and existing passenger ships

11.13 The Committee approved MSC.1/Circ.1533 on Revised guidelines on evacuation analysis for new and existing passenger ships.

11.14 In this connection, the Committee endorsed the Sub-Committee's decision to refer Revised guidelines on evacuation analysis for new and existing passenger ships to SSE 4 for information, as the definitions contained in section 2 of annex 1 to the draft Revised guidelines may be of interest in the development of the functional requirements of SOLAS chapter III.

Draft amendment to chapter 13 of the FSS Code

11.15 The Committee approved the draft amendment to paragraph 2.1.2.2.2.1 of chapter 13 of the FSS Code, regarding clarification of the crew distribution in public spaces, as set out in annex 18, and requested the Secretary-General to circulate the above amendment in accordance with SOLAS article VIII, with a view to subsequent adoption at MSC 97.

Damage control drills for passenger ships

Draft amendments to SOLAS regulation II-1/1.2 and the draft new regulation II-1/19-1

11.16 In the context of the draft amendments to SOLAS regulation II-1/1.2 and the draft new regulation II-1/19-1, the Committee noted that the Sub-Committee had referred the aforementioned draft amendments to HTW 3 to further consideration, taking into account the damage control drill frequency requirements in the draft SOLAS regulation II-1/19-1.2 for crew workload and fatigue issues, and submit the finalized draft amendments to this session for approval, in conjunction with the approval of the draft amendments to SOLAS chapter II-1 subdivision and damage stability requirements.

11.17 Taking into account the outcome of HTW 3 (see paragraph 12.7), the Committee approved the draft amendments to SOLAS regulation II-1/1.2 and the draft new SOLAS regulation II-1/19-1, regarding damage control drills for passenger ships, as set out in annex 16, and requested the Secretary-General to circulate the above amendments in accordance with SOLAS article VIII, with a view to subsequent adoption at MSC 97.
**Draft amendments to SOLAS regulations III/1.4, III/30 and III/37**

11.18 The Committee considered the draft amendments to SOLAS regulations III/1.4, III/30 and III/37, regarding damage control drills for passenger ships, together with document MSC 96/11/5 (Japan), commenting on the draft amendments to SOLAS regulation III/37 on "Muster list and emergency instructions" and, following discussion, agreed to modify the draft amendments to SOLAS regulation III/37.3 as follows:

".9 for passenger ships only, damage control for flooding emergencies."

11.19 Subsequently, the Committee approved the draft amendments to SOLAS chapter III, as set out in annex 19, and requested the Secretary-General to circulate the above amendments in accordance with SOLAS article VIII, with a view to subsequent adoption at MSC 97.

**Draft Guidelines for conducting damage control drills on passenger ships**

11.20 The Committee endorsed the Sub-Committee's decision that the draft Guidelines for conducting damage control drills on passenger ships were not necessary at this stage, as the finalized draft amendments to SOLAS regulations II-1/19-1, III/30 and III/37 (see paragraphs 11.17 and 11.19) were sufficiently detailed.

**Draft amendments to the 2011 ESP Code**

11.21 The Committee approved the draft amendments to the 2011 ESP Code, as set out in annex 20, and requested the Secretary-General to circulate the above amendments in accordance with SOLAS article VIII, with a view to subsequent adoption at MSC 97.

**Unified interpretations relating to the 1966 Load Lines Convention**


**Unified interpretations relating to the 1988 Load Lines Protocol**


**Unified interpretations of SOLAS regulations II-1/29.3 and II-1/29.4**

11.24 The Committee considered the draft Unified interpretations of SOLAS regulations II-1/29.3 and II-1/29.4, together with document MSC 96/11/1 (Norway, IACS), commenting on the discussion on document SDC 3/14/1 (IACS) at SDC 3, related to steering gear test with vessel not at its deepest seagoing draught, and proposing amendments to the associated draft MSC circular, as set out in annex 12 of document SDC 3/21.

11.25 Following discussion and having agreed to the modification proposed in document MSC 96/11/1, the Committee approved MSC.1/Circ.1536 on Unified interpretations of SOLAS regulations II-1/29.3 and II-1/29.4.
Unified interpretations of the 2008 IS Code

11.26 The Committee approved MSC.1/Circ.1537 on Unified interpretations of the 2008 IS Code.

Unified interpretation relating to the International Grain Code

11.27 The Committee approved MSC.1/Circ.1538 on Unified interpretation relating to the International Grain Code.

Unified interpretations of SOLAS chapter II-1

11.28 The Committee approved MSC.1/Circ.1539 on Unified interpretations of SOLAS chapter II-1.

11.29 Notwithstanding the above decision, the Committee noted the statement made by the IACS observer that the definition of the term "lightweight", as set out in the above unified interpretation, is also contained in the 1994 and 2000 HSC Codes and, therefore, similar unified interpretations should also be prepared for those Codes. In this connection, the observer from IADC pointed out that the definition of the term "lightweight" is also contained in the MODU Code. Having noted and agreed with the above views, the Committee considered the draft MSC circulars prepared by the Secretariat (MSC 96/WP.15 and Corr.1) and approved:

.1 MSC.1/Circ.1540 on Unified interpretation of the 2009 MODU Code;

.2 MSC.1/Circ.1541 on Unified interpretation of the 1994 HSC Code; and

.3 MSC.1/Circ.1542 on Unified interpretation of the 2000 HSC Code.

Unified interpretation relating to the IBC Code

11.30 The Committee approved the draft MSC-MEPC.5 circular on Unified interpretation relating to the IBC Code, as set out in annex 21, subject to concurrent approval by MEPC 70.

Unified interpretation relating to the IGC Code

11.31 The Committee approved MSC.1/Circ.1543 on Unified interpretation relating to the IGC Code.

Unified interpretations for the application of the 2009 MODU Code and the Revised technical provisions for means of access for inspections

11.32 The Committee approved MSC.1/Circ.1544 on Unified interpretations for the application of chapter 2 of the 2009 MODU Code and the Revised technical provisions for means of access for inspections (resolution MSC.158(78)).

11.33 Subsequently, the Committee considered if MSC.1/Circ.1464/Rev.1 and its Corr.1 would need to be amended to exclude MODUs and, in light of the approval of the aforementioned Unified interpretations (MSC.1/Circ.1544), agreed that MSC.1/Circ.1464/Rev.1 does not need to be amended to clarify its non-application to MODUs as the text of this circular clearly refers to SOLAS regulation II-1/3-6 on access to and within spaces in the cargo area of oil tankers and bulk carriers.
Unified interpretations relating to the application of SOLAS regulation II-1/3-6 and the Revised technical provisions for means of access for inspections

11.34 The Committee approved MSC.1/Circ.1545 on Unified interpretations relating to the application of SOLAS regulation II-1/3-6, as amended, and the Revised technical provisions for means of access for inspections (resolution MSC.158(78)).

11.35 Subsequently, the Committee considered the need to amend MSC.1/Circ.1464/Rev.1 and its Corr.1, as amended by MSC.1/Circ.1507, and requested the Secretariat to prepare a consolidated draft MSC circular containing the provisions of MSC.1/Circ.1464/Rev.1 and Corr.1, as amended by MSC.1/Circ.1507, and MSC.1/Circ.1545, for consideration at MSC 97.

Unified interpretation of the 1969 TM Convention

11.36 The Committee approved MSC.1/Circ.1546 on Unified interpretations of the 1969 TM Convention.

Revised SOLAS regulation II-1/3-8 and associated guidelines (MSC.1/Circ.1175) and new guidelines for safe mooring operations for all ships

11.37 The Committee noted the progress made on matters related to the revised SOLAS regulation II-1/3-8 and associated guidelines (MSC.1/Circ.1175) and the new guidelines for safe mooring operations for all ships.

Carriage of industrial personnel on vessels engaged on international voyages

11.38 The Committee noted that the eight options on the regulatory regimes and procedures for transporting industrial personnel and table of comparison of criteria within proposed options, including the advantages and disadvantages and the potential way forward, was considered under agenda item 7 (Mandatory instrument and/or provisions addressing safety standards for the carriage of more than 12 industrial personnel on board vessels engaged on international voyages).

Fibre Reinforced Plastic (FRP) elements within ship structures

11.39 The Committee noted the progress made on matters related to the development of draft interim guidelines for use of Fibre Reinforced Plastic (FRP) elements within ship structures.

Other matters

11.40 Having noted the decision of SDC 3 to not accept a proposed unified interpretation on calculation of tonnage for OSVs (SDC 3/14/8), the Committee noted the concerns expressed by the delegation of Norway on the consequences of the above decision. In this connection, the Committee also noted the information from the observer from IACS that the views and decisions taken by SDC 3 in regard to IACS UI TM3 will be reported to IACS members as a priority matter (SDC 3/21, paragraph 14.27).

11.41 Subsequently, the Committee noted the information from the IACS observer that IACS had withdrawn IACS UI TM3 and, therefore, it will not be implemented by its members.
12 HUMAN ELEMENT, TRAINING AND WATCHKEEPING

REPORT OF THE THIRD SESSION OF THE SUB-COMMITTEE

General

12.1 The Committee approved, in general, the report of the third session of the Sub-Committee on Human Element, Training and Watchkeeping (HTW 3/19 and MSC 96/12) and took action as indicated hereunder.

New GISIS module related to Reporting and information communication requirements

12.2 The Committee approved sections 1 to 5 of the framework (HTW 3/19, paragraph 5.40 and annex 2) of a proposed new GISIS module related to Reporting and information communication requirements under articles IV, VIII and IX of the STCW Convention, 1978, as amended.

Comprehensive review of the 1995 STCW-F Convention

12.3 The Committee approved the list of principles and the provisional scope for the comprehensive review of the 1995 STCW-F Convention (HTW 3/19, paragraph 6.11 and annex 3).

Revised guidelines on the implementation of the ISM Code by Administrations

12.4 The Committee, noting that MEPC 69 had approved the draft Assembly resolution related to the revision of the guidelines on the implementation of the ISM Code, subject to concurrent decision by MSC 96, approved the draft Assembly resolution on Revised guidelines on the implementation of the ISM Code by Administrations, as set out in annex 22, for submission to the thirtieth session of the Assembly for adoption.

Amendments to the STCW Convention and Code relating to passenger-ship specific training

12.5 The Committee approved the draft amendments to the STCW Convention and parts A and B of the STCW Code, as set out in annexes 8, 9 and 10, respectively.

12.6 The Committee instructed the Secretariat to make any editorial changes required, and requested the Secretary-General to circulate them in accordance with article XII (1)(a)(i) of the STCW Convention with a view to adoption by MSC 97 (see paragraphs 3.98, 3.99 and 12.5).

Damage control drills for passenger ships

12.7 The Committee recalled that it had approved the proposed text of the draft new SOLAS regulation II-1/19-1.2 on Damage control drills for passenger ships, incorporating the proposal by HTW 3, under agenda item 11 (see paragraph 11.17).

Guidelines for port State control officers on certification of seafarers, hours of rest and manning

12.8 The Committee endorsed the Sub-Committee’s recommendation to forward the amendments to the main body of the draft Guidelines for port State control officers on certification of seafarers, hours of rest and manning to III 3 to consider those provisions left in square brackets, taking into account that further work on the annexes to the draft Guidelines is expected to be finalized at HTW 4.
Guidance on provision of STCW-related documentation to port State control officers and other third-party inspection regimes

12.9 The Committee considered document MSC 96/12/2 (United States and ICS), identifying an inconsistency in the interpretation of the 1978 STCW Convention, as amended, relating to the provision of documentary evidence to port State control officers and other third-party inspection regimes, and proposing that appropriate guidance is developed by the Organization to provide the necessary clarity.

12.10 In the ensuing discussion, the following views were expressed:

.1 there is an inconsistency in the interpretation of the 1978 STCW Convention, as amended, relating to the provision of documentary evidence to port State control officers and other third-party inspection regimes;

.2 the root causes for the erroneous interpretation by port State control officers (PSCOs) to demand course completion certificates or references to IMO model courses during port State control inspections should be ascertained; and

.3 appropriate guidance should be developed to provide necessary clarity to PSCOs.

12.11 After some discussion, the Committee agreed that appropriate guidance relating to the provision of documentary evidence to PSCOs and other third-party inspection regimes should be developed by the Organization to provide the necessary clarity and, subsequently, instructed HTW 4 to consider document MSC 96/12/2 under its agenda item on "Guidance on the implementation of the 2010 Manila Amendments (5.2.2.1)", along with relevant proposals submitted to that session on this issue.

12.12 Having considered the view to avoid multiple references in IMO documents and recalling that the III Sub-Committee was currently reviewing the Procedures for port State control (A.1052(27)), the Committee instructed the HTW Sub-Committee to provide relevant input to the III Sub-Committee for its consideration on this matter.

Secretary-General's report pursuant to STCW regulation I/7, paragraph 2

12.13 In introducing the Secretary-General's report (MSC 96/WP.3), the Director of the Maritime Safety Division, on behalf of the Secretary-General, advised the Committee that, in preparing the report required by STCW regulation I/7, paragraph 2, he had solicited and taken into account the views of the competent persons selected from the list established pursuant to paragraph 7 of section A-I/7 of the STCW Code and circulated as MSC.1/Circ.797. The report, as required by MSC.1/Circ.1448, was comprised of:

.1 the Secretary-General's report to the Committee;

.2 a description of the procedures followed;

.3 a summary of the conclusions reached in the form of a comparison table; and

.4 an indication of the areas which were not applicable to the Member State concerned.
12.14 The Committee was subsequently invited to consider the reports attached to document MSC 96/WP.3 for the purpose of confirming that the information provided by the Member State concerned demonstrated that full and complete effect was given to the provisions of the STCW Convention.

12.15 As was the case with the Secretary-General's reports to its previous sessions, the Committee agreed to consider the reports in order to:

.1 identify, from the Secretary-General's report, the scope of information evaluated by the panels;
.2 review the procedures report to identify any entries requiring clarification;
.3 review the information presented in comparison table format to ensure that it was consistent with the Secretary-General's report; and
.4 confirm that each report reflected that the procedures for the assessment of the information provided by the Member State concerned had been correctly followed.

12.16 The Committee confirmed that the procedures for the assessment of the information provided had been correctly followed in respect of the two STCW Parties included in the Secretary-General's report and instructed the Secretariat to issue an updated circular as MSC.1/Circ.1163/Rev.10.

Secretary-General's report pursuant to STCW regulation I/8

12.17 In introducing the Secretary-General's report (MSC 96/WP.3/Add.1), the Director of the Maritime Safety Division, on behalf of the Secretary-General, advised the Committee that, in preparing the reports required by STCW regulation I/8, paragraph 3, he had solicited and taken into account the views of the competent persons selected from the list established pursuant to paragraph 7 of section A-I/7 of the STCW Code and circulated as MSC.1/Circ.797. Each report, as required by MSC.1/Circ.1449, was comprised of:

.1 the Secretary-General's report to the Committee;
.2 a description of the procedures followed; and
.3 a summary of the conclusions reached in the form of a comparison table.

12.18 The Committee was subsequently invited to consider the reports attached to document MSC 96/WP.3/Add.1 for the purpose of confirming that the information provided by the STCW Parties pursuant to STCW regulation I/8 confirmed that full and complete effect was given to the provisions of the STCW Convention.

12.19 As was the case with the Secretary-General's reports to previous sessions of the Committee, the Committee agreed to consider all the reports collectively in order to:

.1 review the procedures report to identify any entries requiring clarification;
.2 review the information presented in comparison table format; and
confirm that each report reflected that the procedures for the assessment of the information provided by the Parties concerned had been correctly followed.

12.20 The Committee confirmed that the procedures for the assessment of information provided had been correctly followed in respect of 10 STCW Parties and requested the Secretariat to issue an updated circular MSC.1/Circ.1164/Rev.16.

Approval of competent persons

12.21 The Committee approved additional competent persons nominated by Member States (MSC 96/12/1) and requested the Secretariat to issue an updated circular as MSC.1/Circ.797/Rev.28.

12.22 In this regard, the Chairman urged Member States to nominate additional competent persons to assist the Secretary-General.

13 POLLUTION PREVENTION AND RESPONSE

Report of the third session of the Sub-Committee

13.1 The Committee, having considered the action requested in paragraph 2 of document MSC 96/13, approved the draft MSC-MEPC.2 circular on Example of a Certificate of Protection for products requiring oxygen-dependent inhibitors, as set out in annex 23, subject to concurrent approval by MEPC 70.

14 NAVIGATION, COMMUNICATIONS, SEARCH AND RESCUE

URGENT MATTERS EMANATING FROM THE THIRD SESSION OF THE SUB-COMMITTEE

General

14.1 The Committee considered urgent matters emanating from the third session of the Sub-Committee on Navigation, Communications and Search and Rescue (NCSR) (NCSR 3/29 and MSC 96/14) and took action as indicated hereunder.

Corrections to existing routeing systems

14.2 The Committee approved COLREG.2/Circ.66/Corr.1 on corrections to the amendments to the existing traffic separation schemes "Off Friesland", and SN.1/Circ.327/Corr.2 on corrections to the amendments to the mandatory route for tankers from North Hinder to the German Bight, and agreed that these corrections would take immediate effect.

Traffic separation schemes (TSSs) and associated measures

14.3 In accordance with resolution A.858(20), the Committee adopted the following establishment of new, and amendments to existing, traffic separation schemes and associated measures:

.1 establishment of a new traffic separation schemes "Off Southwest Australia";

.2 establishment of a new traffic separation scheme "In the Corsica Channel";
amendments to the existing traffic separation scheme "In the Approaches to Hook of Holland and at North Hinder" and associated measures, superseding the existing precautionary areas "In the approaches to Hook of Holland and at North Hinder";

.4 amendments to the existing traffic separation scheme "At West Hinder"; and

.5 amendments to the existing traffic separation scheme "In Bornholmsgat",

for dissemination by means of COLREG.2/Circ.67.

**Routeing measures other than traffic separation schemes (TSSs)**

14.4 In accordance with resolution A.858(20), the Committee adopted the following establishment of new, and amendments to existing, routeing measures other than traffic separation schemes:

.1 establishment of new two-way routes and precautionary areas "Approaches to the Schelde estuary", superseding the existing precautionary area "In the vicinity of Thornton and Bligh Banks";

.2 establishment of new routeing measures "In Windfarm Borssele"; and

.3 amendments to the existing area to be avoided "Off the coast of Ghana in the Atlantic Ocean",

for dissemination by means of SN.1/Circ.333.

**Implementation of the adopted routeing measures**

14.5 The Committee decided that the new routeing measures detailed in paragraphs 14.3 and 14.4 be implemented as follows:

.1 routeing measures set out in paragraphs 14.3.1, 14.3.2 and 14.4.3, on 1 December 2016;

.2 routeing measures set out in paragraph 14.3.5, on 1 January 2017; and

.3 routeing measures set out in paragraphs 14.3.3, 14.3.4, 14.4.1 and 14.4.2, on 1 June 2017.

**Recognition of Galileo as a component of the WWRNS**

14.6 Having noted that formal promulgation as required under paragraph 2.2.2 of the annex to resolution A.1046(27) had been received, the Committee recognized the Galileo Global Navigation Satellite System as a component of the World-Wide Radionavigation System, for dissemination by means of SN.1/Circ.334.

**Recognition of Iridium mobile satellite system as a GMDSS service provider**

14.7 The Committee endorsed the view of the Sub-Committee that Iridium could be incorporated into the GMDSS subject to compliance with outstanding issues, as set out in annex 1 to document NCSR 3/WP.5, with the understanding that the Sub-Committee, based on the evaluation reports from IMSO, would advise the Committee in future on recognition, when the issues identified have been complied with.
Performance standards for shipborne GMDSS equipment to accommodate additional providers of GMDSS satellite services

14.8 The Committee considered the scope of application of the performance standards for ship-borne GMDSS equipment to accommodate additional providers of GMDSS satellite services. Having noted the majority of the delegations who spoke supported that the new performance standards should be generic, the Committee agreed that these performance standards should be applicable to all new equipment, to be approved, of all providers after the effective date. In this context, it was agreed that a transition period would be required for equipment already under development.

Detailed Review of the GMDSS

14.9 The Committee approved, in accordance with the revised Plan of Work (NCSR 1/28, annex 11), the outcome of the Detailed Review of the GMDSS (NCSR 3/29, annex 7) and the continuation of the project in developing the Modernization Plan.

Measures to protect the safety of persons rescued at sea

14.10 The Committee recalled that MSC 95, during a special session on unsafe mixed migration by sea, forwarded the industry-developed guidance on "Large-scale rescue operations at sea: Guidance on ensuring the safety and security of seafarers and rescued persons" issued by ICS to the NCSR Sub-Committee for consideration and instructed NCSR 3 to report back to MSC 96.

14.11 Having noted the outcome of discussions at NCSR 3, the Committee encouraged Member States and observer organizations to promote the availability of the industry Guidance as widely as possible, and agreed that no further action had to be taken by the Sub-Committee with regard to the industry Guidance.

PROGRESS MADE IN THE DEVELOPMENT OF VHF DATA EXCHANGE SYSTEM (VDES)

14.12 The Committee noted with appreciation the information contained in document MSC 96/INF.10 (IALA), informing on the progress made in the development of the VHF Data Exchange System (VDES).

MARINE METEOROLOGICAL MONITORING SURVEY 2016

14.13 The Committee noted that the World Meteorological Organization (WMO) was conducting its Marine Meteorological Monitoring Survey 2016, and had requested the Secretary-General to encourage Member States and international organizations to invite users to participate in the online survey. Accordingly, the Committee urged Member States and international organizations to invite users to participate in the online survey using the address http://www.wmo.int/MMMS016.

LAUNCH OF MISSILES WITHOUT GIVING NAVIGATIONAL WARNINGS

14.14 The Committee noted the statement made by the delegation of the Republic of Korea, expressing concern regarding the launch of missiles and GPS jamming by the Democratic People’s Republic of Korea without giving navigational warnings, as set out in annex 29.

14.15 The delegations of Australia, France, Japan, the Marshall Islands and the United States also expressed their concerns, supporting the view of the Republic of Korea, as set out in annex 29.
14.16 The Committee noted the response of the delegation of the Democratic People’s Republic of Korea, as set out in annex 29.

15 CAPACITY BUILDING FOR THE IMPLEMENTATION OF NEW MEASURES

General

15.1 The Committee recalled that MSC 95 (MSC 95/22, paragraph 13.3) had requested the Vice-Chairman of the Committee, in consultation with the Chairman and assisted by the Secretariat, to submit, to MSC 96, a preliminary assessment of the capacity-building implications and technical assistance needs related to approved amendments to mandatory instruments and the new outputs related to mandatory instruments, which were approved at that session.

Assessment of capacity-building implications for the implementation of new measures

15.2 The Committee considered document MSC 96/15 (Vice-Chairman), providing the outcome of the aforementioned preliminary assessment, and agreed with the assessment that some items had capacity-building implications and that technical assistance may be needed, which could be further addressed through the Organization’s Integrated Technical Cooperation Programme (ITCP). Therefore, the Committee concluded that it was not necessary to establish the Ad Hoc Capacity-building Needs Analysis Group (ACAG) at this session.

Preliminary assessment for the next session

15.3 The Committee requested the Vice-Chairman, in consultation with the Chairman and with the assistance of the Secretariat, to submit, to MSC 97, a preliminary assessment of the capacity-building implications and technical assistance needs related to approved amendments to mandatory instruments and the new outputs related to mandatory instruments approved at this session.

16 FORMAL SAFETY ASSESSMENT, INCLUDING GENERAL CARGO SHIP SAFETY

Review of general cargo ship safety

16.1 The Committee recalled that MSC 95 noted that consideration of the matters related to general cargo ship safety might be completed following the consideration of the extended survey on general cargo ships by the III Sub-Committee (MSC 95/22, annex 19).

16.2 In view of the above, the Committee noted that III 2, taking into account the absence of proposals submitted on the matters related to general cargo ship safety to FSI 21, III 1 and III 2, and based on paragraph 5.12 of the Committees’ Guidelines (MSC-MEPC.1/Circ.4/Rev.4) on the case of outputs for which no submissions had been received for two consecutive sessions, had concluded, subject to the Committee’s concurrence, that the consideration of matters related to general cargo ship safety had been completed (III 2/16, paragraph 12.4).

16.3 The Committee, having noted that the Assembly, at its twenty-ninth session, removed the output on Review of general cargo ship safety (5.2.1.3) from the High-level Action Plan of the Organization and priorities for the 2016-2017 biennium (resolution A.1098(29)), endorsed the conclusion of III 2 that the consideration of matters related to general cargo ship safety had been completed. Subsequently, the Committee agreed not to include the item on “General cargo ship safety” on the provisional agenda for MSC 97.
FORMAL SAFETY ASSESSMENT (FSA)

Collection of casualty information and reports of the FSA Experts Group

16.4 Following the Secretary-General’s request to deal proactively with safety issues, based on analysis of the statistics related to maritime casualties, the Committee considered the recommendations set out in paragraphs 27.2 and 27.13 of the FSA Experts Group’s report (SDC 3/3/4).

16.5 In addition to encouraging Member States to upload more specific casualty information onto GISIS, the Committee reviewed the following comments, which were noted by the FSA Experts Group and the SDC Sub-Committee, without taking any specific actions:

.1 the reporting of accidents/incidents by Member States should be revisited to enhance the quality and relevance of the data available in GISIS, for the purpose of carrying out FSA studies;

.2 a revised format of reporting casualties should be set up to ensure the transparency of the information available in GISIS; and

.3 only Member States (not international organizations) were allowed to upload information onto GISIS.

16.6 In this context, the Committee also noted the following views expressed on this issue:

.1 the concept of decision making based on truly representative and reliable information should be utilized;

.2 when a ship was involved in an incident, it would be a normal practice to provide the information on the incident and its consequences to the flag Administration;

.3 it would be beneficial to further encourage the use of GISIS to facilitate efficient submission of specific incident data from the flag Administration to IMO, with a view to developing a representative database that could be relied on for use in FSA studies, for general statistical analysis and justification of relevant policy decisions;

.4 the casualty information currently available in GISIS should be analysed, with a view to its utilization for the purpose of conducting FSA studies;

.5 GISIS could not provide casualty statistics needed for FSA studies and, therefore, the use of commercially available data sources could not be avoided, because only such data sources provided information on the root cause of incidents required for identification of preventing or mitigating measures; and

.6 document MSC 96/INF.6 could be used as a good basis for further discussion.

16.7 After a brief discussion, the Committee encouraged Member States to note the above views when uploading casualty information onto GISIS and agreed that interested Member States and international organization could submit comments and proposals on enhancing the quality and relevance of the casualty data reported by means of GISIS for consideration at the next session.
16.8 The Committee endorsed the view of the FSA Experts Group that it may be appropriate to have all the reports previously made by the Group collected and uploaded onto IMODOCS for ease of reference; and requested the Secretariat to create a separate folder onto IMODOCS, under "Meeting Documents", for uploading the reports previously made by the FSA Experts Group and collecting new ones.

Survivability of passenger ships

16.9 The Committee recalled that it had dealt with the finalization of draft amendments to SOLAS chapter II-1, including the report of the FSA Experts Group on the validation of the EMSA 3 study on survivability of passenger ships, under agenda item 11 (see paragraphs 11.2 to 11.4).

Information on fire safety related to the transport of vehicles with electric generators or electrically powered vehicles on ro-ro and ro-pax ships

16.10 The Committee considered the following documents on fire safety related to the transport of vehicles with electric generators or electrically powered vehicles on ro-ro and ro-pax ships:

   .1 MSC 96/16/1 (Austria et al.), providing information on fire safety in connection with the transport of vehicles with electric generators or electrically powered vehicles, based on the results of an FSA study of transport processes of electric vehicles and vehicles with refrigeration units on ro-ro and ro-pax vessels, carried out by Germany (SSE 2/INF.3 and MSC 96/INF.3), and advising that the FSA contains measures to be further considered by the appropriate sub-committees (i.e. SSE, CCC and HTW); and

   .2 MSC 96/INF.3 (Germany), reporting the outcome of the FSA study for ro-ro and ro-pax ships regarding the transport of electrically powered vehicles and vehicles with refrigeration units.

16.11 In considering the above documents, the Committee noted the following views:

   .1 a new output is required to consider the need of any amendments to SOLAS regulation II-2/20, in accordance with the Committees' Guidelines on the organization and method of work (MSC-MEPC.1/Circ.4/Rev.4);

   .2 as per annex 6 to the Committees' Guidelines, to accept the outcomes of the FSA studies, set out in documents SSE 2/INF.3 and MSC 96/INF.3, as a justification for a new output, these studies should be verified by the FSA Experts Group;

   .3 the proposal should be submitted as a substantive document rather than an information document;

   .4 this would be a complex issue requiring close cooperation between experts on dangerous goods and on fire safety; and

   .5 development of amendments to SOLAS regulation II-2/20 should be considered as an urgent matter, with a view to entering into force on 1 January 2020.

16.12 Following discussion, the Committee invited interested Member States to submit a justification for a new output on Review of SOLAS regulation II-2/20, for consideration at the next session.
Update on the safety level of bulk carriers and comparison with predictions in previous FSA studies

16.13 The Committee noted with appreciation the information contained in document MSC 96/INF.6 (France and Germany), providing an update on the safety level of bulk carriers and comparison with predictions in previous FSA studies.

17 PIRACY AND ARMED ROBBERY AGAINST SHIPS

17.1 In considering document MSC 96/17 (Secretariat), the Committee noted, in particular, that:

.1 MSC.4/Circ.232, containing the 2015 annual report on acts of piracy and armed robbery against ships, had been published in April 2016;

.2 the industry co-sponsors of BMP 4 had announced a revised High Risk Area (HRA), effective as from 1 December 2015;

.3 the Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia – Information Sharing Centre (ReCAAP-ISC) had released a new regional guide to counter piracy and armed robbery against ships in Asia;

.4 the Djibouti Regional Training Centre building in Djibouti, intended to support regional maritime security and counter-piracy training in the region, had formally been opened on 12 November 2015;

.5 only a low number of Member States had provided information to the Organization on national points of contact for communication of information on piracy and armed robbery; and

.6 a formal consultation process related to expanding the use of the LRIT Information Distribution Facility (IDF) for the automatic provision of flag State LRIT information to the Maritime Trade Information Sharing Centre Gulf of Guinea (MTISC-GoG) on a voluntary basis had been conducted in September/October 2015.

17.2 In the ensuing discussion, the majority of the delegations that spoke, noting the positive results from the use of the IDF in the Gulf of Aden and the western Indian Ocean and the increasing number of piracy attacks in the Gulf of Guinea, supported expanding the use of the IDF to the Gulf of Guinea, allowing the voluntary provision of flag State LRIT information to MTISC-GoG.

17.3 Accordingly, the Committee authorized expanding the use of the IDF to the Gulf of Guinea and requested the Secretariat to prepare a draft MSC resolution in this respect for consideration and adoption by MSC 97.

17.4 The Committee also urged Member States to:

.1 provide information to the Organization on national points of contact for communication of information on piracy and armed robbery using the Contact Points module of GISIS; and

.2 continue to report information on piracy and armed robbery incidents through the Secretariat (marsec@imo.org), using the reporting form set out in appendix 5 of MSC.1/Circ.1333/Rev.1.
17.5 The Committee noted with appreciation the information contained in document MSC 96/INF.5 (ReCAAP-ISC) providing an update on the activities carried out by the ReCAAP-ISC and the situation of piracy and armed robbery against ships in Asia for the year 2015, as well as the additional oral update from ReCAAP-ISC.

17.6 The Committee also noted with appreciation the information contained in document MSC 96/INF.11 (Marshall Islands), providing a progress report on the completion of a comprehensive survey of the number of floating armouries in the HRA to ascertain the extent of their use and methods of operation, and invited flag States to consider supporting the completion of the comprehensive survey.

18 UNSAFE MIXED MIGRATION BY SEA

18.1 The Committee recalled that MSC 95, during a special session on unsafe mixed migration by sea to consider the outcome of the inter-agency High-level meeting, had considered key issues within its competence, including search and rescue and operation of merchant ships in view of the recent development of mass rescue of migrants.

18.2 The Committee recalled that MSC 95 had:

.1 agreed to place on the agenda of MSC 96 an item on "Unsafe Mixed Migration by Sea";

.2 invited Member States to make submissions to MSC 96, further elaborating on the issues and suggestions that they raised during MSC 95;

.3 placed a new output 5.1.2.2 (Measures to protect the safety of persons rescued at sea) on the agenda of NCSR 3 from the 2016-2017 biennium agenda; and

.4 forwarded the industry-developed guidance on "Large-scale rescue operations at sea: Guidance on ensuring the safety and security of seafarers and rescued persons" issued by ICS to the NCSR Sub-Committee for consideration and instructed NCSR 3 to report back to MSC 96.

18.3 The Committee recalled further that, MSC 95 having considered documents MSC 95/21/10 and Add.1 (Secretariat) on Joint databases IMO/IOM/UNODC on migrant incidents and on suspected smugglers and vessels, the Committee had:

.1 accepted, as work in progress, the amended reporting format set out in the annex to document MSC 95/21/10/Add.1;

.2 forwarded MSC/Circ.896/Rev.1 and the revised format to FAL Committee for its consideration from that Committee's point of view with a view to adopting a joint MSC/FAL circular by FAL 40 and MSC 96; and

.3 invited Member States to bring the amended reporting format to the attention of all parties concerned, and to provide timely and accurate information on migrant incidents and on suspected smugglers and vessels to the Organization via the Facilitation module in GISIS.

18.4 The Committee noted that A 29, following the decisions made by MSC 95 and LEG 102, had approved a new output on "Unsafe Mixed Migration by sea" in the High-level Action Plan of the Organization, allocating MSC, LEG and FAL Committees as parent organs.
The Committee was informed that, at the invitation of Italy, an Informal Meeting to Review the Legal Framework for the Rescue of Mixed Migrants at Sea was held at IMO Headquarters on 21 September 2015.

The Committee recalled that the outcome of NCSR 3 on the industry-developed guidance on "Large-scale rescue operations at sea: Guidance on ensuring the safety and security of seafarers and rescued persons" issued by ICS was already considered by the Committee under agenda item 14 (Navigation, communications, search and rescue).

The Committee noted that no documents had been submitted on this agenda item.

The Committee was informed on the outcome of FAL 40 on this subject, and specifically that:

1. FAL 40 had noted the information on the new inter-agency platform for information sharing on migrant smuggling by sea, and had encouraged Member States to provide timely and accurate information on migrant incidents and on suspected smugglers and vessels to the Organization via the facilitation module in GISIS;

2. in considering the request of MSC 95 to review MSC/Circ.896/Rev.1, FAL 40 had agreed that:
   1. the non-mandatory nature of the text of the guidelines should be retained;
   2. the first paragraph of the annex to the draft revised circular relating to the Convention on transnational organized crime should be deleted;
   3. the third paragraph of the annex to the draft revised circular should refer to Member States rather than Contracting Governments;
   4. with respect to the reporting format in the appendix to the annex to the draft revised circular, the title of the report should reflect that it is concerned with migrant incidents at sea;
   5. in the reporting format, it was unclear what the difference was between the information sought in the "Brief description of incident and measures taken" and the "Details of smuggling of migrants by sea" fields. The two fields should be merged; and
   6. to facilitate future updating, the circular should remain as an MSC circular under the purview of MSC rather than become a joint MSC-FAL circular.

In light of the foregoing, the Committee instructed the Secretariat to prepare the draft MSC circular, including the aforesaid amendments, for consideration by the Committee with a view to approval.

The Committee, having considered document MSC 96/WP.12, approved MSC.1/Circ.896/Rev.2 on Interim measures for combating unsafe practices associated with the trafficking, smuggling or transport of migrants by sea.
18.11 The Committee authorized the Secretariat to effect any required editorial amendments which may be found necessary during the preparation of the document and issue the aforesaid circular as MSC.1/Circ.896/Rev.2.

18.12 The delegation of Malta, while welcoming the approval of the above mentioned MSC circular as a significant step forward in addressing the issues related to irregular migration at sea, expressed the following opinions:

.1 in order to have prompt access to the flag State authorities of ships engaged in unsafe practices associated with the trafficking, smuggling or transport of migrants by sea, it was important for Member States to keep the list of contacts in GISIS updated, as necessary, and that the Secretariat should actively pursue this;

.2 notwithstanding the positive significance of this MSC circular, it should still be considered as work in progress and, in a future version of the circular, additional consideration should be given to, inter alia, the following:

.1 that commercial ships, following instructions of an MRCC, are required to remain in an area pending or during search and rescue operations related to the rescue of persons at sea;

.2 operations of transfer of persons at sea between two ships both engaged in the illegal activity; and

.3 information to be provided preferably also by ships owned or operated by a Government and used, both on a permanent or an ad hoc basis, in the rescue of persons at sea.

18.13 The Committee instructed the Secretariat to provide, at MSC 97, information on reported cases received from Member States along with information, if any, with regards to interventions related to the SUA Convention on the effectiveness of the reporting information included in the appendix of MSC.1/Circ.896/Rev.2.

18.14 The Committee was informed on the outcome of Symposium on Migration by Sea, held at the World Maritime University in Malmo on 26 and 27 April 2016, that brought together a range of organizations, subject-matter experts and academics to address a range of issues related to mixed migration by sea. Five panels discussed an assessment of migration by sea, human rights in relation to migration, migrants and human trafficking by sea, safety and security aspects of migration by sea, and international law related to liability and insurance.

18.15 The Symposium identified ten critical needs to:

.1 maintain pressure on the UN to look again at safe refuges for migrants before they embark, to convey asylum seekers and the most vulnerable to safety in proper craft (i.e. ferries), thus removing them from the hands of traffickers and people smugglers;

.2 recognize the welfare of seafarers who may be traumatized by horrific rescue missions;

.3 better resource reception facilities, not leaving coastal States to cope with the burdens on their own;
4 have more practical and pragmatic asylum policies;
5 look more closely at push factors to stop being so squeamish and politically correct about often appallingly bad governance and corruption in countries driving their people away;
6 learn from each other and to see the value of bilateral and interagency cooperation at an operational level;
7 have more capacity building, technology transfer and help those less capable around the world with what is being learned at sea and ashore in the current crisis;
8 have regular briefings and more transparency to dispel rumours, which can travel fast in an era of instant communications and can affect migrant reactions;
9 better liaison between Government agencies and shipping companies (as is done by the Information Fusion Centre (IFC) in Singapore), which is clearly useful and might be transferred elsewhere with advantage; and
10 provide masters of ships with the maximum amount of support in their rescue missions, from all interests, so that they need have no fears or doubts about their need to intervene.

18.16 The Committee expressed its appreciation to WMU for organizing this important conference. Further details of the Symposium can be found on the WMU website at http://www.wmu.se/news/symposium, and presentations can be downloaded from the WMU "Maritime Commons" platform at http://commons.wmu.se/migration_by_sea.

19 ANALYSIS AND CONSIDERATION OF RECOMMENDATIONS TO REDUCE ADMINISTRATIVE BURDENS IN IMO INSTRUMENTS INCLUDING THOSE IDENTIFIED BY THE SG-RAR

19.1 The Committee recalled the decision of C 113 to request the relevant committees to review administrative requirements under their purview and to consider how to proceed with the outcome of the Ad Hoc Steering Group on Reducing Administrative Requirements (SG-RAR)'s work, with a view to developing appropriate outputs to be included in the High-level Action Plan (HLAP) for 2016-2017.

19.2 The Committee also recalled that MSC 95 had noted the 167 requirements under the Committee's purview, compiled by the Secretariat and contained in the annex to document MSC 95/21, and having concurred with the Secretariat's conclusion that further work was required, to take an informed decision on that matter. In this regard, MSC 95 had:

1 instructed the Secretariat to analyse the information in the annex to document MSC 95/21, taking into account the recent decisions by A 28 concerning reporting through GISIS (A.1074(28)) and any output on the issue from MEPC 68 (which has concurred), and report the outcome of this analysis to MSC 96;
2 instructed the Secretariat to prepare information for seafarers and interested stakeholders on the key aims of the ISPS Code; and
19.3 In considering documents MSC 96/19 and Corr.1 (Secretariat), providing the Secretariat's analysis of the information in the annex to document MSC 95/21, together with recommendations for each reporting requirement identified as an administrative burden by the SG-RAR, the Committee noted the following views:

1. most of the responses to the public consultation on administrative requirements were from seafarers and shipping managers and gave clear insights on the practical impact of administrative requirements;

2. the clear engagement of seafarers and shipping managers, who are the Parties most affected by mandatory IMO regulations, creates a moral obligation on the Organization to follow up on their responses;

3. the III Sub-Committee could be requested to consider the feasibility of using electronic documentation other than electronic certificates (manuals, plans, etc.), with a view to advising the Committee;

4. there should be no need to provide justification for the establishment of new outputs or the expansion of the scope of existing outputs in order to consider relevant perceived administrative burdens, since the public consultation and the recommendation thereon, approved by both the Council and the Assembly, have provided ample justification for action to be taken; and

5. the recommendations by the Secretariat should be forwarded to the relevant Sub-Committees for consideration, with a view to preparing any necessary amendments to IMO mandatory requirements in order to alleviate administrative burdens.

19.4 Having considered the Secretariat's analysis (MSC 96/19 and Corr.1) and the above views, the Committee:

1. encouraged Member States to use GISIS modules to fulfil relevant reporting requirements, taking into account resolution A.1074(28);

2. urged Administrations to expedite the implementation of electronic certificates, taking into account the guidance provided in FAL.5/Circ.39/Rev.2;

3. encouraged interested Member States and international organizations to review the recommendations of the Secretariat, on the feasibility of using electronic documentation other than electronic certificates, in conjunction with the relevant outcome of the FAL Committee (FAL 40/19, section 6 and paragraphs 17.1 to 17.8) and MEPC (MEPC 69/21, sections 9 and 17), with a view to submitting proposals to MSC 97, under the agenda item “Implementation of instruments and related matters”, on whether the use of electronic documentation other than electronic certificates is feasible and how such use could be addressed (e.g. amendments to mandatory IMO instruments or development of guidance);
agreed that no action is necessary with regard to reporting requirements that had been identified by the SG-RAR as being similar to other requirements, having noted the conclusion of the Secretariat that each such requirement addresses distinct safety aspects;

.5 instructed the HTW 4 to continue its work on the development of a framework for a GISIS module relating to the STCW Convention and Code;

.6 agreed that no further action is necessary with regard to the reporting requirements in the ISPS Code and SOLAS chapter XI-2, having taken into account the instruction of MSC 95 to the Secretariat, to prepare information for seafarers and interested stakeholders on the key aims of the ISPS Code;

.7 agreed that no action is necessary with regard to requirements relating to the work of the IMO depositary;

.8 agreed that no further action is required for the perceived administrative burdens contained in rows 4, 22, 27, 81, 121, 145, 151, 152, 158, 162 and 163 of the annex to document MSC 96/19;

.9 instructed NCSR 4 to further consider the perceived administrative burdens and the Secretariat’s recommendations contained in rows 123 and 128 of the annex to document MSC 96/19 under the existing output on Revised Guidelines and criteria for ship reporting systems (resolution MSC.43(64)), with a view to advising the Committee on how best to proceed; and

.10 instructed NCSR 4 to further consider the perceived administrative burdens and the Secretariat’s recommendations contained in rows 126, 127, 129 and 130 of the annex to document MSC 96/19, under the agenda item "Any other business", with a view to advising the Committee on how best to proceed.

20 IMPLEMENTATION OF INSTRUMENTS AND RELATED MATTERS

Status of footnotes in the IGF Code

20.1 The Committee considered document MSC 96/20/2 (Secretariat), identifying a number of footnotes in the IGF Code that do not refer to a guideline, standard or recommendation but may be considered substantive, i.e. footnotes that are not merely referential; and inviting the Committee to review such footnotes and decide, as appropriate, with regard to their legal status, and instruct the Secretariat accordingly with respect to the publication text.

20.2 Having noted the support for the established practice within the Organization, the Committee confirmed that the above footnotes do not form part of the authentic text of the IGF Code. In addition, taking into account that footnotes, which are not merely referential, provide useful information and are recommendatory in nature, the Committee agreed that the footnotes in the IGF Code should be included in the sales publication.
Clarifications on issues relevant to implementation of the RO Code

20.3 The Committee considered document MSC 96/20 (Palau), seeking clarification on the correct application of the Code for Recognized Organizations (RO Code) in respect of the transfer of RO in conjunction with the change of flag, transfer of RO at completion of certification cycle, certification of vessels proceeding for demolition, and certification by flag appointed surveyors other than ROs.

20.4 While some delegations supported the views raised in document MSC 96/20, the Committee, noting that the majority of the delegations did not agree to the proposals in the document (in particular, relating to transfer of class and transfer of flag; the flag State’s authority and responsibility to ensure the safety of a vessel for her single voyage for demolition; and the adequacy of existing provisions on the qualification requirements for flag State surveyors), invited the Republic of Palau to submit a document, as deemed appropriate, to the next session in accordance with the Committees' Guidelines (MSC-MEPC.1/Circ.4/Rev.4).

New GISIS module on Development of amendments to the 1974 SOLAS Convention and related mandatory instruments

20.5 The Committee noted with appreciation the information provided in document MSC 96/20/1 (Secretariat) on the availability of a new GISIS module, based on the request by MSC 94, on Development of amendments to the 1974 SOLAS Convention and related mandatory instruments, in order to keep records of the development of draft amendments.

20.6 The Committee instructed its subsidiary bodies and the Secretariat to keep the records updated in GISIS during the preparation of draft amendments to the 1974 SOLAS Convention and related mandatory instruments, in respect of relevant decisions taken at the Committee or Sub-Committee level.

Application of the Code on Noise levels on board ships

20.7 The Committee considered document MSC 96/20/3 (Austria, et al.), providing comments on the scope of application of the Code on noise levels on board ships (resolution MSC.337(91)), as defined by SOLAS regulation II-1/3-12 (resolution MSC.338(91)), i.e. ships for which the building contract is placed before 1 July 2014, the keels of which are laid or which are at a similar stage of construction on or after 1 January 2015 and the delivery of which is before 1 July 2018, do not fall either under paragraph 1 or under paragraph 2 of SOLAS regulation II-1/3-12. The proponents of the document considered that it is not rational nor practicable for ships contracted for construction before 1 July 2014 to comply with standards of the Code, which entered into force after that date, and that it is more appropriate that such ships comply with the standards set forth in the previous Code on noise levels on board ships (resolution A.468(XII)) and an amendment to SOLAS regulation II-1/3-12 is considered necessary. They also proposed that, as an interim measure, the Committee would agree to the guidance as set out in the annex to the document.

20.8 In introducing the above document, the delegation of the Netherlands, referring to the decision by the Council that minor corrections/issues could continue to be considered by the committees under the agenda item "Any other business" (C/ES.27/D, paragraph 3.2(vi)), proposed to amend SOLAS regulation II-1/3-12, without having a new output, since the amendments can be considered as minor corrections. While the majority of the delegations supported amending the regulation to correct the error as soon as possible, some delegations expressed their concerns that the amendments may impact inadvertently some ships already under construction.
Instructions of the Drafting Group on Consideration and Adoption of Amendments to Mandatory Instruments

20.9 In light of the foregoing, the Committee instructed the Drafting Group on Consideration and Adoption of Amendments to Mandatory Instruments, established under agenda item 3, to prepare draft amendments to SOLAS regulation II-1/3-12, together with an associated draft MSC circular, taking into account information contained in document MSC 96/20/3 (annex), as well as the comments made in plenary, for the consideration of the Committee.

Report of the drafting group

20.10 Having considered part 2 of the report of the Drafting Group on Consideration and Adoption of Amendments to Mandatory Instruments (MSC 96/WP.6/Add.1), the Committee approved MSC.1/Circ.1547 on Guidance on the application of SOLAS regulation II-1/3-12 to ships delivered before 1 July 2018 and the associated draft amendments to SOLAS regulation II-1/3-12, as set out in annex 16, and requested the Secretary-General to circulate the above amendments in accordance with SOLAS article VIII, with a view to subsequent adoption at MSC 97.

21 RELATIONS WITH OTHER ORGANIZATIONS

Relations with non-governmental organizations

21.1 The Committee noted the information in document MSC 96/21 (Secretariat), reporting on decisions of C 114 and A 29 concerning relations with non-governmental organizations, applications for consultative status and related matters.

Third Joint FAO/IMO Ad Hoc Working Group on IUU Fishing and Related Matters

21.2 The Committee noted the verbal update by the Secretariat relating to the third meeting of the Joint FAO/IMO Ad Hoc Working Group on IUU Fishing and Related Matters (JWG), held at IMO Headquarters from 16 to 18 November 2015, that the full report of JWG 3 would be first considered by the 32nd session of the FAO Committee on Fisheries (COFI) in July 2016 and its outcome would be submitted to MEPC 70 and MSC 97, together with the report of JWG 3.

22 APPLICATION OF THE COMMITTEE’S GUIDELINES

General

22.1 The Committee recalled that MSC 94 had developed draft guidelines on consideration and review of the outcome of FSA studies; and approved draft amendments to section 4 of the Guidelines on the organization and method of work of the Maritime Safety Committee and the Marine Environment Protection Committee and their subsidiary bodies (MSC-MEPC.1/Circ.4/Rev.3) and a draft new annex 6, containing guidelines for considering and reviewing the outcomes of FSA studies (MSC 94/21, annex 23).

22.2 The Committee also recalled that MEPC 68 had concurrently approved the amendments to the Committees' Guidelines and that the revised Guidelines had been reissued by the Secretariat as MSC-MEPC.1/Circ.4/Rev.4.
22.3 The Committee noted that the Assembly, at its twenty-ninth session, adopted, inter alia, resolution A.1099(29) on Application of the Strategic Plan and the High-level Action Plan of the Organization, which requested the Council and the committees to review and revise, during the 2016-2017 biennium, their guidelines on the organization and method of work, taking into account the document on Application of the Strategic Plan and the High-level Action Plan of the Organization, as set out in the annex to the resolution, as appropriate.

22.4 The Committee also noted that FAL 40, in considering the application of its Guidelines, taking into account the mandatory nature of resolution A.1099(29), agreed that the current text of the Committee's Guidelines should be reviewed to reflect the mandatory character that it should have; and, in this connection, FAL 40 agreed to replace the word "guidelines" with "document" throughout the text, including the title and annexes, and to use mandatory language in the new document in order to align it with resolution A.1099(29).

22.5 The Committee further noted that MEPC 69, taking into account that the draft amendments to the Committees' Guidelines set out in the annex to document MEPC 69/18 (Secretariat) had been further developed by the Secretariat and submitted for consideration at MSC 96 (MSC 96/22), had decided to defer consideration of this matter to MEPC 70 pending the outcome of MSC 96.

Use of mandatory language

22.6 Having noted that, in the operational paragraph 2 of resolution A.1099(29), the Council and the committees are explicitly requested to "review and revise, during the 2016-2017 biennium, the guidelines for the organization and method of their work, taking account of the document on Application of the Strategic Plan and the High-level Action Plan of the Organization, as appropriate", the Committee considered the need to use mandatory language in order to align the Committees' Guidelines with resolution A.1099(29) on Application of the Strategic Plan and the High-level Action Plan of the Organization, taking into account the decisions made by FAL 40.

22.7 In discussing whether the way used by the Assembly, at its twenty-ninth session, when revising the Guidelines on the application of the Strategic Plan and the High-level Action Plan of the Organization (resolution A.1062(28)), should also be followed by the Committee (i.e. the word "guidelines" should be deleted from the title and the text, and mandatory language should be used in the revised document, based on the text set out in the annex to resolution A.1099(29)) or not, the Committee decided to use mandatory language as necessary, based on resolution A.1099(29).

Draft amendments to the Committees' Guidelines

22.8 The Committee had the following documents for consideration in regard to draft amendments to the Committees' Guidelines:

.1 MSC 96/22 (Secretariat), providing draft consequential amendments to the Committee Guidelines emanating from resolution A.1099(29) on Application of the Strategic Plan and the High-level Action Plan of the Organization and proposing some further modifications to better reflect the current method of work of the Committees and their subsidiary bodies; and

.2 MSC 96/22/1 (Russian Federation), proposing further clarification of the Committees' Guidelines regarding the deadlines for posting the documents submitted for consideration by the Committees or their subsidiary bodies onto the IMO document website (IMODOCS).
22.9 In considering document MSC 96/22/1, the Committee, having noted the following views expressed on the proposed draft amendment:

.1 analysis by the Secretariat had revealed that some of the existing deadlines specified in paragraph 6.12 of the Committees’ Guidelines might not be realistic;

.2 the Secretariat could analyse the current practice, with a view to providing the Committee with a new timeline relating to deadlines for submitting and consequent posting of documents;

.3 it might be appreciated that convening practically all meetings during the first half of the year had stretched the limits of the Secretariat;

.4 concerns expressed should not be considered as a criticism of the excellent services delivered to the membership by the IMO Conference Division;

.5 the problem identified in document MSC 96/22/1 should be addressed as a matter of urgency; however, all the three working languages should be on equal footing in the Organization; and

.6 the analysis to be done by the Secretariat should be forwarded to the Council, for consideration with a view to deciding on the need for any consequential actions,

agreed to take no specific actions relating to the deadlines for posting the documents onto IMODOCS at this session and requested the Secretariat to analyse the current practice, with a view to proposing a possible solution(s) for consideration at the next session. Furthermore, the Committee agreed to report the repeated problem with accessing documents uploaded onto IMODOCS, which occurs during the meetings, to the Council for action, as appropriate.

22.10 In considering the amendments proposed in document MSC 96/22, the Committee noted the following views expressed on this matter:

.1 it would be helpful, in order to have all required information listed in one place, if the relevant annex to the Guidance on drafting of amendments to the 1974 SOLAS Convention and related mandatory instruments (MSC.1./Circ.1500) could be referenced in the existing section 4.15 of the Committees’ Guidelines;

.2 the templates of the checklist set out in the annex to MSC-MEPC.7/Circ.1, and the check/monitoring sheet and the record format set out in annexes 2 and 3 of the annex to MSC.1/Circ.1500, respectively, should be reproduced in the Committees’ Guidelines;

.3 for the interest of small island developing States, the document should emphasize the need for assessment of capacity-building implications; and

.4 MSC.1/Circ.1500 was mainly intended to provide guidance on drafting amendments to the 1974 SOLAS Convention and related mandatory instruments and should not be referred to in the document.

22.11 Following the discussion, the Committee, taking into account the decision relating to the use of mandatory language, agreed not to include in the revised Committees’ Guidelines any references to MSC.1/Circ.1500, the checklist set out in the annex to MSC-MEPC.7/Circ.1, the check/monitoring sheet and the record format, both set out in annexes 2 and 3 of the annex to
MSC.1/Circ.1500, or any specific examples emphasizing the importance of capacity-building implications; and instructed the Secretariat to prepare the final text of the draft amendments to the Committees’ Guidelines.

22.12 Having considered document MSC 96/WP.14, containing the final draft amendments to the Committees’ Guidelines, the Committee approved them, in general, and authorized the Secretariat to make any necessary editorial amendments and to inform MEPC 70 of the Committee’s decision.

22.13 Subsequently, the Committee approved the draft MSC-MEPC circular on Organization and method of work of the Maritime Safety Committee and the Marine Environment Protection Committee and their subsidiary bodies, as set out in annex 24, subject to concurrent approval by MEPC 70, and noted that the provisions of the document would be applicable with immediate effect.

23 WORK PROGRAMME

SUB-COMMITTEE ON CARRIAGE OF CARGOES AND CONTAINERS (CCC)

Proposal for a new output on amendments to the IGC Code

23.1 The Committee considered document MSC 96/23/2 (Norway), proposing to amend the revised IGC Code to remove any inconsistencies, omissions and ambiguous wording.

23.2 The majority of the delegations that spoke expressed the opinion that the proposals included in document MSC 96/23/2 had already been considered during the most recent review of the IGC Code and, therefore, the Committee decided not to include the above proposed output in the 2016-2017 biennial agenda.

23.3 Notwithstanding the above decision, the Committee agreed:

.1 to instruct the Secretariat to issue a corrigendum to annex 6 of document MSC 93/22/Add.1, containing resolution MSC.370(93), to make an editorial correction to replace "or" by "and" in paragraph 5.9.3 of the revised IGC Code; and

.2 that the remaining parts of the above proposals could be considered under the existing agenda item on "Unified interpretation to provisions of IMO safety-, security- and environment-related Conventions (1.1.2.3)".

Proposal for a new output to amend the IGC and IGF Codes to include high manganese austenitic steel for cryogenic service

23.4 The Committee considered document MSC 96/23/5 (Republic of Korea), proposing to amend the IGC and IGF Codes to include high manganese austenitic steel for cryogenic service, and agreed to include in the 2016-2017 biennial agenda of the CCC Sub-Committee and the provisional agenda for CCC 3, a new output on “Suitability of high manganese austenitic steel for cryogenic service and development of any necessary amendments to the IGC Code and IGF Code”, with a target completion year of 2017.
23.5 The Committee further agreed, in accordance with MSC.1/Circ.1481 and MSC.1/Circ.1500, that:

.1 the amendments to be developed should not amend the scope of application of the IGC and IGF Codes, adopted respectively by resolutions MSC.370(93) and MSC.391(95);

.2 the instruments to be amended are the IGC and IGF Codes; and

.3 the amendments to be developed should enter into force on 1 January 2020, provided that they are adopted before 1 July 2018.

Proposal for a new output to remove inconsistencies between SOLAS regulations II-2/19 and II-2/20 and IMDG Code Special Provisions 961 and 962

23.6 The Committee considered document MSC 96/23/9 (Antigua and Barbuda, France and IACS), proposing a new output to amend SOLAS regulations II-2/20.2 and II-2/20-1 to address confusion regarding the provisions of SOLAS chapter II-2 relating to spaces carrying vehicles with fuel in their tanks and Special Provisions 961 and 962 in the IMDG Code, and agreed to include in the 2016-2017 biennial agenda of the CCC Sub-Committee and the provisional agenda for CCC 3, a new output on "Amendments to SOLAS regulations II-2/20.2 and II-2/20-1 to clarify the fire safety requirements for cargo spaces containing vehicles with fuel in their tanks for their own propulsion", with a target completion year of 2017, in association with the SSE Sub-Committee as and when requested by the CCC Sub-Committee.

23.7 The Committee further agreed, in accordance with MSC.1/Circ.1481 and MSC.1/Circ.1500, that:

.1 the amendments to be developed should apply to new and existing ships to which SOLAS regulations II-2/20 and II-2/20-1 apply;

.2 the instrument to be amended is the 1974 SOLAS Convention, as amended (i.e. SOLAS II-2/20.2 and II-2/20-1); and

.3 the amendments to be developed should enter into force on 1 January 2020, provided that they are adopted before 1 July 2018.

Clarification of the scope of outputs 5.2.3.3 and 5.2.3.4

23.8 The Committee considered the request of C/ES.28 to clarify the scope of output 5.2.3.3 on "Amendments to the IMSBC Code and supplements" and output 5.2.3.4 on "Amendments to the IMDG Code and supplements" in SMART terms and provide clear instructions to CCC 3.

23.9 The Committee agreed that the scope of outputs 5.2.3.3 and 5.2.3.4 was limited to the technical aspects of the cargoes only and that operational and administrative requirements associated with the IMSBC and IMDG Codes were not included within the scope of these outputs. Therefore, should any amendment to the Codes have a possible impact on other parts of the respective Codes, Member States or the Sub-Committees should present a proposal for a new output to the Committee, in accordance with the Committees' Guidelines. The Secretariat was instructed to inform CCC 3 accordingly.
Urgent matters emanating from CCC 3 to MSC 97

23.10 Due to the close proximity of CCC 3 to MSC 97, the Committee noted that only urgent matters emanating from CCC 3 would be considered by MSC 97 and, in accordance with the Committees’ Guidelines (MSC-MEPC.1/Circ.4/Rev.4), agreed that the following issues emanating from CCC 3 would be considered by MSC 97 as urgent matters:

.1 amendments to the IGF Code and development of guidelines for low flashpoint fuels;
.2 safety requirements for carriage of liquefied hydrogen in bulk;
.3 mandatory requirements for classification and declaration of solid bulk cargoes as harmful to the marine environment;
.4 matters related to liquefaction of solid bulk cargoes; and
.5 unified interpretation of the provisions of IMO safety-, security- and environment-related Conventions,

with the remaining issues being considered by MSC 98.

Biennial status report of the Sub-Committee and provisional agenda for CCC 3

23.11 The Committee, having confirmed the Sub-Committee’s previous biennial status report, approved the biennial agenda of the Sub-Committee for the 2016-2017 biennium and the provisional agenda for CCC 3, as set out in annexes 25 and 26, respectively. The Secretariat was requested to inform MEPC 70 accordingly.

SUB-COMMITTEE ON HUMAN ELEMENT, TRAINING AND WATCHKEEPING (HTW)

Biennial status report of the Sub-Committee and provisional agenda for HTW 4

23.12 The Committee approved the Sub-Committee’s biennial status report and the provisional agenda for HTW 4, as set out in annexes 25 and 26, respectively.

SUB-COMMITTEE ON IMPLEMENTATION OF IMO INSTRUMENTS (III)

Biennial status report of the Sub-Committee and provisional agenda for III 3

23.13 The Committee, having confirmed the Sub-Committee’s previous biennial status report, approved the biennial agenda of the Sub-Committee for the 2016-2017 biennium and the provisional agenda for III 3, as set out in annexes 25 and 26, respectively. The Secretariat was requested to inform MEPC 70 accordingly.

SUB-COMMITTEE ON NAVIGATION, COMMUNICATIONS AND SEARCH AND RESCUE (NCSR)

Proposal for a new output on harmonized Maritime Service Portfolios

23.14 The Committee considered document MSC 96/23/7 (Australia et al.), proposing a new output on e-navigation to define and harmonize the format and structure of MSPs and to provide guidance on the appropriate communication channels used for the electronic exchange of information between shore and ship, including any necessary coordination mechanisms and transitional arrangements that may be required, and agreed to include in the
post-biennial agenda of the Committee an output on "Develop guidance on definition and harmonization of the format and structure of Maritime Service Portfolios (MSPs)", with two sessions needed to complete the item, assigning the NCSR Sub-Committee as the coordinating organ.

23.15 The Committee expressed appreciation for the offer made by IALA in document MSC 96/23/10, commenting on document MSC 96/23/7, to contribute to the coordination of the work related to the development of MSPs. The Committee welcomed any future input from other international organizations to this work and agreed to keep the coordination of this subject under the scope of the Organization, through the NCSR Sub-Committee.

23.16 Regarding the proposal in document MSC 96/23/7 to activate the IMO-IHO Harmonization Group on Data Modelling (HGDM) to work on this output, the Committee recalled that MSC 90 had established this group, including its terms of reference, but the aforementioned group has never been formalized. Therefore, the Committee, taking into account the decision to include the output in its post-biennial agenda, agreed to invite IHO to submit a proposal to the Committee and/or to NCSR to activate the IMO-IHO Harmonization Group on Data Modelling (HGDM), to work on this issue and include the modalities, e.g. venue and frequency for consideration at a later session of the Committee.

Proposal for a new output on the application of IRNSS in the maritime field

23.17 The Committee considered document MSC 96/23/8 (India), proposing a new output to recognize the satellite navigation system "Indian Regional Navigation Satellite System (IRNSS)" as a future component of the World-Wide Radionavigation System (WWRNS) and to develop performance standards for shipborne IRNSS receiver equipment, and agreed to include in the post-biennial agenda of the Committee an output on "Application of the 'Indian Regional Navigation Satellite System (IRNSS)' in the maritime field and development of performance standards for shipborne IRNSS receiver equipment", with two sessions needed to complete the item, assigning the NCSR Sub-Committee as the coordinating organ.

Proposal for a new output for amendments to SOLAS chapter IV to accommodate additional mobile satellite systems recognized for use in the GMDSS

23.18 The Committee considered document (MSC 96/23/10) (United States), proposing to amend SOLAS chapter IV and certain other related documents to accommodate new mobile satellite systems recognized for use in the GMDSS, and agreed to include in the 2016-2017 biennial agenda of the NCSR Sub-Committee and the provisional agenda for NCSR 4, an output on "Review SOLAS chapter IV and appendix (Certificates: Forms P, R and C) to accommodate additional mobile satellite systems", with a target completion year of 2017.

23.19 Notwithstanding the heavy work load of the agenda of the NCSR Sub-Committee, the Committee agreed to include the new output as a priority for NCSR 4, and invited Member States and international organizations to streamline the proposals as much as possible to make the work of the NCSR Sub-Committee manageable, i.e. focusing on SOLAS amendments but not consequential amendments to related instruments.

23.20 The Committee further agreed, in accordance with MSC.1/Circ.1481 and MSC.1/Circ.1500, that:

1. the amendments to be developed should not amend the scope of application of SOLAS chapter IV and 1988 Protocol;
.2 the instrument to be amended is the 1974 SOLAS Convention (i.e. SOLAS chapter IV and appendix (1988 Protocol) Certificates (Forms P, R and C)); and

.3 the amendments to be developed should enter into force on 1 January 2020, provided that they are adopted before 1 July 2018.

23.21 The delegation of the United Arab Emirates recalled that it had submitted a proposal to MSC 88 for the evaluation of the Thuraya Satellite System as a GMDSS service provider as a regional system; however, not much progress has been achieved due to various reasons. One of the main reasons had been that the relevant regulations of SOLAS chapter IV and related documents do not take into account additional GMDSS satellite service providers. Therefore, the United Arab Emirates expressed the opinion that the required amendments should take place as soon as possible.

Biennial status report of the Sub-Committee and provisional agenda for NCSR 4

23.22 The Committee approved the Sub-Committee's biennial status report and confirmed the provisional agenda for NCSR 4, as set out in annexes 25 and 26, respectively.

SUB-COMMITTEE ON SHIP DESIGN AND CONSTRUCTION (SDC)

Proposal for a new output to address the requirements for watertight integrity contained in parts B-2 to B-4 of SOLAS chapter II-1

23.23 Having considered document MSC 96/23/3 (Norway), proposing to review and revise regulations in SOLAS chapter II-1 to ensure consistency between the probabilistic damage stability requirements in parts B and B-1 of SOLAS chapter II-1 and the requirements for watertight integrity contained in parts B-2 to B-4 of SOLAS chapter II-1, the Committee agreed to include in the post-biennial agenda of the Committee an output on "Review SOLAS chapter II-1, parts B-2 to B-4, to ensure consistency with parts B and B-1 with regard to watertight integrity", with three sessions needed to complete the item, assigning the SDC Sub-Committee as the coordinating organ.

23.24 The Committee further agreed, in accordance with MSC.1/Circ.1481 and MSC.1/Circ.1500, that:

.1 the amendments to be developed should apply to ships built on or after 1 January 2024, to which SOLAS chapter II-1 applies;

.2 the instrument to be amended is the 1974 SOLAS Convention (i.e. SOLAS chapter II-1, parts B-2 to B-4); and

.3 the amendments to be developed should enter into force on 1 January 2024, provided that they are adopted before 1 July 2022.

Biennial status report of the Sub-Committee and the provisional agenda for SDC 4

23.25 Subsequently, the Committee approved the Sub-Committee's biennial status report and the provisional agenda for SDC 4, as set out in annexes 25 and 26, respectively.
**SUB-COMMITTEE ON SHIP SYSTEMS AND EQUIPMENT (SSE)**

**Proposal for a new output on requirements for CO₂ pipelines in under-deck passageways**

23.26 The Committee considered documents MSC 96/23/4 and MSC 96/23/4/Add.1 (China), proposing a new output on requirements for CO₂ pipelines passing through the spaces in the under-deck passageways, with a view to amending the existing paragraph 2.1.3.1 of chapter 5 of the FSS Code, and agreed to include in the 2016-2017 biennial agenda of the SSE Sub-Committee and the provisional agenda for SSE 4, a new output on "Amendments to the FSS Code for CO₂ pipelines in under-deck passageways", with a target completion year of 2017. In addition, the Committee agreed that the SSE Sub-Committee should not narrow the discussions to only CO₂ pipelines, but take into account other pipelines for conveying fire-extinguishing medium, as necessary.

23.27 In this regard, the Observer from ICS expressed the opinion that, before requiring that the CO₂ pipelines concerned were required to be joined by welding only, further careful consideration of the proposal was required in terms of confirming a compelling need to make any regulatory changes in order to avoid unintended or unreasonable consequences. The Observer from ICS also highlighted that it should be borne in mind that the underdeck passageways concerned could be in excess of 300 metres in length and the CO₂ pipelines were of similar length.

23.28 The Committee further agreed, in accordance with MSC.1/Circ.1481 and MSC.1/Circ.1500, that:

.1 the amendments to be developed should apply to ships built on or after 1 January 2020, to which FSS Code applies;

.2 the instrument to be amended is the FSS Code (chapter 5, paragraph 2.1.3.1); and

.3 the amendments to be developed should enter into force on 1 January 2020, provided that they are adopted before 1 July 2018.

**Proposal for a new output to amend the LSA Code paragraph 6.1.1.3**

23.29 The Committee considered document MSC 96/23/6 (Republic of Korea and IACS), proposing to amend the LSA Code, paragraph 6.1.1.3, in order to facilitate its uniform implementation, and agreed to include in the 2016-2017 biennial agenda of the SSE Sub-Committee and the provisional agenda for SSE 4, a new output on "Uniform implementation of paragraph 6.1.1.3 of the LSA Code", with a target completion year of 2017.

23.30 The Committee further agreed, in accordance with MSC.1/Circ.1481 and MSC.1/Circ.1500, that:

.1 the amendments to be developed should apply to all ships covered by the LSA Code, built on or after 1 January 2020;

.2 the instrument to be amended is the LSA Code; and

.3 the amendments to be developed should enter into force on 1 January 2020, provided that they are adopted before 1 July 2018.
23.31 In light of the above decision, some delegations expressed the view on the need to broaden the scope of the proposed output, including the clarification of the term "launching" referred in SOLAS regulation III/14 and the LSA Code, but the Committee agreed not to amend it at this stage and invited Member States and international organizations to present relevant proposals to MSC 97 for consideration.

Confusion between SOLAS regulations II-2/19 and II-2/20 and IMDG Code Special Provisions 961 and 962

23.32 The Committee recalled that it had agreed to include in the 2016-2017 biennial agenda of the CCC Sub-Committee and the provisional agenda of CCC 3 an output on "Amendments to SOLAS regulations II-2/20.2 and II-2/20-1 to clarify the fire safety requirements for cargo spaces containing vehicles with fuel in their tanks for their own propulsion", with a target completion date of 2017, in association with the SSE Sub-Committee as and when requested by the CCC Sub Committee (see paragraph 23.6).

Urgent matters emanating from SSE 4 to MSC 98

23.33 The Committee, having noted that SSE 4 will take place more than 10 weeks before MSC 98, endorsed with the recommendation of SSE 4 to consider a full report of SSE 4 at MSC 98, in lieu of submitting only urgent matters emanating from that session.

Biennial status report of the Sub-Committee and provisional agenda for SSE 4

23.34 The Committee, having agreed to also include existing output 5.1.2.1 on "Making the provisions of MSC.1/Circ.1206/Rev.1 mandatory" in the provisional agenda for SSE 4, approved the Sub-Committee's biennial status report and the provisional agenda for SSE 4, as set out in annexes 25 and 26, respectively.

ENDORSEMENT OF NEW OUTPUTS

23.35 In accordance with the relevant provisions of the document on the application of the Strategic Plan and the High-level Action Plan of the Organization (resolution A.1099(29)), the Committee, having agreed to the sub-committees' biennial agendas and the provisional agendas for their forthcoming sessions, invited the Council to endorse, for inclusion in the current High-level Action Plan, the following new outputs agreed by the Committee:

.1 suitability of high manganese austenitic steel for cryogenic service and development of any necessary amendments to the IGC Code and IGF Code (paragraph 23.4);

.2 amendments to SOLAS regulations II-2/20.2 and II-2/20-1 to clarify the fire safety requirements for cargo spaces containing vehicles with fuel in their tanks for their own propulsion (paragraph 23.6);

.3 review SOLAS chapters IV and appendix (Certificates: Forms P, R and C) to accommodate additional mobile satellite systems (paragraph 23.18);

.4 amendments to the FSS Code for CO₂ pipelines in under-deck passageways (paragraph 23.26); and

.5 uniform implementation of paragraph 6.1.1.3 of the LSA Code (paragraph 23.29).
**Biennial Status of Report of the Maritime Safety Committee**

23.36 The Committee invited the Council to note the Report on the status of outputs for the 2016-2017 biennium, as set out in annex 27.

**Post-Biennial Agenda of the Committee**

23.37 The Committee invited the Council to note the updated Post-biennial agenda of the Maritime Safety Committee, as set out in annex 28.

**Follow up of the Twenty-Ninth Session of the Assembly**

23.38 The Committee considered the outcome of the twenty-ninth session of the Assembly (MSC 96/23/1) and noted the following actions it had been requested to take in the context of resolutions adopted by the Assembly:

.1 in the context of resolution A.1097(29) – Strategic Plan for the Organization (for the six-year period 2016 to 2021), when making recommendations for Committees' biennial agendas during the Strategic Plan period, to bear in mind the desirability of not scheduling more than one diplomatic conference in each year, save in exceptional circumstances;

.2 in the context of resolution A.1098(29) – High-level Action Plan of the Organization and priorities for the 2016-2017 biennium:

.1 when reporting on its work to the Assembly at its thirtieth regular session and to the Council at its sessions during the 2016-2017 biennium, to ensure that they report progress towards fulfilling the Organization's aims and objectives using the framework of the strategic directions, high-level actions and planned biennial outputs;

.2 when considering proposals for new outputs, to ensure, in accordance with resolution A.1099(29) containing the document on the application of the Strategic Plan and the High-level Action Plan of the Organization and the guidelines on the organization and method of their work, as appropriate, that the issues to be addressed are those which fall within the scope of the Strategic Plan and the High-level Action Plan;

.3 in accordance with resolution A.1099(29), to submit to the Council for endorsement any new outputs that they may approve during the 2016-2017 biennium for inclusion in the High-level Action Plan for that biennium;

.4 to ensure full observance of the document contained in resolution A.1099(29), which provides a uniform basis for the application of the Strategic Plan and the High-level Action Plan throughout the Organization, and for the strengthening of existing working practices through the provision of enhanced planning and management procedures that are flexible, manageable, proportional, transparent and balanced;
in underlining the specific responsibilities of the chairmen, vice-chairmen and secretaries of the Council, committees and sub-committees to ensure a consistent and rigorous application of resolution A.1099(29) and the Guidelines on the organization and method of work of the respective committees and their subsidiary bodies; and

.6 to ensure that the high-level actions and related outputs, especially those involving amendments to existing conventions (particularly those which have been in force for a short period), should take fully into account the directives in resolution A.500(XII), and that due attention should be given to the requirement that a well-documented need must be demonstrated for the development and adoption of new or revised standards;

.3 in the context of resolution A.1099(29) – Application of the Strategic Plan and the High-level Action Plan of the Organization, to review and revise, during the 2016-2017 biennium, the guidelines for the organization and method of their work, taking account of the document on Application of the Strategic Plan and the High-level Action Plan of the Organization, as appropriate;

.4 in the context of resolution A.1103(29) – Principles to be considered when drafting IMO Instruments to:

.1 continue the work of review existing requirements in order to identify those that are duplicative or obsolete, or that do not take into account electronic alternatives, and to modify them as necessary; and

.2 encourage, under the coordination of the Council, to apply the principles outlined in the annex to the resolution (Principles to be considered when drafting IMO Instruments) when drafting requirements or when reviewing existing requirements, with the aim of achieving better regulation;

.5 in the context of resolution A.1104(29) – Survey guidelines under the harmonized system of survey and certification, 2015, to keep the Survey Guidelines under review and to propose amendments thereto to the Assembly, as appropriate;

.6 in the context of resolution A.1105(29) – 2015 non-exhaustive list of obligations under instruments relevant to the IMO Instruments Implementation Code (resolution A.1070(28)), to keep the list under review and to propose amendments thereto to the Assembly, as appropriate;

.7 in the context of resolution A.1106(29) – Revised Guidelines for the on-board operational use of shipborne automatic identification systems (AIS), to keep the revised guidelines under review and amend them as appropriate; and

.8 in the context of resolution A.1107(29) – Entry into force and implementation of the 2012 Cape Town Agreement, to review the situation concerning entry into force of the Agreement and, in the light of such review, to take action as it deems appropriate.
23.39 In this context, the Committee agreed to instruct:

.1 the III Sub-Committee to keep the Survey Guidelines referred in subparagraph .5 above under review and to propose amendments thereto to the Assembly, as appropriate;

.2 the III Sub-Committee to keep the list referred in paragraph 23.38.6 above under review and to propose amendments thereto to the Assembly, as appropriate;

.3 the NCSR Sub-Committee to keep the revised guidelines referred in subparagraph 23.38.7 above under review and amend them as appropriate; and

.4 the Secretariat to provide the updated information on ratification to of the 2012 Cape Town Agreement for consideration at the next session of the Committee.

23.40 Furthermore, the Committee recalled that it had already agreed, under agenda item 22 (Application of the Committee's Guidelines), to the revised Committees' Guidelines, which included the demonstration of a well-documented compelling need when developing and adopting new or revised standards, taking into account the need of fulfilling the Organization's aims and objectives using the framework of the strategic directions, high-level actions and planned biennial outputs.

INTERSESSIONAL MEETINGS

23.41 The Committee, taking into account the decisions made under various agenda items at MSC 95 and at this session, approved/confirmed, as appropriate, the following intersessional meetings:

.1 the twelfth meeting of the Joint IMO/ITU Experts Group on Maritime Radiocommunication Matters, to take place from 11 to 15 July 2016;

.2 the twenty-sixth meeting of the E&T Group on the IMSBC Code, to take place from 12 to 16 September 2016, directly after CCC 3;

.3 the twenty-third session of the ICAO/IMO Joint Working Group on Search and Rescue, to take place in Berlin, from 12 to 16 September 2016;

.4 the twenty-second meeting of the PPR Working Group on the Evaluation of Safety and Pollution (ESPH), to take place from 10 to 14 October 2016;

.5 the thirteenth meeting of the Joint IMO/ITU Experts Group on Maritime Radiocommunication Matters, to take place in 2017;

.6 the twenty-fourth session of the ICAO/IMO Joint Working Group on Search and Rescue, to take place in 2017; and

.7 a meeting of PPR Working Group on the Evaluation of Safety and Pollution (ESPH), to take place in 2017, as approved by MEPC 69,

and invited the Council to endorse the above decisions.
Substantive items for inclusion in the agendas for MSC 97 and MSC 98

23.42 The Committee agreed to the substantive items to be included in the agendas of its ninety-seventh and its ninety-eighth sessions, as set out in document MSC 96/WP.10, as amended.

Establishment of working and drafting groups during MSC 97

23.43 The Committee, taking into account the decisions made under various agenda items, anticipated that the working and drafting groups on the following subjects may be established at its ninety-seventh session:

.1 goal-based standards;
.2 maritime security;
.3 carriage of industrial personnel; and
.4 consideration and adoption of amendments to mandatory instruments.

23.44 The Committee agreed that the Capacity-building Needs Analysis Group (ACAG) may also need to be established.

Duration and dates of the next two sessions

23.45 The Committee noted that its ninety-seventh session has been scheduled to take place from 21 to 25 November 2016 and its ninety-eighth session has been tentatively scheduled to be held in June 2017.

24 ANY OTHER BUSINESS

International Code for Ships Operating in Polar Waters (Polar Code)

24.1 The Committee had for its consideration the following documents:

.1 MSC 96/24 (New Zealand), providing data on non-SOLAS vessels operating in polar waters and SAR incidents involving non-SOLAS vessels within these waters and the New Zealand non-SOLAS vessels which have operated within Antarctica over the last 10 southern hemisphere summer seasons, as requested by MSC 95;

.2 MSC 96/24/3 (Iceland), providing data in relation to non-SOLAS vessels operating in polar waters and SAR incidents involving non-SOLAS vessels north of the Arctic Polar Code demarcation line, within the Icelandic search and rescue region (SRR), and the Icelandic non-SOLAS vessels which have operated in Arctic polar waters during a two-year period (2014-2015); and the information on the parties responsible for coordinating all maritime and aviation search and rescue activities in the Icelandic SRR; and
In considering the above documents, the Committee noted the following views expressed during the discussion:

.1 application of the Polar Code to non-SOLAS ships (phase 2), which should include fishing vessels, should begin without delay to enhance the safety for non-SOLAS ships operating in polar waters;

.2 the Polar Code should not be applied to fishing vessels until after entry into force of the 2012 Cape Town Agreement, where the requirements of the Code are in line with the Agreement;

.3 the Polar Code should not be applied to pleasure yachts; and

.4 while most delegations were of the view that more incident data is needed, particularly for non-SOLAS ships, before the phase 2 work begins, others were of the view that the data submitted so far demonstrated sufficient need to proceed to phase 2 without delay.

Following the discussion, the Committee noted, with appreciation, the information provided in support of the next phase of the work on the Polar Code and invited Member States and international organizations to submit more information to MSC 97 to facilitate the consideration on the matter, taking into account that a relevant output is already included in the post-biennial agenda of the Committee.

Verification of the gross mass of packed containers

Following consideration of document MSC 96/24/1 (ICHCA and WSC), the Committee noted, with appreciation, the set of frequently asked questions and answers (FAQs) regarding the verification of the gross mass of packed containers, which ICHCA and WSC had published, in collaboration with shippers and insurers, to assist in the planning for the implementation of this new requirement, as well as to promote awareness and a common understanding amongst the various stakeholders.

The Committee also noted, with appreciation, the information contained in document MSC 96/INF.7 (FONASBA), reporting on the results of two surveys commissioned by FONASBA to monitor the introduction of appropriate measures at national level regarding the requirement for verification of the gross mass of packed containers and to inform interested parties on the status of the measures.

Having recalled that the SOLAS requirements for the gross mass of packed containers to be verified will enter in force on 1 July 2016, the Committee noted the following views expressed in regard to the new requirements and the associated guidance contained in MSC.1/Circ.1475:

.1 while there is no requirement for the verified gross mass (VGM) of a packed container to be determined and provided in order for the container to be loaded on a ship before 1 July 2016, if the same container is trans-shipped on or after 1 July 2016, a VGM would be required at the port of trans-shipment, were a strict application of the amendments to SOLAS regulation VI/2 regarding VGM (resolution MSC.380(94)) to be followed.
In such cases, containers could be subject to significant delays, which could result in the loss of cargoes, particularly perishable or time-sensitive cargoes, and at the same time the port of trans-shipment would encounter operational challenges and additional administrative burdens;

2 even if software upgrades required for the electronic collection and transmittal of VGM data are completed in all ports and container handling systems globally, it would be unreasonable for anyone to expect that such a global deployment of software upgrades would be entirely robust on the first day of real-world operation;

3 while there should be no delay in implementation of the SOLAS requirements regarding VGM it would be beneficial if Administrations and port State control authorities could take a practical and pragmatic approach when enforcing the VGM requirements, particularly for a period of three months immediately following 1 July 2016 in order to ensure that any problems related to trans-shipped containers and the transmittal of electronic VGM data are resolved without impacting the smooth operation of the global logistics chain during the initial phasing-in period of the requirements;

4 the key to successful implementation of the SOLAS VGM requirements is close communication and cooperation between Administrations and all sectors of the industry associated with the transport of containers;

5 CCC 3 could further discuss possible ways of facilitating implementation of the SOLAS VGM requirements;

6 there were concerns regarding the potential for Masters to be criminalized should port State control authorities take a severe stance on enforcement at an early stage; and

7 it should be acknowledged that existing requirements in SOLAS chapters II-1, VI and IX and the ISM Code already require Masters to be provided with appropriate and accurate information on the cargo so that the cargo could be stowed safely on board the ship.

24.7 In this regard, the delegation of Singapore made a statement, the full text of which is set out in annex 29.

24.8 Having considered the above views and recalling the Secretary-General’s Circular Letter No.3624 encouraging communication on this matter, the Committee urged Administrations and industry stakeholders to communicate frequently and fully with regard to implementation of the SOLAS VGM requirements and to share best practices.

24.9 Furthermore, the Committee agreed that an appropriate way forward would be to urge Administrations and port State control authorities to adopt a practical and pragmatic approach when transitioning to the new requirements of SOLAS regulation VI/2 and exercising control procedures, for a period of three months after 1 July 2016, in order to permit containers that will have been loaded before 1 July 2016, but trans-shipped on or after 1 July 2016, to reach their final port of discharge without a verified gross mass. Additionally, such a practical and pragmatic approach within the aforementioned time period should also be intended to provide flexibility to all the stakeholders in containerized transport to refine, if necessary, any new procedures that they have put in place for compliance with the new requirements. In this regard, the Committee requested the Secretariat to prepare a draft MSC circular on advice to Administrations and port State control Authorities regarding the SOLAS requirements for verified gross mass of packed containers.
24.10 Having considered MSC 96/WP.16, the Committee approved MSC.1/Circ.1548 on Advice to Administrations, port State control authorities, companies, port terminals and masters regarding the SOLAS requirements for verified gross mass of packed containers.

Reducing pest movement by sea containers

24.11 The Committee noted, with appreciation, the information provided in document MSC 96/24/2 (FAO), reporting on the ongoing activities to minimize pest movement by sea containers, which have been undertaken under the framework of the International Plant Protection Convention (IPPC) and, in particular, the work of IPPC on developing an International Standard for Phytosanitary Measures (ISPM) on sea container cleanliness. The above document also reported on the outcome of the IPPC special topics session at the eleventh session of the IPPC Commission on Phytosanitary Measures (CPM-11), which took place at FAO Headquarters in Rome on 7 April 2016.

IMO/IACS cooperation on the IACS Quality System Certification Scheme (QSCS)

24.12 In the context of the IACS Quality System Certification Scheme (QSCS) and its transition to accredited certification bodies (ACBs), the Committee considered document MSC 96/24/4 (Secretariat), reporting on the development of the QSCS, and noted that, in accordance with the participation agreement between IMO and IACS, the IMO consultant/observer had continued participating in the implementation of the Scheme since the last report to the Committee (MSC 95/21/9) and expressed his satisfaction that the IACS QSCS audits were conducted to a good standard.

24.13 Furthermore, the Committee, recalling the decision of MSC 95, requested the Secretariat to continue the arrangement for IMO's participation in the IACS Quality System Certification Scheme, with financial contributions provided by IACS, and to provide a report to MSC 98.

European Union operational guidelines on places of refuge

24.14 The Committee noted, with appreciation, the information provided in document MSC 96/24/5 (Austria, et al.), relating to the development of operational guidelines for the accommodation of ships in need of assistance, requesting a place of refuge by the Competent Authorities within the European Union. The Committee also noted that the European Union Operational Guidelines on places of refuge were tested in 2015 and put into use in January 2016.

Embarkation station and stowage location of the remotely located liferaft

24.15 The Committee had for its consideration document MSC 96/24/6 (Liberia, Marshall Islands and IACS) proposing to supplement SOLAS regulation III/11.7 with a provision specifying that the 10 degree adverse trim criteria need not be considered when providing the embarkation ladder for the liferaft or liferafts as required by SOLAS regulation III/31.1.4.

24.16 In considering the above proposal, the Committee, having noted the following views expressed on this matter:

1. for survival craft situated in most locations, the 10 degree adverse trim criteria can be reasonably applied; however, when considering remotely located survival craft at extreme ends of the ship, the effect of applying the 10 degree adverse trim criteria can be significant, resulting in unnecessarily long and, in the time of need, unmanageable embarkation ladders;
it was not intended to apply the provisions of SOLAS regulation III/11.7 to the remotely located liferaft or liferafts required by SOLAS regulation III/31.1.4;

taking into account the Council's decision that minor corrections/issues could be considered by the committees under the agenda item "Any other business" (C/ES.27/D, paragraph 3.2(vi)), the proposed "correction" can be considered by the Committee without requiring a new output;

a cautious consideration is required to address the problem without creating a potential situation where a person had to jump metres into the water during ship abandonment before he/she could embark the remote survival craft because ships did have trim; and

the revised SOLAS regulation III/11.7 should include a calculation method for the length of the embarkation ladder, based on the adverse trim and an adverse list of 20°, in the loading condition taken from the approved loading manual which gives the lightest draft at the embarkation station,

decided that the above proposal was not a "minor correction" as envisioned by the Council's decision. Consequently, the Committee invited the co-sponsors to submit a proposal for a new output in accordance with the Committee's Guidelines, for consideration at MSC 97.

Global Integrated Shipping Information System (GISIS)

24.17 The Committee noted, with appreciation, the information contained in document MSC 96/INF.2 (Secretariat), reporting on the status of GISIS.

Philippine action pursuant to the Manila Statement on the enhancement of the Safety of Ships carrying passengers on non-international voyages

24.18 The Committee noted, with appreciation, the information contained in document MSC 96/INF.12 (Philippines), reporting on the actions taken by the Philippines pursuant to the Manila Statement on the enhancement of the safety of ships carrying passengers on non-international voyages.

Expansion of the Panama Canal

24.19 The delegation of Panama made a statement on the inauguration of the expanded Panama Canal and the associated training facility, which is set out in annex 29. In this regard, the Secretary-General responded by congratulating the Government of Panama and all stakeholders involved on this successful project, which he emphasized will be a major contribution to international shipping, global logistics. It would also contribute to addressing climate change issues through reduction of emissions.

Expressions of appreciation

24.20 The Committee expressed its appreciation to two directors of the Organization who will be retiring later this year, Mr. Jo Espinoza-Ferrey, Director of the Administrative Division and Mrs. Olga O'Neil, Director of the Conference Division, for their invaluable contributions to the Committee's work and wished them both a long and happy retirement.
25 ACTION REQUESTED OF OTHER IMO ORGANS

25.1 The Assembly, at its thirtieth session, is invited to:

.1 note the adoption by the Committee of amendments to the 1974 SOLAS Convention and related mandatory codes and the approval/adoption of non-mandatory instruments (paragraphs 3.80 to 3.102 and 11.8 and annexes 1 to 5, 11 and 17);

.2 note the actions taken on issues related to goal-based new ship construction standards and the initial GBS verification audits, in particular, that the Committee overwhelmingly confirmed that the information provided by the Submitters (12 IACS members ROs) demonstrated that their rules conform to the GBS Standards (paragraphs 5.1 to 5.33 and annex 12); and

.3 adopt the draft Assembly resolution on Revised guidelines on the implementation of the ISM Code by Administrations (paragraph 12.4 and annex 22).

25.2 The Council, at its one-hundredth and sixteenth session, is invited to:

.1 consider the report of the ninety-sixth session of the Maritime Safety Committee and, in accordance with Article 21(b) of the IMO Convention, transmit it, with its comments and recommendations, to the thirtieth session of the Assembly (paragraphs 1.1 and 25.1);

.2 note the adoption by the Committee of amendments to the 1974 SOLAS Convention and related mandatory codes and the approval/adoption of non-mandatory instruments (paragraphs 3.80 to 3.102 and 11.8 and annexes 1 to 5, 11 and 17);

.3 note the actions taken by the Committee on issues related to maritime security and, in particular, the approval of guidance for the development of national maritime security legislation and the approval of interim guidelines on maritime cyber risk management (paragraphs 4.1 to 4.22);

.4 note the actions taken on issues related to goal-based new ship construction standards and the initial GBS verification audits, in particular, that the Committee overwhelmingly confirmed that the information provided by the Submitters (12 IACS member ROs) demonstrated that their rules conform to the GBS Standards (paragraphs 5.1 to 5.33 and annex 12);

.5 note the actions taken by the Committee on issues related to passenger ship safety (paragraphs 6.1 to 6.6);

.6 note the actions taken by the Committee on issues related to the carriage of more than 12 industrial personnel on board vessels engage on international voyages (paragraphs 7.1 to 7.15);

.7 note the approval of the draft Assembly resolution on Revised guidelines on the implementation of the ISM Code by Administrations (paragraph 12.4 and annex 22);
.8 note the decisions taken in regard to piracy and armed robbery against ships (paragraphs 17.1 to 17.6);

.9 note the decisions taken in regard to unsafe mixed migration at sea (paragraphs 18.1 to 18.16);

.10 note the decisions taken in regard to the recommendations to reduce administrative requirements in IMO instruments (paragraphs 19.1 to 19.4);

.11 note the actions taken by the Committee on issues related to the application of the Committees’ Guidelines and, in particular, consider the problems with accessing documents uploaded onto IMODOCs and take action as appropriate (paragraphs 22.1 to 22.13 and annex 24);

.12 endorse the new outputs agreed at the session for inclusion in the High-level Action Plan and priorities for the 2016-2017 biennium (paragraph 23.35 and annex 27);

.13 note the biennial status report of the Maritime Safety Committee (paragraph 23.36 and annex 27);

.14 note the post-biennial agenda of the Maritime Safety Committee (paragraph 23.37 and annex 28); and

.15 endorse the intersessional meetings approved for 2016 and 2017 (paragraph 23.41).

25.3 The Legal Committee, at its one-hundredth and third session, is invited to note the decisions taken in regard to unsafe mixed migration at sea (paragraphs 18.1 to 18.16).

25.4 The Technical Cooperation Committee, at its sixty-sixth session, is invited to note the outcome on matters related to capacity building for the implementation of new measures (paragraphs 15.1 to 15.3).

25.5 The Marine Environment Protection Committee, at its seventieth session, is invited to:

.1 note the concurrent endorsement that there is no need to align FAL.2/Circ.127-MEPC.1/Circ.817-MSC.1/Circ.1462 on List of certificates and documents required to be carried on board ships with FAL.5/Circ.39/Rev.1 at this time, as the existing circular is not in conflict with the use of e-certificates (paragraph 9.5);

.2 note the concurrent decision to defer consideration of the draft MSC-MEPC.4 circular on Guidelines for port State control officers on the ISM Code, to MEPC 70 and MSC 97 (paragraph 9.9);

.3 note that the Committee instructed III 3 to review the text of the Revised process for putting forward recommendations to the relevant IMO bodies resulting from the reports of Concentrated Inspection Campaigns (III.2/Circ.1), with a view to addressing the concerns raised by MEPC 69, and to report their outcome to MSC 97 (paragraph 9.10);

.4 approve the draft MSC-MEPC.5 circular on Unified interpretation relating to the IBC Code (paragraph 11.30 and annex 21);
5. note the concurrent approval of the draft Assembly resolution on *Revised guidelines on the implementation of the ISM Code by Administrations*, for submission to the thirtieth session of the Assembly for adoption (paragraphs 12.4 and annex 22);

6. approve the draft MSC-MEPC.2 circular on *Example of a Certificate of Protection for products requiring oxygen-dependent inhibitors* (paragraph 13.1 and annex 23);

7. note the decisions taken in regard to the recommendations to reduce administrative requirements in IMO instruments (paragraphs 19.1 to 19.4);

8. note decisions taken in regard to the revision of the Committees' Guidelines (paragraphs 22.7 to 22.12)

9. approve the draft MSC-MEPC circular on *Organization and method of work of the Maritime Safety Committee and the Marine Environment Protection Committee and their subsidiary bodies*, for dissemination as MSC-MEPC.1/Circ.5 (paragraph 22.13 and annex 24);

10. note the concurrent approval of the biennial agenda of the CCC Sub-Committee and the provisional agenda for CCC 3, including the two new outputs related to safety matters (paragraph 23.11 and annexes 25 and 26);

11. note the concurrent approval of the biennial agenda of the III Sub-Committee and the provisional agenda for III 3 (paragraph 23.13 and annexes 25 and 26); and

12. note the concurrent approval of the intersessional working group meetings requested by the CCC and PPR Sub-Committees, to be held in 2016 and 2017 (paragraph 23.41).

25.6 The Facilitation Committee, at its forty-first session, is invited to:

1. note the actions taken by the Committee on issues related to maritime security and, in particular, the approval of guidance for the development of national maritime security legislation and the approval of interim guidelines on maritime cyber risk management (paragraphs 4.1 to 4.22);

2. note the Committee's decision that there is no need to align FAL.2/Circ.127-MEPC.1/Circ.817-MSC.1/Circ.1462 on List of certificates and documents required to be carried on board ships with FAL.5/Circ.39/Rev.1 at this time, as the existing circular is not in conflict with the use of e-certificates (paragraph 9.5);

3. note that the Committee instructed III 3 to consider the draft amendments to the *Procedures for port State control, 2011* (resolution A.1052(27)) in the context of its ongoing comprehensive review (paragraph 19.19);

4. note the decisions taken in regard to unsafe mixed migration at sea (paragraphs 18.1 to 18.16);
.5 note the decisions taken in regard to the recommendations to reduce administrative requirements in IMO instruments (paragraphs 19.1 to 19.4); and

.6 note decisions taken in regard to the revision of the Committees’ Guidelines (paragraphs 22.7 to 22.13).

(The annexes will be issued as addenda to this document)
The SCF Interim Industry Standard

3 February 2016
Introduction

Goal-Based Ship Construction Standards for Bulk carriers and Oil Tankers (GBS) define high-level safety objectives to be achieved through “functional requirements” and “detailed requirements”. The conformity of rules and regulations of classification societies with the “functional requirements” are to be verified by procedures. GBS, accordingly, has a five-tier structure consisting of Tier I – Goals, Tier II – Functional requirements, Tier III – Verification of conformity, Tier IV – Rules and regulations for ship design and construction and Tier V – Industry practices and standards. The IMO supervises Tier I, II, III and IV, whereas Tier V is dealt with on industry level.

In order to ensure design transparency, one of the “functional requirements” of GBS, each Ship is required by the International Convention for the Safety of Life at Sea (SOLAS) to have specific information and documentation on ship design and construction onboard the Ship throughout the Ship’s life. This set of documents, drawings and information is collectively called the Ship Construction File (SCF).

The documents and drawings required to be provided as part of the SCF contain shipbuilding know-how. Therefore, all who have access to such sensitive information is expected to give due consideration to the intellectual property rights (IPR).

At the 2009 Tripartite Meeting (Shipowners, Shipbuilders and Classification Societies) it was agreed to develop a cross industry concept for ensuring both design transparency and the protection of intellectual property (IP) which needs to be based on safekeeping certain SCF information at a dedicated Archive Center ashore.

MSC 87, held in May 2010, stressed the importance of addressing both design transparency and IPR, supported the cross-industry model presented and noted these proposals. It was also acknowledged by MSC 87 that detailed standard for SCF would be developed by the industry (Industry Standard).

GBS is applied only to bulk carriers and oil tankers of 150 meters in length and above. GBS-related rules (amendments to SOLAS Ch. II-1 and regulations concerning GBS) came into effect on January 1, 2012, and the members of the International Association of Classification Societies (IACS) developed GBS compatible structural rules.

The Industry Standard presented in this document corresponds to GBS Tier V and may be referred to or quoted in the rules and regulations for ship design and construction (Tier IV). The SCF Industry Standard establishes procedures for implementing the Ship Construction File (SCF), which is defined by four IMO documents – MSC.287 (87) (adopted at MSC 87 on 20 May 2010), MSC.290 (87) (adopted at MSC 87 on 21 May 2010), MSC.296 (87) (adopted at MSC 87 on 20 May 2010) and MSC.1/Circ.1343 (circulated on 2 June 2010) and supplement those IMO documents based on MSC 87/5/4 (endorsed by MSC 87).

The Industry Standard was developed and agreed by a cross industry group of the following industry organizations:

- CANSI (China Association of the National Shipbuilding Industry);
- CESA (Community of European Shipyards’ Associations);
- KOSHIPA (Korea Offshore & Shipbuilding Association);
- SAJ (The Shipbuilders’ Association of Japan);
- SCA (Shipbuilders Council of America);

1 Tripartite Meeting is a regular annual cross-industry meeting between the high level participants from Shipowners, Shipbuilders and Classification Societies to discuss and agree on prospective collective actions that will contribute to the development of maritime industry.
The cross industry group has agreed on the following principles.

The SCF Interim Industry Standard (SCF IS) serves as industry guidance and therefore do not oblige parties to fully follow the contents but rather provide principles, which will facilitate agreement being reached for each Ship. Such agreements and the resulting commitments will reflect specific individual situations. In other words, the purpose of the SCF IS is to promote common understanding of the industry issues involved, and to facilitate agreement on individual projects.

Furthermore, the SCF IS is intended to provide guidance on the principles of how the various parties manage the information and on taking various actions pertaining to SCF Information. The intention is to provide users of the SCF IS with practical assistance on the administrative, technical, operational and document management aspects.

Additional, more detailed guidance for the practical implementation of the SCF IS is provided in the Interim Supplementary Guidance (SCF SG) of the SCF IS.

The principles outlined in the SCF IS could also be used to facilitate the management of information other than the SCF required by GBS (entered into force in January 2012), which could then be kept according to a voluntary private agreement between, for example, the Shipowner, IP-Holder and the Archive Center.

The Shipbuilder prepares the relevant SCF Information for design and construction transparency, (see Ch. 3.1)

The Shipowner keeps and updates the SCF Information. (see Ch. 3.4)

SCF Information is to include necessary and sufficient information concerning the Ship’s hull structure in order to facilitate the Ship’s safe operation, maintenance, inspections and repair as well as response in emergency situations. (see Ch. 2.1)

Access Right Holders, need to give due consideration to the IPR. (see Ch. 3.2).

All parties should manage SCF Information in accordance with the access and safekeeping principles provided in the SCF IS. (see Ch. 3.2)

The SCF Supplement Ashore is kept at an Archive Center to ensure both transparency of the information and protection of IP. (see Ch 2.1)

Standard storage location of various documents and drawings is provided in Table 2.

The Archive Center keeps the SCF Supplement Ashore and a full copy of the SCF Onboard and discloses them to Access Right Holders through the Shipowner. (see Ch. 3.2 and 3.3)
1. Definitions

(a) **Access Right Holders** are persons and institutions that have a right to access SCF Information, e.g. Shipowner, Seafarer, Ship operator and their Sub-contractors for the safe operation of the Ship and/or due to other legitimate obligation, authorities such as representatives of flag States, coastal States and their Recognized Organizations for Port State Controls or marine accident investigations, etc. as well as registered classification societies for surveys.

(b) **Archive Center** means a facility tasked with storage, safekeeping and managing access of to the SCF Information that it holds.

(c) **IP-Holder** means an entity which possesses rights related to the intellectual property in the Ship’s SCF Information. The entity may cover the Shipbuilder, Shiprepairer, Equipment maker, Shipowner, etc.

(d) **Intellectual Property (IP)** refers to creations of the mind which is divided into industrial property and copyright. In the field of shipbuilding, IP covers but is not limited to: proprietary technical descriptions, calculations, test results, plans, drawings, designs, models, specifications, reports and any other knowledge assets, registered and unregistered, which are instrumental for competitiveness and company strategies of the IP holder.

(e) **Rules** means not only the rules by Classification Societies but also other rules and regulations that are sufficient to demonstrate the Ship meets that the GBS functional requirements concerning the hull structure.

(f) **Safe Operation Purpose** means a purpose related to safe operations, maintenance, inspections and repair (structural work to maintain the structural strength assumed at the time of construction, such as restoring damaged parts to their original state and reinforcing parts with insufficient strength) of the Ship, and responses in emergency situations of the Ship.

(g) **SCF Information** means a collection of information composed of the SCF Onboard and SCF Supplement Ashore. It is a general term given to a collection of information that is sufficient to demonstrate that the Ship meets the GBS functional requirements concerning the hull structure and is needed for the safe operation of the Ship, maintenance, inspections and repair as well as in emergency situations. In this document, the term “SCF Information” means the SCF Onboard and/or SCF Supplement Ashore, irrespective of whether it refers to partial or the whole, or to the original or a copy.

(h) **SCF Onboard** means SCF Information that is required to be kept onboard the Ship at all times.

(i) **SCF Supplement Ashore** means SCF Information that is Highly IP sensitive information but not absolutely necessary and relevant to be kept onboard the Ship at all times. Usually, it means information that is kept only at the Archive Center.

(j) **Seafarer** means individuals who are employed and work regularly onboard the Ship.

(k) **Ship** means an oil tanker of 150 meters in length and above or a bulk carrier of 150 meters in length and above, constructed with single deck, top-side tanks and hopper side tanks in cargo spaces, excluding ore carrier and combination carrier, that fulfills one of the following criteria:
   
   i. The building contract is placed on or after July 1, 2016;
   
   ii. In the absence of a building contract, the keels are laid or are at a similar stage of construction on or after July 1, 2017; or
   
   iii. The delivery is on or after July 1, 2020.

(l) **Shipowner** means an entity that has entered into possession of a Ship through acts like a purchase or a transfer and engaged in safekeeping and updating of SCF Information during the
Ship’s operational lifetime in accordance with amendments to the SOLAS Convention Chapter II-1 Part A-1. These tasks in relation to management of SCF Information may also be tasked to Ship operators, management companies etc.

(m) **Sub-contractor** means an entity (such as a Shipbuilder for repair/conversion) that is contracted, directly or indirectly, by the Shipowner.

(n) **Third Party** means those other than the IP-Holder, Shipowner, Seafarer, Ship operator, Ship management company. Engineering houses and/or consultants employed by the Shipowner, Seafarer, Ship operator or Ship management company form a part of Third Party.

(o) **Update** means promptly updating SCF Information when any modification is made to the Ship that requires a change or addition of SCF Information at any major event, including, but not limited to, substantial repair, Conversion or any modification to the Ship structure, or the updated portion of SCF Information.
2. SCF Information

2.1. Composition of SCF Information and Scope of Application

SCF Information is a set of documents, drawings and information composed of the SCF Onboard and SCF Supplement Ashore and collectively refers to information that is sufficient to demonstrate that the Ship meets the GBS functional requirements concerning the hull structure. Such information is needed for the Ship’s safe operation, maintenance, inspections and repair as well as in emergency situations. Figure 1 shows the “SCF Onboard – SCF Supplement Ashore” model.

Figure 1: The “SCF Onboard – SCF Supplement Ashore” model

The SCF Supplement Ashore is the part of SCF Information that is highly IP sensitive and kept only at the Archive Center ashore. It would usually be provided directly to the Archive Center by the IP-Holder upon new-building of the Ship or Update. This is the highly IP sensitive information that is not absolutely necessary and relevant to be kept onboard the Ship at all times (see Chapter 1 “Definitions” and 3.3. “IP Levels”). Any SCF Information which is highly IP sensitive but necessary and relevant to be kept onboard the Ship at all times (for example required to be on board by IMO Conventions) should comprise a part of the SCF Onboard. In the case of conventional bulk carriers and oil tankers, the SCF Supplement Ashore is normally composed of the following four components:
• full “Detailed structural strength calculation” document\(^{(2)}\) (see also page 24);
• full “Detailed fatigue life calculation” document\(^{(3)}\) (see also page 36);
• “Yard plans” drawings\(^{(4)}\) (see also page 32); and
• Master “Lines plan” drawing\(^{(5)}\) (see also page 34).

2.2. Definition of SCF Information

The list of information to be included in the SCF is provided in Table 1. The actual names and sets of such documents and drawings may differ from those listed in the example documents or drawings as they depend on each Shipbuilder’s drawing system. The information provided may be in more than one document or drawing with appropriate names. Explanatory notes are provided below the Table.

This Table is not identical with the Appendix to MSC.1/Circ.1343, but includes additional items and explanations which are considered to be relevant to be included in the SCF by the cross industry group.

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\(^{(2)}\) Full “Detailed strength calculation” documents contain the full bulky output of structural strength calculations, which is defined under Item 3-2 contained in Annex. Summarized information on structural strength calculation is available on board through documents such as Item 3-3 and 3-3A (Plan showing highly stressed areas prone to yielding and/or buckling).

\(^{(3)}\) Full “Detailed fatigue life calculation” documents contain the full bulky output of fatigue life calculations, which is defined under Item 4-1 contained in Annex. Summarized information on fatigue is available on board through document Item 4-2 (Plan showing areas prone to fatigue).

\(^{(4)}\) “Yard plans” drawings – besides scantling information of structural members – contain also sensitive proprietary information on fabrication processes. The scantling information of structural members to fulfill the day-to-day needs on board is, however, available on board, by means of Item 3-5 (Key construction plans) and Item 3-6 (Net scantlings of structural constituent parts) defined in Annex.

\(^{(5)}\) Master “Lines plan” is a master drawing displaying the detailed hull form of the entire ship. Hull form information frequently required is readily made available on board, by means of Item 3-5 (Key construction plans) defined in Annex. Hull form information needed in emergency situations is also encrypted and stored on ship loading computers on board as numerical data. (Refer to Item 3-11 “Equivalent to Lines plan” defined in Annex, too.)
Table 1: List of information to be included in the Ship Construction File (SCF)

<table>
<thead>
<tr>
<th>Tier II items</th>
<th>Information to be included</th>
<th>Further explanation of the content</th>
<th>Example documents or drawings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DESIGN</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Design life</td>
<td>• assumed design life in years</td>
<td>• statement or note on midship section</td>
<td>• List of Applied Rules &amp; Standards (See Item 1-1 in Annex) and General Information on SCF</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• midship section</td>
</tr>
<tr>
<td>2. Environmental</td>
<td>• assumed environmental conditions</td>
<td>• statement referencing data source or Rule (specific rule and data) or;</td>
<td>• List of Applied Rules &amp; Standards and General Information on SCF</td>
</tr>
<tr>
<td>conditions</td>
<td></td>
<td>• in accordance with Rule (date and revision)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Structural Strength</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1 General design</td>
<td>• applied Rule (date and revision)</td>
<td>• applied design method alternative to Rule and subject structure(s)</td>
<td>• List of Applied Rules &amp; Standards and General Information on SCF</td>
</tr>
<tr>
<td></td>
<td>• applied alternative to Rule</td>
<td></td>
<td>• capacity plan</td>
</tr>
<tr>
<td>3.2 Deformation and</td>
<td>• calculating conditions and results</td>
<td>• allowable loading patterns (This needs not necessarily be restricted to only the typical loading</td>
<td>• loading manual</td>
</tr>
<tr>
<td>failure modes</td>
<td>• assumed loading conditions</td>
<td>patterns shown in the loading manual)</td>
<td>• trim and stability booklet</td>
</tr>
<tr>
<td></td>
<td>• operational restrictions due to structural strength (See Item 3-1 in Annex)</td>
<td>• maximum allowable hull girder bending moment and shear force</td>
<td>• damage control plan</td>
</tr>
<tr>
<td>Tier II items</td>
<td>Information to be included</td>
<td>Further explanation of the content</td>
<td>Example documents or drawings</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------------------------</td>
<td>----------------------------------</td>
<td>-------------------------------</td>
</tr>
</tbody>
</table>
| 3.3 Ultimate strength | • applied Rule (date and revision)  
  • Calculating conditions and results | • maximum allowable cargo density or stowage factor  
  • **bulky output of strength calculation** (See Item 3-2 in Annex) | • List of Applied Rules & Standards and General Information on SCF  
  • loading instrument instruction manual  
  • **damage control plan**  
  • full detailed strength calculation |
| 3.4 Safety margins | • strength calculation results, including local strength  
  • gross hull girder section modulus  
  • minimum hull girder section modulus along the length of the Ship to be maintained throughout the Ship's lifetime, including cross section details such as the value of the area of the deck zone and bottom zone, the renewal value for the neutral axis zone.  
  • gross scantlings of structural constituent parts | • bulky output of strength calculation  
  • **plan showing highly stressed areas prone to yielding and/or buckling** (See Item 3-3, 3-3A in Annex)  
  • **structural drawings** (See Item 3-4 in Annex) | • operation and maintenance manuals  
  • full detailed strength calculation  
  • areas prone to yielding and/or buckling  
  • calculation of hull girder section modulus  
  • **damage control plan**  
  • general arrangement  
  • key construction plans (See Item 3-5 in Annex) |
<table>
<thead>
<tr>
<th>Tier II items</th>
<th>Information to be included</th>
<th>Further explanation of the content</th>
<th>Example documents or drawings</th>
</tr>
</thead>
</table>
|               | • net scantlings of structural constituent parts (See Item 3-6 in Annex) | • rudder and stern frame | • rudder and rudder stock  
• stern frame |
|               |                             | • structural details of typical members (See Item 3-7 in Annex) | • structural details  
• yard plans (See Item 3-8 in Annex)  
• dangerous area plan (See Item 3-9 in Annex)  
• key construction plans  
• Master Lines plan (See Item 3-10 in Annex) and Equivalent to Lines plan (See Item 3-11 in Annex) |
<table>
<thead>
<tr>
<th>Tier II items</th>
<th>Information to be included</th>
<th>Further explanation of the content</th>
<th>Example documents or drawings</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Fatigue life</td>
<td>• applied Rule (date and revision)</td>
<td>• applied design method alternative to Rule and subject structure(s)</td>
<td>• List of Applied Rules &amp; Standards and General Information on SCF</td>
</tr>
<tr>
<td></td>
<td>• applied alternative to Rule</td>
<td>• assumed loading conditions and rates</td>
<td>• structural details</td>
</tr>
<tr>
<td></td>
<td>• calculating conditions and results;</td>
<td>• bulky output of fatigue life calculation (See Item 4-1 in Annex)</td>
<td>• full detailed fatigue life calculation</td>
</tr>
<tr>
<td></td>
<td>• assumed loading conditions</td>
<td>• plan showing areas prone to fatigue (See Item 4-2 in Annex)</td>
<td>• areas prone to fatigue</td>
</tr>
<tr>
<td></td>
<td>• fatigue life calculation results</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Residual strength</td>
<td>• applied Rule (date and revision)</td>
<td>• bulky output of strength calculation</td>
<td>• List of Applied Rules &amp; Standards and General Information on SCF</td>
</tr>
<tr>
<td></td>
<td>• Calculating conditions and results</td>
<td></td>
<td>• damage control plan</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• full detailed strength calculation</td>
</tr>
<tr>
<td>6. Protection against corrosion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.1 Coating life</td>
<td>• coated areas and target coating life and other measures for corrosion protection in holds, cargo and ballast tanks, other structure-integrated deep tanks and void spaces</td>
<td></td>
<td>• List of Applied Rules &amp; Standards and General Information on SCF</td>
</tr>
<tr>
<td></td>
<td>• specification for coating in holds, cargo and ballast tanks, other structure-integrated deep tanks and void spaces</td>
<td></td>
<td>Coating Technical File required by PSPC</td>
</tr>
<tr>
<td>Tier II items</td>
<td>Information to be included</td>
<td>Further explanation of the content</td>
<td>Example documents or drawings</td>
</tr>
<tr>
<td>---------------</td>
<td>----------------------------</td>
<td>-----------------------------------</td>
<td>-------------------------------</td>
</tr>
</tbody>
</table>
| 6.2 Corrosion addition | • specification for coating and other measures for corrosion protection in holds, cargo and ballast tanks, other structure-integrated deep tanks and void spaces  
  • gross scantlings of structural constituent parts  
  • net scantlings of structural constituent parts  
  • voluntary addition thickness | • plans showing areas prone to excessive corrosion  
  (See Item 6-1 in Annex) | • Coating Technical File required by PSPC  
  • areas prone to excessive corrosion  
  • key construction plans |
| 7. Structural redundancy | • applied Rule (date and revision) | | • List of Applied Rules & Standards and General Information on SCF |
| 8. Watertight and weathertight integrity | • applied Rule (date and revision)  
  • key factors for watertight and weathertight integrity | • details of equipment forming part of the watertight and weathertight integrity | • hatch cover Maker Drawings  
  • structural details of hatch covers, doors and other closings integral with the shell and bulkheads (See Item 8-1 in Annex)  
  • damage control plan |
<p>| 9. Human element considerations | • list of ergonomic design principles applied to ship structure design to enhance safety during operations, inspections and maintenance of the Ship | | • List of Applied Rules &amp; Standards and General Information on SCF |</p>
<table>
<thead>
<tr>
<th>Tier II items</th>
<th>Information to be included</th>
<th>Further explanation of the content</th>
<th>Example documents or drawings</th>
</tr>
</thead>
</table>
| 10. Design transparency | • applied Rule (date and revision)  
• applicable industry standard for design transparency and IP protection  
• reference to part of SCF Information kept ashore | • summary, location and access procedure for part of SCF Information on shore | • List of Applied Rules & Standards and General Information on SCF |
| CONSTRUCTION | | | |
| 11 Construction quality procedures | • applied construction quality standard | • recognized national or international construction quality standard | • List of Applied Rules & Standards and General Information on SCF |
| 12 Survey during construction | • survey regime applied during construction (to include all owner and class scheduled inspections during construction)  
• information on non-destructive examination | • applied Rules (date and revision)  
• copies of certificates of forgings and castings welded into the hull | • Block inspection list  
• inspection schedule for ship structures  
• copies of certificates of forgings and castings welded into the hull  
• tank testing plan including details of the test requirements  
• non-destructive testing plan  
• Coating Technical File required by PSPC |
<p>| IN-SERVICE CONSIDERATIONS | | | |</p>
<table>
<thead>
<tr>
<th>Tier II items</th>
<th>Information to be included</th>
<th>Further explanation of the content</th>
<th>Example documents or drawings</th>
</tr>
</thead>
</table>
| 13 Survey and maintenance     | • maintenance plans specific to the structure of the Ship where higher attention is called for  
• preparations for survey  
• gross hull girder section modulus  
• minimum hull girder section modulus along the length of the Ship to be maintained throughout the Ship's lifetime, including cross section details such as the value of the area of the deck zone and bottom zone, the renewal value for the neutral axis zone.  
• gross scantlings of structural constituent parts  
• net scantlings of structural constituent parts  
• Voluntary addition thickness  
• hull form  
• gross scantlings of structural constituent parts  
• net scantlings of structural constituent parts  
• Voluntary addition thickness  
• hull form  
• gross scantlings of structural constituent parts  
• net scantlings of structural constituent parts  
• Voluntary addition thickness  
• hull form  
• gross scantlings of structural constituent parts  
• net scantlings of structural constituent parts  
• Voluntary addition thickness  
• hull form  | • plan showing highly stressed areas prone to yielding, buckling, fatigue and/or excessive corrosion  
• arrangement and details of all penetrations normally examined at dry-docking  
• details for dry-docking  
• details for in-water survey  
• plan showing highly stressed areas prone to yielding, buckling, fatigue and/or excessive corrosion  
• arrangement and details of all penetrations normally examined at dry-docking  
• details for dry-docking  
• details for in-water survey  | • Inspection Guidance in Operation  
• operation and maintenance manuals (e.g., hatch covers and doors)  
• detail of bottom plug  
• docking plan  
• details for in-water survey  
• dangerous area plan  
• Ship Structure Access Manual  
• means of access to other structure-integrated deep tanks and large void spaces (See Item 13-1 in Annex)  
• Coating Technical File required by PSPC  
• key construction plans  
• rudder and rudder stock  
• stern frame  
• structural details  
• yard plans  
• Master Lines plan and Equivalent to Lines plan  |
| 14 Structural accessibility   | • means of access to holds, cargo and ballast tanks and other structure-integrated           | • plans showing arrangement and details of means of access                                           | • Ship Structure Access Manual  
• means of access to other structure- |
<table>
<thead>
<tr>
<th>Tier II items</th>
<th>Information to be included</th>
<th>Further explanation of the content</th>
<th>Example documents or drawings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>deep tanks</td>
<td></td>
<td>integrated deep tanks and large void spaces</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• damage control plan</td>
</tr>
</tbody>
</table>

**RECYCLING CONSIDERATIONS**

15 Recycling

- identification of all materials that were used in construction and may need special handling due to environmental and safety concerns
- list of materials used for the construction of the hull structure

**List of materials** (See Item 15-1 in Annex)

**Notes:**

1 "Key construction plans" means plans such as midship section, main O.T. and W.T. transverse bulkheads, construction profiles/plans, shell expansions, forward and aft sections in cargo tank (or hold) region, engine-room construction, forward construction, stern construction and Superstructure (deck house) construction drawings. “Key construction plans” also includes scantling information of structural members and hull form information on a level meeting onboard needs as defined in Item 3-5 (Key construction plans) and Item 3-6 (Net scantlings of structural constituent parts) contained in Annex.

2 "Hull form" means a graphical or numerical representation of the geometry of the hull. Examples would include the graphical description provided by a lines plan and the numerical description provided by the hull form data stored within an onboard computer of the Ship.

3 "Equivalent to Lines plan" means a set of information of hull form to be indicated in Key construction plans and numerical data encrypted and stored on an onboard loading computer of the Ship, which meet onboard needs in normal and emergency situations. (Refer to Item 3-11 “Equivalent to Lines plan” defined in Annex, too.)

4 If some method alternative to classification rules is applied, declaration of such application and applied areas need to be indicated.
2.3. IP Levels

The following two IP Levels are defined for SCF documents and drawings considering IP sensitivity, operational needs and standard access procedures:

- Ordinary IP Level
- High IP Level

Standard IP Levels of SCF documents and drawings are shown along with standard storage locations in Table 2.

These standard IP Levels indicated in Table 2 may be modified for specific Ships subject to agreement between the Shipowner and IP-Holders concerned.

Storage locations indicated in Table 2 may be changed subject to agreement between the Shipowner and IP-Holder concerned. However, any item required to be on board by IMO Conventions, and those items listed as being on board in the table are to be on board as a minimum to ensure that they are transferred with the Ship whenever a change of Shipowner takes place.

All SCF Information will need appropriate care to be taken to safeguard the relevant IP.

2.4. Format of SCF Information

In order to facilitate both the use of the safety related information and the protection of IP, the SCF Onboard could be stored and used in different formats, e.g. either hardcopies or digital files (including a viewer/browser with printout functionality) at the choice of the Shipowner or in accordance with requirements of the Flag State and/or port States. A complete set of the SCF Onboard and SCF Supplement Ashore in a digital format is kept at the Archive Center.

Digital SCF documents need to be stored in a format (software and hardware) that ensures compatibility with standard hardware/software (standard PC operating systems) and that can be upgraded in the future to cater for IT technology advancement. Recognized global standards are expected to be used as far as practical so that there will be no critical access failure when hardware such as personal computers and/or software such as operating systems and browsers are updated or renewed, or when the Shipowner or the Archive Center is changed.

Regardless of the format of documents and drawings, the access to and safekeeping of SCF Information is performed in accordance with the principles provided in Ch. 3.2.
### Table 2: Standard IP Levels and Storage Locations

<table>
<thead>
<tr>
<th>IP Level</th>
<th>Document/drawing name used in Industry Standards</th>
<th>Storage location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ordinary</td>
<td>Capacity plan (*2)</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Loading manual (*1)</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Trim &amp; stability booklet (*1)</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Loading instrument instruction manual (*1)</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Operation and maintenance manual (*1)</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>General arrangement (*2)</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Damage control plan (*2)</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Docking plan (*1)</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Calculation of hull girder section modulus</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Dangerous area plan (*2)</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Coating technical file</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Structural details of hatch covers, doors and other closings integral with the shell and bulkheads</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Hatch cover Maker drawings</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Inspection Guidance in Operation</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Block inspection list</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>List of materials</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Inspection schedule for ship structures</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Copies of certificates of forgings and castings welded into the hull</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Tank testing plan including details of the test requirements</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Non-destructive testing plan</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Areas prone to yielding and/or buckling</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Areas prone to fatigue</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Areas prone to excessive corrosion</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Detail of bottom plug</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Details for in-water survey</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Means of access to other structure-integrated deep tanks and large void spaces</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Ship structure access manual</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>List of applied Rules &amp; Standards and General Information on SCF</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Midship section</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Main O.T. and W.T. transverse bulkheads</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Construction profiles/plans</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Shell expansions</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Forward and aft sections in cargo tank (or hold) region</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Engine-room construction</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Forward construction</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Stern construction</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Superstructure (deck house) construction</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Rudder and rudder stock</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Stern frame</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Structural details</td>
<td>on board ship</td>
</tr>
<tr>
<td></td>
<td>Equivalent to Lines plan</td>
<td>on board ship</td>
</tr>
<tr>
<td>High</td>
<td>Full Detailed strength calculation</td>
<td>on shore archive</td>
</tr>
<tr>
<td></td>
<td>Full Detailed fatigue life calculation</td>
<td>on shore archive</td>
</tr>
<tr>
<td></td>
<td>Yard plans</td>
<td>on shore archive</td>
</tr>
<tr>
<td></td>
<td>Master Lines plan</td>
<td>on shore archive</td>
</tr>
</tbody>
</table>

**Note:** Documents and drawings in the “Ordinary” category marked by (*1) are those that are used frequently during ship operations, while documents and drawings with (*2) are those that are posted in the Ship’s accommodation at all times.
3. Management of SCF Information

3.1. Preparation of SCF Information

Upon delivery of the newly built ship, the Shipbuilder – functioning as co-ordinator of all IP-Holders – provides SCF Information in accordance with the IMO requirements as described below:

i. The SCF Onboard to the Ship;

ii. Copy of the SCF Onboard to the Shipowner’s Office Ashore; and

iii. Copy of the SCF Onboard and SCF Supplement Ashore to the Archive Center

3.2. Access and Safekeeping of SCF Information

Shipowner securely keeps SCF Information throughout the Ship’s operational lifetime in order to ensure safe operations of the Ship.

Shipowner, for Safe Operation Purposes, can access the SCF Information on board at any time and permit other Access Right Holders to access SCF Information through the Shipowner under the following principles:

• The IP of SCF Information including confidentiality needs to be protected; and

• Appropriate procedures to manage access to and securely keep SCF Information in line with the SCF IS need to be implemented by the Shipowner, e.g. as a part of the Quality Management Systems.

In principle, the applicable access and safekeeping procedures are to be:

i. strict enough to ensure IP protection;

ii. simple enough for smooth access;

iii. robust enough for onboard utilization;

iv. durable enough for lifetime service;

v. compatible with standard hardware/software systems in the market; and

vi. cost effective.

The access and safekeeping procedures for each IP Level are as follows:

a) Ordinary IP Level information: the company document management system as a part of the Ship’s Quality Management System is expected to include procedures for access management (e.g., recording of name of document or drawing, access date, name of accessing person/organization and the existence of a confidentiality agreement between the IP Holder(s) and Shipowner needs to be recognized.) It is anticipated that appropriate IT security procedures to protect information held in electronic form are put in place. These include periodical renewal of passwords or equivalent and may include periodical renewal of the information to ensure that a complete set of the latest information is used and that the information has not been compromised.

b) High IP Level information: is stored at the Archive Center ashore. When the Shipowner initiates the procedures for access to the information, accompanied with information related to the uses of the information, the Archive Center, in accordance with the specific procedures, provides the required information after obtaining confirmation by the IP Holder. After the period of use, High IP Level information is to be returned to the Archive Center.

Hull form and structural strength information that is required for mandatory Emergency Response Services (ERS) can be kept by dedicated ERS providers if IPR protection
obligations are acknowledged by the provider such as by means of a confidentiality agreement. The specific protection obligations and access procedures of the SCF IS may be modified to adapt to the needs of the ERS.

In general, it is envisaged that a confidentiality agreement could be developed between the owner and the IP-Holder. Company procedures for SCF access management need to take account of such agreement.

### 3.3. Archive Center

The Archive Center securely keeps SCF Information and arranges appropriate measures for access to and IP protection of SCF Information, in accordance with the principles shown in the SCF IS.

The Archive Center is operated in accordance with the following basic operational requirements. The Archive Center:

i. takes a nonpartisan stance;

ii. provides services 24 hours and 365 days in accordance with a predetermined operational plan in order to respond to any global and urgent requirement to provide SCF Information kept at the Archive Center;

iii. provides services at least in English;

iv. makes and keeps secure backup copies of the digital documents it keeps;

v. provides the information on necessary hardware and software, and on relevant software updates/upgrades, so that accessing individual may access SCF Information kept at the Archive Center; and

vi. provides tools such as browser software to view SCF Information that should be compatible with standard PC operating systems.

The Archive Center provides the SCF Onboard Information after checking whether:

- the party that required Access to SCF Information is either the Shipowner or another registered Access Right Holder; and
- the party requesting the information has confirmed that the information is needed for the Ship’s Safe Operation Purposes.

The Archive Center provides the SCF Supplement Information after checking whether:

- the party that required Access to SCF Information is the Shipowner or another registered Access Right Holder who is making access via the Shipowner;
- there is an agreement between Shipowner and IP-Holder; and
- required SCF Information is necessary and sufficient for the purpose.

The Archive Center appointed by the IP-Holder, from accredited candidates at the time of new-building of the Ship, needs to be agreed with the Shipowner.

### 3.4. Update of SCF Information

The Shipowner, following any significant event including, for example, substantial repair, conversion or any major modification to the Ship structure that requires Update of the SCF Information, needs to arrange an Update of the SCF Information.

In such cases, SCF Information before the Update needs to be continuously retained without destruction or modification along with the updated SCF Information for traceability purposes.

The Shipowner may task the Archive Center to carry out procedures for Update as appropriate.
Updated SCF Information needs to be stored at the same Archive Center that keeps the Ship’s original SCF Information.

3.5. Use of SCF Information for Purposes other than Safe Operation

The Shipowner is expected to agree in advance with the IP-Holder when SCF Information is disclosed to a Third Party for purposes other than Safe Operation Purpose, noting that the definition of ‘safe operation’ includes maintenance, repair, inspection and emergency response.

4. Revision of the Interim Industry Standards

In the event that the IMO requirement is amended or a relevant issue concerning IT progress or use of this SCF IS arises and a proposal is made by any member of the cross industry group (see the Introduction for its definition) for the revision of this SCF IS, the cross industry group will consider the need for a revision to the SCF IS. Following agreement of such a need, this SCF IS may be revised as appropriate.

In addition it is anticipated that in the absence of significant issues arising, a general review will be initiated by the cross industry group within 24 months from the sufficient application of this SCF IS to take account of experience gained in the initial use of this SCF IS.

References


Annex  Practical Guidelines for SCF Information Definition

A.1 Introduction

(1) Purpose and notes

- This Annex shows a collection of detailed definitions, models and examples of SCF Information which is based on the requirements of the IMO. The purpose of the detailed definitions, models and examples of SCF Information is to provide practical clarification and explanation on the "List of information to be included in the Ship Construction File (SCF)" indicated in Table 1 of Chapter 2 so as to prevent misinterpretation and confusion.

- Items with detailed definitions, models and examples are indicated by markers such as Items 1-1 to 15-1 in Table 1 of Chapter 2. In general, detailed definitions, models and examples are given on one page for each item. It should be noted that the set of SCF documents and drawings, models and examples given to each document/drawing are only for a specific design case, and different set of documents and drawings are acceptable as long as they include sufficient information conforming to requirements of SCF Information as a whole.

(2) Additional definitions

- Substantial repair: Steel replacement of the hull area of Ship affected by an accident (damage caused by contact, collision or grounding, etc.) or substantial corrosion.

- Any modification of the Ship structure: Scantling or shape change of original ship structure, or the addition of local reinforcements due to the installation of new equipment on board, etc.

- Updated SCF: Depending on Shipowner's decision, the Shipyard for repair/conversion updates the key construction plans or provides new sheets in relation with the modification which are additional to the existing key construction plans. Updated key construction plans or new sheets as well as relevant yard plans (fabrication and installation drawings) in a digital format are also provided as addition to SCF Supplement Ashore by the Shipyard for repair/conversion.

A.2 List of Applied Rules & Standards and General Information on SCF

“List of Applied Rules & Standards and General Information on SCF” means the information listed hereunder. However, IP-Holder may divide such information into SCF document(s) or provide such information in SCF drawing(s). IP-Holder may also compile following information into one document as part of SCF Onboard:

1) Applied Rules and Standards
2) List of SCF Onboard Information: Documents and drawings that constitute SCF Onboard of the Ship need to be listed.
3) Table showing the storage location, IP Level and IP-Holder name for each of the SCF documents or drawings containing SCF Information.
4) Table showing the linkage between each of the documents and drawings containing SCF Information and the GBS Tier II functional requirements.
5) List of the documents and drawings kept at the Archive Center as SCF Supplement.
6) Location of the Archive Center and access information including contact points.
7) Procedures for updating SCF Information
8) The IS and SG including Intellectual property provisions.
Item 1-1: Applied Rules & Standards

**Definition**
- This document shows the names and versions of applied rules and standards as required by GBS.
- However, IP-Holder may divide such information and indicate in relevant SCF document(s) or drawing(s).

<table>
<thead>
<tr>
<th>GBS Tier Items</th>
<th>SCF Item</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Design life</td>
<td>Design life</td>
</tr>
</tbody>
</table>
| 2              | Environmental conditions | Assumed environmental condition: North Atlantic wave environment
The rule requirements are based on a ship trading in the North Atlantic wave environment for its entire design life.
Wind and current The effects of wind and current with regard to the strength of the structure are not considered.
Ice The effects of ice and ice accretion are not taken into account by the Rules.
| 3              | Structural strength | General design |
| 4              | Fatigue life | Fatigue life |
| 5              | Residual strength | Residual strength |
| 6              | Protection against corrosion | Coating life |
| 7              | Structural redundancy | Structural redundancy |
| 8              | Human element considerations | Human element considerations |
| 9              | Design transparency | Design transparency |
| 10             | Construction quality procedures | Construction quality procedures |

**Remarks**
- The models and examples attached in this document are only for a specific design case, and different set of documents are acceptable as long as they include necessary information conforming to SCF requirements as a whole.
### Item 3-1: Operational restrictions due to structural strength

| Definition | Information on operational restrictions due to structural strength is covered by several documents, any such as loading manual, trim and stability booklet, loading instrument instruction manual and operation and maintenance manuals. The operation and maintenance manuals are for outfitting equipment for which operation is limited in terms of structural strength, and may include cargo securing manual (examples attached below), manuals for large outfitting equipment which loads to the hull construction, etc. |
| Models & Examples | ![Olympic Lashing](image1.png) ![Group Lashing](image2.png) **Figure 4** - Securing of top tier against fore-and-aft shifting (view from top)  
 ![Securing of end row in top tier](image3.png) **Figure 5** - Securing of end row in top tier against fore-and-aft shifting  
 Abstract from the Cargo Securing Manual is attached. |
| Remarks | The models and examples attached in this document are only for a specific design case, and different set of documents are acceptable as long as they include necessary information conforming to SCF requirements as a whole. |
**Item 3-2: Bulky output of strength calculation**

A set of full detailed structural strength calculation required for approval of structural drawings and documents as required by the rules and prepared by a shipbuilder or a classification society. This is the generic terms of calculation for hull structure scantlings decided on the basis of their capacities for stress, buckling, deformation and any other factors stipulated in the rules (e.g. collapse, deformation, vibration, noise, corrosion, etc. if required) except for fatigue which is otherwise defined. This set of full detailed structural strength calculation may be divided into several documents. This set of full detailed structural strength calculation includes those approved by the classification society as an alternative method to the rules using proprietary techniques peculiar to each shipbuilder, instead of those specified by the rules. This set of full detailed structural strength calculation includes results and background information on the calculation procedures such as boundary conditions, load conditions, etc. as well as names and versions of computer hardware and software, and any other information related to direct strength analyses specified in the reporting requirements of Common Structural Rules for Bulk Carriers and Oil Tankers issued by IACS as follows.

<table>
<thead>
<tr>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) List of plans used including dates and versions.</td>
</tr>
<tr>
<td>b) Detailed description of structural modelling including all modelling assumptions and any deviations in geometry and arrangement of structure compared with plans.</td>
</tr>
<tr>
<td>c) Plots to demonstrate correct structural modelling and assigned properties.</td>
</tr>
<tr>
<td>d) Details of material properties, plate thickness, beam properties used in the model.</td>
</tr>
<tr>
<td>e) Details of boundary conditions.</td>
</tr>
<tr>
<td>f) Details of all loading conditions reviewed with calculated hull girder shear force, bending moment and torsional moment distributions.</td>
</tr>
<tr>
<td>g) Details of applied loads and confirmation that individual and total applied loads are correct.</td>
</tr>
<tr>
<td>h) Plots and results that demonstrate the correct behaviour of the structural model under the applied loads.</td>
</tr>
<tr>
<td>i) Summaries and plots of global and local deflections.</td>
</tr>
<tr>
<td>j) Summaries and sufficient plots of stresses to demonstrate that the design criteria are not exceeded in any member.</td>
</tr>
<tr>
<td>k) Plate and stiffened panel buckling analysis and results.</td>
</tr>
<tr>
<td>l) Tabulated results showing compliance, or otherwise, with the design criteria.</td>
</tr>
<tr>
<td>m) Proposed amendments to structure where necessary, including revised assessment of stresses, buckling and fatigue properties showing compliance with design criteria.</td>
</tr>
<tr>
<td>n) Reference of the finite element computer program, including its version and date.</td>
</tr>
</tbody>
</table>

This set of full detailed structural strength calculation also includes results and background information on the calculation procedures related to any strength calculations other than direct strength analyses, such as hull girder ultimate capacity calculation, residual strength calculation and hull girder section modulus calculation.
### Models & Examples

**Results of Finite Element Analysis**

![Finite Element Analysis Diagram](image)

**Fig. 12:** Stress distribution of No. 2-4 cargo holds by FEA Analysis

**Fig. 14:** Stress distribution of P1, XS Sec. by FEA Analysis

**Fig. 16:** Stress distribution of P1, XS Sec. by FEA Analysis

**Fig. 18:** Stress distribution of R1-2, Alt. Sec. by FEA Analysis

**Fig. 20:** Stress distribution of Bottom Shell Plane by FEA Analysis

### Remarks

- Full detailed structural strength calculation is available to the Shipowner during the construction period, with the Shipowner procedurally complying with the IP protection principles, similar to those stated in the Introduction and chapter 3 of the SCF IS (similar in the sense that the SCF IS descriptions are primarily for actions taking place after delivery of the ship).
- It is standard to store such detailed structural strength calculation only at the Archive Center from the viewpoint of protection of Intellectual Property Rights.
- The models and examples attached in this document are only for a specific design case, and different set of documents are acceptable as long as they include necessary information conforming to SCF requirements as a whole.
**Item 3-3: Plan showing highly stressed areas prone to yielding and/or buckling**

| Definition | This plan is used for proper and preventive inspections and surveys during construction and after the delivery of the Ship, and indicates each specific area for the Ship as "areas without margin more than a certain degree". In addition to the above, areas where general caution is advised may be included. |
| Models & Examples | ![Trans. Ring Section](image1.png) ![Horizontal Stringer Plan](image2.png) |

Figure: Typical plan showing highly stressed areas prone to yielding and/or buckling for Double Hull Oil Tanker

(Note) Highly stressed areas prone to yielding and/or buckling are shown by the following marks: ○

| Remarks | - Background of this subject is the cautionary statement below in the Tier I Goal of GBS:  
"Ships shall be designed and constructed for a specified design life to be safe and environmentally friendly, when properly operated and maintained under the specified operating and environmental conditions"  
- "Specified design life is the nominal period that the ship is assumed to be exposed to operating and/or environmental conditions and/or the corrosive environment and is used for selecting appropriate ship design parameters. However, the ship's actual service life may be longer or shorter depending on the actual operating conditions and maintenance of the ship throughout its life cycle."  
- Acceptance criteria by classification society for yielding and buckling of all structural members are satisfied as a matter of course (see Item 3-2).  
- The models and examples attached in this document are only for a specific design case, and different set of documents are acceptable as long as they include necessary information conforming to SCF requirements as a whole. |
### Item 3-3A: Plan showing highly stressed areas prone to yielding and/or buckling

<table>
<thead>
<tr>
<th>Definition</th>
<th>See Item 3-3</th>
</tr>
</thead>
</table>

**Models & Examples**

![Diagram of highly stressed areas]

Figure: Typical plan showing highly stressed areas prone to yielding and/or buckling for Bulk Carrier

(Note) Highly stressed areas prone to yielding and/or buckling are shown by the following marks: ○

**Remarks**

- This shows examples of a bulk carrier in addition to Item 3-3. Conditions mentioned other than the figures and descriptions in Item 3-3A needs to be in accordance with the contents in Item 3-3.
- The models and examples attached in this document are only for a specific design case, and different set of documents are acceptable as long as they include necessary information conforming to SCF requirements as a whole.
### Item 3-4: Structural drawings

<table>
<thead>
<tr>
<th>Definition</th>
</tr>
</thead>
</table>
| 1. A collection of drawings for structural members composing main hull  
2. Including scantlings (as-built, net) of all structural members of the main hull  
3. Including information on leg length of welds  
4. Composed of following figures.  
   (1) key construction plans  
   See Item 3-5.  
   (2) yard plans  
   See Item 3-8.  
5. Describing method for gross and net scantlings  
   See Item 3-6.  
6. Describing method for weld leg length  
   See Item 3-8.  
7. Explanation of abbreviated symbols  
   Abbreviated symbols used for above SCF Information need to be explained in the drawings or in a separate drawing.  
   Explanation of symbols not related to SCF Information (for instance, information provided by the shipbuilder for construction) is not necessary.  
8. Examples of figures  
   Key construction plans: See Item 3-5.  
   Yard plans: See Item 3-8. |

<table>
<thead>
<tr>
<th>Models &amp; Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>- The models and examples attached in this document are only for a specific design case, and different set of documents are acceptable as long as they include necessary information conforming to SCF requirements as a whole.</td>
</tr>
</tbody>
</table>
**Item 3-5: Key construction plan**

<table>
<thead>
<tr>
<th>Definition</th>
<th>A set of plans (drawings) showing shapes and gross scantlings of major structural members required mainly for classification approval, including superstructure construction.</th>
</tr>
</thead>
</table>
| Models & Examples | - Key construction plans are composed of the following set of drawings described in the explanatory note 2 of MSC.1/Circ.1343.  
  + midship section  
  + main O.T. and W.T. transverse bulkheads  
  + construction profiles/plans  
  + shell expansions  
  + forward and aft section in cargo tank (or hold) region  
  + engine-room construction  
  + forward construction  
  + stern construction  
  + superstructure (deck house) construction |
| Remarks | - Leg length of welds may be included in separate drawings.  
- Detailed structure may be included in separate drawings as "structural details". Refer to Item 3-6.  
- Hull form information should also be shown in cross section, plan and profile on a sufficient level meeting onboard needs.  
- Abbreviated symbols used for SCF Information need to be explained in the drawings or in a separate drawing.  
- Explanation of abbreviated symbols not related to SCF Information (for instance, information provided by the shipbuilder for construction) is not necessary.  
- The models and examples attached in this document are only for a specific design case, and different set of documents are acceptable as long as they include necessary information conforming to SCF requirements as a whole |
### Item 3-6: Net scantlings of structural constituent parts

<table>
<thead>
<tr>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information showing net plate thickness or corrosion addition thickness in order to indicate renewal criteria specified by the classification requirements. Alternatively, information showing corrosion addition thickness for one side of each structural member in various compartment types of the Ship and method for calculating net plate thickness may be substituted for.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Models &amp; Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Indication of net (renewal) scantlings</td>
</tr>
<tr>
<td>(2) Indication of corrosion addition (Special note when there is voluntary addition)</td>
</tr>
<tr>
<td>(3) Instruction for calculating procedure for net (renewal) scantlings</td>
</tr>
</tbody>
</table>

\[
l_{net} = l_{drawing} - t_c \\
l_c = \text{Roundup}_{0}(l_{t1} + l_{t2}) + t_{reserve} \\
t_{reserve} = 0.5 \\
\text{Special note when there is voluntary addition}
\]

<table>
<thead>
<tr>
<th>Compartment</th>
<th>(t_{C1}, t_{C2})</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>1.2</td>
</tr>
<tr>
<td>C2</td>
<td>3.7</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

Fig. Examples of plan showing “net scantlings of structural constituent parts”

<table>
<thead>
<tr>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>- The models and examples attached in this document are only for a specific design case, and different set of documents are acceptable as long as they include necessary information conforming to SCF requirements as a whole.</td>
</tr>
</tbody>
</table>
## Item 3-7: Structural details of typical members

| Definition | Information showing structural details required mainly for classification approval of Key construction plans at the time of new building, repair or conversion, including cutout (slot), collar plate, scallop, snip end, etc.  
This information may be included in a separate drawing showing structural details collectively and/or in each drawing including Yard plan. |
| --- | --- |
| Models & Examples | Structural details of typical members are shown in following figures.  
1. **Slot**  
2. **Collar plate**  
3. **Scallop**  
4. **Snip end**  

![Slot](image1)  
![Collar plate](image2)  
![Scallop](image3)  
![Snip end](image4)  

**NOTE:**  
These figures are only examples of a particular design. Details shall be different depending on each specific design. |
| Remarks | - The models and examples attached in this document are only for a specific design case, and different set of documents are acceptable as long as they include necessary information conforming to SCF requirements as a whole. |
### Item 3-8: Yard plans

<table>
<thead>
<tr>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>A set of plans (drawings) containing scantling information of all structural members of the Ship. The size, thickness, grade and continuity of structural members including weld property are shown. If the key construction plans include scantling information of all structural members, they can be substituted for yard plans, however, need to be kept as a part of SCF Onboard.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Models &amp; Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plans containing scantling information of all structural members of the Ship, including the following items:</td>
</tr>
<tr>
<td>○ Superstructure (deck house) construction</td>
</tr>
<tr>
<td>○ Hatch Coaming</td>
</tr>
<tr>
<td>○ Poop</td>
</tr>
<tr>
<td>○ Forecastle Deck</td>
</tr>
<tr>
<td>○ Bulwark</td>
</tr>
<tr>
<td>○ Lower reinforcement for heavy outfitting equipment (the one required by classification rules)</td>
</tr>
<tr>
<td>○ Leg length of welds</td>
</tr>
<tr>
<td>• Leg length of welds may be included in a separate drawing.</td>
</tr>
<tr>
<td>• Structural details may be included in a separate drawing. See Item (3-6).</td>
</tr>
<tr>
<td>• Abbreviated symbols used for SCF Information needs to be explained in the drawing or in a separate drawing.</td>
</tr>
<tr>
<td>• Explanation of symbols not related to SCF Information (for instance, information provided by the shipbuilder for construction) is not necessary.</td>
</tr>
<tr>
<td>• Bracket or other members in accordance with the shipbuilders' standards may be represented by marks of which details may be included in a separate drawing.</td>
</tr>
</tbody>
</table>

(Nota) Yard plans may contain information not related to SCF Information, such as block names, ID of each member/piece, assembly sequence, etc.

**Example of Yard plans**

Remarks

- Yard plans also contains information on fabrication processes only required for initial construction.
- The models and examples attached in this document are only for a specific design case, and different set of documents are acceptable as long as they include necessary information conforming to SCF requirements as a whole.
### Item 3-9: Dangerous area plan

<table>
<thead>
<tr>
<th>Definition</th>
<th>Drawing showing dangerous areas of the Ship which are defined in IEC 60092-502 Electrical installation in ships Part 502 Tankers-Special features. Applicable to oil tankers only.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Models &amp; Examples</td>
<td><img src="image1.png" alt="Diagram" /> <img src="image2.png" alt="Diagram" /> <img src="image3.png" alt="Diagram" /> <img src="image4.png" alt="Diagram" /> <img src="image5.png" alt="Diagram" /></td>
</tr>
<tr>
<td>Remarks</td>
<td>- The models and examples attached in this document are only for a specific design case, and different set of documents are acceptable as long as they include necessary information conforming to SCF requirements as a whole.</td>
</tr>
</tbody>
</table>
**Item 3-10: Master Lines plan**

**Definition**
A Master Lines plan is dedicated to show detailed hull form of the Ship entirely.

<table>
<thead>
<tr>
<th>Models &amp; Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body plan (Aft)</td>
</tr>
<tr>
<td>(Station lines)</td>
</tr>
<tr>
<td>Body plan (Fore)</td>
</tr>
<tr>
<td>(Station lines)</td>
</tr>
<tr>
<td>Forward part of half breadth and sheer plans</td>
</tr>
<tr>
<td>(Water lines and buttock lines)</td>
</tr>
<tr>
<td>Aft part of half breadth and sheer plans</td>
</tr>
<tr>
<td>(Water lines and buttock lines)</td>
</tr>
</tbody>
</table>

(Note) Reproduced from the Report of the Shipping Research Association of Japan, the 154th Research Committee, (Research material No.235), March 1977, with the permission by Japan Ship Technology Research Association (JSTRA)

**Remarks**
- The models and examples attached in this document are only for a specific design case, and different set of documents are acceptable as long as they include necessary information conforming to SCF requirements as a whole.
### Item 3-11: Equivalent to Lines plan

| Definition | "Equivalent to Lines plan" means graphical and/or numerical information of the geometry of the hull form needed for onboard repair of any part of the hull structure and/or trim & stability and longitudinal strength calculation needed routinely or in emergency situations onboard. It is provided by set of information of hull form to be indicated in Key construction plans and numerical data encrypted and stored on an onboard loading computer of the Ship. |
| Models & Examples | **Hull Form Information in “Key construction plans”**  
(Note) Hull form information should be shown in cross section, plan and profile.  
Utilization of numerical hull form data stored on onboard loading computer of the ship  

| Remarks | - The above definition is covering notes 6 of "Annex to MSC.1/Circ.1343 (2 June 2010)"  
- The models and examples attached in this document are only for a specific design case, and different set of documents are acceptable as long as they include necessary information conforming to SCF requirements as a whole. |
**Item 4-1: Bulky output of fatigue life calculation**

<table>
<thead>
<tr>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>A set of full detailed fatigue strength calculation required for approval of structural drawings and documents as required by the rules and prepared by a shipbuilder or a classification society. This set of full detailed fatigue life calculation may be divided into several documents. This set of full detailed fatigue life calculation includes those approved by the classification society as an alternative method to the rules using proprietary techniques peculiar to each shipbuilder, instead of those specified by the rules. This set of full detailed fatigue life calculation includes results and background information on the calculation procedures such as boundary conditions, load conditions, etc. as well as names and versions of computer hardware and software, and any other information related to direct fatigue life analyses specified in the reporting requirements of Common Structural Rules for Bulk Carriers and Oil Tankers issued by IACS as follows.</td>
</tr>
<tr>
<td>a) List of plans used including dates and versions.</td>
</tr>
<tr>
<td>b) Detailed description of structural modelling including all modelling assumptions and any deviations in geometry and arrangement of structure compared with plans.</td>
</tr>
<tr>
<td>c) Plots to demonstrate correct structural modelling and assigned properties.</td>
</tr>
<tr>
<td>d) Details of material properties, plate thickness, beam properties used in the model.</td>
</tr>
<tr>
<td>e) Details of boundary conditions.</td>
</tr>
<tr>
<td>f) Details of all loading conditions reviewed with calculated hull girder shear force, bending moment and torsional moment distributions.</td>
</tr>
<tr>
<td>g) Details of applied loads and confirmation that individual and total applied loads are correct.</td>
</tr>
<tr>
<td>h) Plots and results that demonstrate the correct behaviour of the structural model under the applied loads.</td>
</tr>
<tr>
<td>i) Summaries and plots of global and local deflections.</td>
</tr>
<tr>
<td>j) Summaries and sufficient plots of stresses to demonstrate that the design criteria are not exceeded in any member.</td>
</tr>
<tr>
<td>k) Plate and stiffened panel buckling analysis and results.</td>
</tr>
<tr>
<td>l) Tabulated results showing compliance, or otherwise, with the design criteria.</td>
</tr>
<tr>
<td>m) Proposed amendments to structure where necessary, including revised assessment of stresses, buckling and fatigue properties showing compliance with design criteria.</td>
</tr>
<tr>
<td>n) Reference of the finite element computer program, including its version and date.</td>
</tr>
</tbody>
</table>

This set of full detailed fatigue life calculation also includes results and background information on the calculation procedures related to any fatigue life calculations other than direct fatigue life analyses, such as simplified fatigue life calculations.
Results of Fatigue Life Calculation

Advanced and highly confidential design and construction methods and detailed calculations to prove their safety which are required to adopt structure design and construction methods different from classification rules include the following, for instance:

- Soft configuration of snipped end of primary member end brackets for improved fatigue strength;
- End configuration of web stiffener connected to longitudinal for improved fatigue strength; and
- Special slot configuration (including collar plate) for improved fatigue strength

Remarks

- Full detailed fatigue life calculation is available to the Shipowner during the construction period, with the Shipowner procedurally complying with the IP protection principles, similar to those stated in the introduction and chapter 3 of the SCF IS (similar in the sense that the SCF IS descriptions are primarily for actions taking place after delivery of the ship).
- The models and examples attached in this document are only for a specific design case, and different set of documents are acceptable as long as they include necessary information conforming to SCF requirements as a whole.
**Item 4-2: Plan showing areas prone to fatigue**

| Definition | This plan is the reference material used for proper and preventive inspections and surveys during construction and after the delivery of the Ship, and indicates each specific area for the Ship as "areas without margin more than a certain degree" In addition to the above, areas where general caution is advised may be included. |
| Models & Examples | **D/H Oil Tanker**  
Trans. Ring Section  
Vertical Stiffener Section  
Horizontal Stringer Plan  
Side Longitudinal Plan  
**Bulk Carrier**  
Trans. Ring Section  
T.BHD. Section  
Corrugate BHD Section  
(Note) Areas prone to fatigue are shown by the following marks: ○ |
| Remarks | - Background of this item is described in Item 3-3.  
- Acceptance criteria by classification society for fatigue are satisfied as a matter of course (see Item 4-1).  
- The models and examples attached in this document are only for a specific design case, and different set of documents are acceptable as long as they include necessary information conforming to SCF requirements as a whole. |
## Item 6-1: Plan showing areas prone to excessive corrosion

<table>
<thead>
<tr>
<th>Definition</th>
<th>This plan is used for proper and preventive inspections and surveys after the delivery of the Ship, and indicates the areas where relatively severe corrosion is expected more than other areas.</th>
</tr>
</thead>
</table>
| Models & Examples | Structural members with larger quantity of corrosion additions according to CSR, such as \( tc = 4.0 \) in the following figure, namely:  
- Steel members within 3 meters below the upper deck  
- Inner skin  
- Inner bottom |
| Remarks | - Background of this item is described in **Item 3-3**.  
- "Corrosion" of GBS is a general term including mechanical wear. Therefore, members including inner bottom plating with adjacent structures up to a certain height covered by GRAB Notation of BC need to be covered.  
- The models and examples attached in this document are only for a specific design case, and different set of documents are acceptable as long as they include necessary information conforming to SCF requirements as a whole. |
**Item 8-1: Structural details of hatch covers, door and other closings integral with the shell and bulkhead**

<table>
<thead>
<tr>
<th>Definition</th>
<th>Scope of coverage is of the doors and other closings covered by the damage stability definition. Refer to the respective drawings of manufacturers for detailed structure.</th>
</tr>
</thead>
</table>
| Models & Examples                                                         | ![Hatch Cover Maker Drawings](image)

Remarks: The models and examples attached in this document are only for a specific design case, and different set of documents are acceptable as long as they include necessary information conforming to SCF requirements as a whole.
### Item 13-1: Means of access to other structure-integrated deep tanks

<table>
<thead>
<tr>
<th>Definition</th>
<th>Arrangement of means of access in other structure integrated deep tanks and large void spaces, except for those in the hold (tank) part, including F.P.T. which are covered by PMA regulation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Models &amp; Examples</td>
<td><img src="image1.png" alt="STEERING GEAR FLAT PLAN" /> <img src="image2.png" alt="PERFORATE FLAT PLAN" /> <img src="image3.png" alt="FR 11 SEC." /></td>
</tr>
<tr>
<td>Remarks</td>
<td>- The models and examples attached in this document are only for a specific design case, and different set of documents are acceptable as long as they include necessary information conforming to SCF requirements as a whole.</td>
</tr>
</tbody>
</table>

Fig. Example of plan showing “Means of access to other structure”
**Item 15-1: List of materials**

<table>
<thead>
<tr>
<th>Definition</th>
<th>List of materials used for the hull structure.</th>
</tr>
</thead>
</table>

### Hull structure material list

<table>
<thead>
<tr>
<th>Kind of Material</th>
<th>Main Hull</th>
<th>Rudder &amp; Stern Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>AH315</td>
<td>Forged Steel (σ_y=***N/mm²)</td>
</tr>
<tr>
<td></td>
<td>DH315</td>
<td>Cast Steel (σ_y=***N/mm²)</td>
</tr>
<tr>
<td></td>
<td>EH315</td>
<td>SUS304</td>
</tr>
<tr>
<td></td>
<td>AH355</td>
<td>SUS316</td>
</tr>
<tr>
<td></td>
<td>DH355</td>
<td>SCS14</td>
</tr>
<tr>
<td></td>
<td>EH355</td>
<td>SS400</td>
</tr>
<tr>
<td></td>
<td>EH390</td>
<td>S20C</td>
</tr>
<tr>
<td></td>
<td>SS400</td>
<td>Resin (STARLITE #*****)</td>
</tr>
<tr>
<td></td>
<td>STPG370</td>
<td>Rubber (Perbunan N)</td>
</tr>
</tbody>
</table>

### Models & Examples

- The models and examples attached in this document are only for a specific design case, and different set of documents are acceptable as long as they include necessary information conforming to SCF requirements as a whole.
Interim Supplementary Guidance of the SCF Interim Industry Standard

3 February 2016
Introduction

The SCF Interim Industry Standard (SCF IS) provides guidance procedures for implementing the Ship Construction File (SCF), which is defined in four IMO documents – MSC.287 (87) (adopted at MSC 87 on 20 May 2010), MSC.290 (87) (adopted at MSC 87 on 21 May 2010), MSC.296 (87) (adopted at MSC 87 on 20 May 2010) and MSC.1/Circ.1343 (circulated on 2 June 2010) and supplement those IMO documents based on MSC87/5/4 (endorsed by MSC87).

The SCF IS also provides guidance on general principles with regard to legitimate use of SCF Information.

To facilitate practical use of the SCF IS from the administrative and operational point of view, while according with the SCF IS, this Interim Supplementary Guidance (SCF SG) of the SCF IS provides users with more detailed guidance. These details aim to further clarify the SCF IS, with concrete explanations, models and examples. This SCF SG is therefore not intended to alter, go beyond or supersede the contents of the SCF IS.

The Archive Center is tasked with the principal functions of storage, safekeeping and managing access to highly IP sensitive SCF Information, as well as backing up of ordinarily IP sensitive SCF Information. It is anticipated that the Shipowner, IP-Holder and Archive Center will operate under certain contractual provisions that will enable the SCF IS to be implemented and this SCF SG will provide guidance to assist the parties where use of an Archive Center is agreed. Interim Guidance on Systems for Management of SCF in a digital Format (SCF GS) are provided separately so that SCF archive service systems can be developed in a consistent manner and system & procedural compatibility can be enhanced.

This SCF SG of the SCF IS was developed by a cross industry group of the following industry organizations:

- CANSI (China Association of the National Shipbuilding Industry);
- CESA (Community of European Shipyards’ Associations);
- KOSHIPA (Korea Offshore & Shipbuilding Association);
- SAJ (The Shipbuilders’ Association of Japan);
- SCA (Shipbuilders Council of America);
- BIMCO;
- ICS (International Chamber of Shipping);
- INTERCARGO (The International Association of Dry Cargo Shipowners);
- INTERTANKO (The International Association of Independent Tanker Owners);
- OCIMF (Oil Companies International Marine Forum); and
- IACS (International Association of Classification Societies, Ltd.)
1. Definitions

The definitions of terms used in this SCF SG of the SCF IS are given below. Those definitions that are defined and appear in the SCF Interim Industry Standard (SCF IS) are repeated identically in this SCF SG unless specifically mentioned to the contrary. (The definitions which also appear in the SCF IS are shaded in gray for user’s convenience)

(a) **Access Right Holders** are persons and institutions that have a right to access SCF Information, e.g. Shipowner, Seafarer, Ship operator *(Shipowner Agent)* and their Sub-contractors for the safe operation of the Ship, and/or due to legitimate obligation authorities such as representatives of flag States, coastal States and their Recognized Organizations for Port State Controls or marine accident investigations, etc. as well as registered classification societies for surveys.

(b) **Archive Center** means a facility tasked with storage, safekeeping and managing access to SCF Information that it holds.

(c) **Electronic Media Onboard** means the electronic media used to store a digital version of the SCF Onboard when Shipowner chooses digital documents, which is provided in accordance with *Annex-2*.

(d) **Intellectual Property (IP)** refers to creations of the mind which is divided into industrial property and copyright. In the field of shipbuilding, IP covers but is not limited to: proprietary technical descriptions, calculations, test results, plans, drawings, designs, models, specifications, reports and any other knowledge assets, registered and unregistered, which are instrumental for competitiveness and company strategies of the IP holder.

(e) **IP-Holder** means an entity which possesses the rights related to the intellectual property (IP) in the Ship’s SCF Information. The entity may cover the Shipbuilder, Shiprepairer (the Shipbuilder and the Shiprepairer may be collectively called Shipyard to be engaged in newbuilding, repair and conversion), Equipment maker, Shipowner, etc.

If more than one entity possesses the intellectual property rights in, or right to provide access to the Ship’s SCF Information when the Ship is built or converted, IP-Holder may, in principle, be a single entity which organizes and represents the others. Alternatively, there may be more than one IP-Holder for the Ship.

(f) **Periodical Renewal** means an IT procedure intended to assure the security, consistency and accuracy of information stored in a digital format.

(g) **Relevant Provisions** means the provisions of SCF IS, this SCF SG or any other associated provisions and any other agreement made among the Shipowner, IP-Holder and Archive Center.

(h) **Rules** means not only the rules by Classification Societies but also other rules and regulations that are sufficient to demonstrate the Ship meets that the GBS functional requirements concerning the hull structure.

(i) **Safe Operation Purpose** means a purpose related to safe operations, maintenance, inspections and repair (structural work to maintain the structural strength assumed at the time of construction, such as restoring damaged parts to their original state and reinforcing parts with insufficient strength, and major or minor structural conversion work such as those involved in model change of machinery) of the Ship, and responses in emergency situations of the Ship.

(j) **SCF Information** means a collection of information composed of the SCF Onboard and SCF
Supplement Ashore. It is a general term given to a collection of information that is sufficient to demonstrate that the Ship meets the GBS functional requirements concerning the hull structure and is needed for the safe operation of the Ship, maintenance, inspections and repair as well as in emergency situations. In the SCF IS and this SCF SG, the term “SCF Information” means the SCF Onboard and/or SCF Supplement Ashore, irrespective of whether it refers to partial or the whole, or to the original or a copy.

(k) **SCF Onboard** means SCF Information that is required to be kept onboard the Ship at all times.

(l) **SCF Supplement Ashore** means SCF Information that is highly IP sensitive, not absolutely necessary and relevant to be kept onboard the Ship at all times, and not required to be onboard by any mandatory requirement by any flag State. Usually, it means information that is contained in the documents or drawings listed in 2.1 and kept only at the Archive Center.

(m) **Seafarer** means individuals who are employed and work regularly onboard the Ship.

(n) **Seafarer Representative** means a Seafarer (of the Ship in question) who serves as the representative in communication with the Sub-contractor, the IP-Holder, the Archive Center and other parties concerned.

(o) **Ship** means an oil tanker of 150 meters in length and above or a bulk carrier of 150 meters in length and above, constructed with single deck, top-side tanks and hopper side tanks in cargo spaces, excluding ore carrier and combination carrier, that fulfills one of the following criteria:

i. The building contract is placed on or after July 1, 2016.

ii. In the absence of a building contract, the keels are laid or are at a similar stage of construction on or after July 1, 2017; or

iii. The delivery is on or after July 1, 2020.

(p) **Ship’s Operational Lifetime** means the period from the delivery of the Ship until removal of the Ship’s registration due to recycling or total loss.

(q) **Shipowner** means an entity that has entered into possession of a Ship through acts like a purchase or a transfer and engaged in safekeeping and updating of SCF Information during the Ship’s Operational Lifetime in accordance with amendments to the SOLAS Convention Chapter II-1 Part A-1. These tasks in relation to management of SCF Information, may also be tasked to Ship operators, management companies etc. (refer also to the definition of “Shipowner Agent”).

(r) **Shipowner Representative** means an individual who is regularly employed by the Shipowner and serves as the representative in communication with the Sub-contractor, the IP-Holder, the Archive Center and other parties concerned.

(s) **Shipowner Agent** means an entity that is tasked by the Shipowner to carry out, onboard the Ship or at the Shipowner’s Office Ashore, with management of SCF Information. Shipowner Agent’s tasks include procedures for access and keeping SCF Information, disclosure of SCF Information to Seafarers, the Sub-contractor and other Access Right Holders, and requirements to view and use SCF Information to the Archive Center. Shipowner Agent needs to be an entity that is tasked by the Shipowner with the Ship’s daily operations. Shipbuilders for repair/conversion, for instance, cannot be a Shipowner Agent. Shipowner Agents may cover managing and operating companies of the Ship, if any (as appropriate).

(t) **Shipowner Agent Representative** means an individual who is regularly employed by the Shipowner Agent and serves as the representative in communication with the Sub-contractor,
the IP-Holder, the Archive Center and other parties concerned.

(u) **Shipowner's Office Ashore** means the office ashore of the Shipowner or the Shipowner Agent that is registered as the place to access and keep copy of the SCF Onboard.

(v) **Sub-contractor** means an entity (such as a shipbuilder for repair/conversion) that is contracted, directly or indirectly, by the Shipowner or the Shipowner Agent.

(w) **Third Party** means those other than the IP-Holder, Shipowner, Seafarer, Ship operator and Ship management company (last two: Shipowner Agent). Engineering houses and/or consultants employed by the Shipowner, Seafarer, Ship operator or Ship management company (last two: Shipowner Agent) form a part of Third Party.

(x) **Update** means promptly updating SCF Information when any modification is made to the Ship that requires a change or addition of SCF Information at any major event, including, but not limited to, substantial repair, conversion or any modification to the ship structure, or the updated portion of SCF Information.
2. SCF Information

2.1 Composition of SCF Information and Scope of Application

- As in the SCF IS, SCF Information is a set of information composed of the SCF Onboard and SCF Supplement Ashore.

- **Figure 1** of the SCF IS shows the “SCF Onboard – SCF Supplement Ashore” model.

- In the case of conventional bulk carriers and oil tankers, the SCF Supplement Ashore is normally composed of the following four documents or drawings:
  1) full “Detailed strength calculation” document;
  2) full “Detailed fatigue life calculation” document;
  3) “Yard plans” drawings; and
  4) Master “Lines plan” drawing

- Definitions of the above four documents or drawings are shown in **2.2** of the SCF IS.

- The full Detailed strength and fatigue life calculation documents are available to the Shipowner during the design and construction period of the Ship, and can after the delivery of the Ship be provided to the Shipowner from the Archive Center for internal use subject to the requirement not to disclose to any Third Party unless specifically agreed by the IP-Holders.

2.2 Definitions of SCF Information

- The list of information to be included in the SCF is provided in **Table 1** of the SCF IS.

- **Annex: Practical Guidelines for SCF Information Definition** to the SCF IS is provided to provide clarification as to the content of drawings etc. by providing detailed definitions, illustrated models and examples for reference.

- A sample linkage between SCF documents or drawings and GBS Tier II (functional requirements) is shown in **Table 1**.

2.3 IP Levels

- The following two IP Levels are defined for SCF documents and drawings considering IP sensitivity, operational needs and standard access procedures as shown in **Table 2** of the SCF IS.

  1) Ordinary IP Level
  2) High IP Level

2.4 Format of SCF Onboard kept onboard the Ship and at the Shipowner’s Office Ashore
- For the sake of reducing complexity in the implementation of the SCF IS and facilitating long-term storage without deterioration or loss of information throughout the Ship’s Operational Lifetime, consideration should be given to SCF Information being stored and used in a digital format as described in the paragraphs below.

- Considering the practical needs on board, where digital format is selected, the following SCF Onboard documents and drawings, as marked by (*1) or (*2) in Table 2 of the SCF IS, will be provided in a printed format in addition to that in a digital format for normal operation:

  1) Capacity plan;
  2) Loading manual;
  3) Trim & stability booklet;
  4) Loading instrument instruction manual;
  5) Operation and maintenance manual;
  6) General arrangement;
  7) Damage control plan
  8) Docking plan; and
  9) Dangerous area plan

- SCF documents and drawings that are required onboard by the flag State in a paper format will be provided in a printed form.

- Alternatively, a complete set of the SCF Onboard may be provided in a printed format if so chosen by the Shipowner. In case that the Shipowner’s choice is to have the complete set of the SCF Onboard in a printed format, the Archive Center’s role will normally focus on the services related to the SCF Supplement Ashore and back up of the SCF Onboard, unless provided otherwise in the contract provisions expected to be established between the Shipowner, IP-Holder and the Archive Center to implement the SCF IS.

- Where a digital format is selected, in addition, a complete set of printed SCF Onboard, if so requested by the Shipowner, may be provided onboard the Ship by the IP-Holder specifically and exclusively for emergency use as described in Annex-1 (see A1.4(2)). In addition, in the case of an emergency situation, the electronic system provides a means to override the authentication procedures normally required for access to the SCF Onboard in digital format.

- Management of SCF Information is shown in Annex-1.

2.5 Format of SCF Information kept at the Archive Center

- A complete set of the SCF Onboard and SCF Supplement Ashore, both in a digital format, will be kept at the Archive Center.
### Table 1: Linkage of SCF Documents with Functional Requirements in Tier II of GBS

<table>
<thead>
<tr>
<th>Document name used in Industry Standard</th>
<th>Linkage between Functional Requirements in Tier II of GBS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Capacity plan</td>
<td>✓</td>
</tr>
<tr>
<td>Loading manual</td>
<td>✓</td>
</tr>
<tr>
<td>Trim &amp; stability booklet</td>
<td>✓</td>
</tr>
<tr>
<td>Loading instrument instruction manual</td>
<td>✓</td>
</tr>
<tr>
<td>Operation and maintenance manual</td>
<td>✓</td>
</tr>
<tr>
<td>Full Detailed strength calculation</td>
<td>✓</td>
</tr>
<tr>
<td>Areas prone to yielding and/or buckling</td>
<td>✓</td>
</tr>
<tr>
<td>Calculation of hull girder section modulus</td>
<td>✓</td>
</tr>
<tr>
<td>General arrangement</td>
<td>✓</td>
</tr>
<tr>
<td>Midship section</td>
<td>✓</td>
</tr>
<tr>
<td>Main O.T. and W.T. transverse bulkheads</td>
<td>✓</td>
</tr>
<tr>
<td>Construction profiles / plans</td>
<td>✓</td>
</tr>
<tr>
<td>Shell expansions</td>
<td>✓</td>
</tr>
<tr>
<td>Forward and aft sections in cargo tank (or hold) region</td>
<td>✓</td>
</tr>
<tr>
<td>Engine-room construction</td>
<td>✓</td>
</tr>
<tr>
<td>Forward construction</td>
<td>✓</td>
</tr>
<tr>
<td>Stern construction</td>
<td>✓</td>
</tr>
<tr>
<td>Rudder and rudder stock</td>
<td>✓</td>
</tr>
<tr>
<td>Superstructure (deck house) construction</td>
<td>✓</td>
</tr>
<tr>
<td>Stern frame</td>
<td>✓</td>
</tr>
<tr>
<td>Structural details</td>
<td>✓</td>
</tr>
<tr>
<td>Yard plans</td>
<td>✓</td>
</tr>
<tr>
<td>Dangerous area plan</td>
<td>✓</td>
</tr>
<tr>
<td>Master Lines plan</td>
<td>✓</td>
</tr>
<tr>
<td>Equivalent to Lines plan</td>
<td>✓</td>
</tr>
<tr>
<td>Full Detailed fatigue life calculation</td>
<td>✓</td>
</tr>
<tr>
<td>Areas prone to fatigue</td>
<td>✓</td>
</tr>
<tr>
<td>Coating technical file required by PSPC</td>
<td>✓</td>
</tr>
<tr>
<td>Areas prone to excessive corrosion</td>
<td>✓</td>
</tr>
<tr>
<td>Structural details of hatch covers, doors and other closings integral with the shell and bulkheads</td>
<td>✓</td>
</tr>
<tr>
<td>Inspection schedule for ship structures</td>
<td>✓</td>
</tr>
<tr>
<td>Copies of certificates of forgings and castings welded into the hull</td>
<td>✓</td>
</tr>
<tr>
<td>Requirement</td>
<td>Yes</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------</td>
<td>-----</td>
</tr>
<tr>
<td>Tank testing plan including details of the test requirements</td>
<td></td>
</tr>
<tr>
<td>Non-destructive testing plan</td>
<td>✔</td>
</tr>
<tr>
<td>Operation and maintenance manuals (e.g., hatch covers and doors)</td>
<td></td>
</tr>
<tr>
<td>Detail of bottom plug</td>
<td></td>
</tr>
<tr>
<td>Docking Plan</td>
<td></td>
</tr>
<tr>
<td>Details for in-water survey</td>
<td></td>
</tr>
<tr>
<td>Means of access to other structure-integrated deep tanks and large void spaces</td>
<td>✔</td>
</tr>
<tr>
<td>Ship structure access manual</td>
<td>✔</td>
</tr>
<tr>
<td>Damage control plan</td>
<td>✔</td>
</tr>
<tr>
<td>Hatch cover Maker drawings</td>
<td>✔</td>
</tr>
<tr>
<td>Inspection Guidance in Operation</td>
<td></td>
</tr>
<tr>
<td>Block inspection list</td>
<td>✔</td>
</tr>
<tr>
<td>List of materials</td>
<td>✔</td>
</tr>
<tr>
<td>List of Applied Rules &amp; Standards and General Information on SCF</td>
<td>✔</td>
</tr>
</tbody>
</table>

(Note)

✔️ means potential linkage.
3. Shipowner Items

3.1 Access and Safekeeping of SCF Information

- Shipowner securely keeps SCF Information throughout the Ship’s Operational Lifetime in order to ensure safe operations of the Ship in accordance with Annex-1.

- The Shipowner:
  1) Keeps the SCF Onboard on board the Ship and tasks the Archive Center to keep a copy of the SCF Onboard in a digital format;
  2) Keeps a copy of the SCF Onboard at the Shipowner’s Office Ashore; and
  3) Tasks the Archive Center to keep the SCF Supplement Ashore in a digital format.

- Shipowner, for Safe Operation Purposes, can access SCF Information on board at any time and permit other Access Right Holders to access SCF Information through the Shipowner in accordance with Annex-1 under the following principles stipulated in the SCF IS.
  - The IP of SCF Information including confidentiality needs to be protected; and
  - Appropriate procedures to manage access to and secure keeping of SCF Information need to be implemented by the Shipowner as a part of the Quality Management Systems.

- Models and examples of safekeeping and access procedures for the SCF Onboard are shown in Annex-4. The Shipowner could develop and apply equivalent safekeeping and access procedures for the SCF Onboard in line with the principles and procedures of the SCF IS.

3.2 Update of SCF Information

- Following any significant event including, for example, substantial repair, conversion or any major modification to the Ship structure that requires Update of the SCF Information, Updating needs to be done in a timely manner.

- In such cases, SCF Information before the Update needs to be continuously retained without destruction or modification along with the updated SCF Information for traceability purposes.

- The Shipowner may task the Archive Center to carry out procedures for Update of SCF Information held by the Archive Center in a digital format. Procedures for Update of SCF Information in a printed format kept on board and in the Shipowner’s office, if any, also need to be implemented.

- Updated SCF Information in a digital format that supersedes or affects the accuracy of the original SCF Information needs to be stored at the same Archive Center that keeps the Ship’s original SCF Information.

3.3 Delegating tasks to Shipowner Agent

- The Shipowner may engage the Shipowner Agent to carry out tasks related to the management of SCF Information, such as safekeeping and managing access to the SCF Onboard, sending requirements to print out and/or view SCF Information to the Archive Center and managing disclosure of SCF Information. The Shipowner needs to ensure that the Shipowner Agent complies with the Relevant Provisions.
3.4 Provision of Information Concerning Ship, Shipowner Representative and Shipowner Agent Representative etc.

- The Shipowner should communicate necessary information to the Archive Center for implementation of the Relevant Provisions, such as contact information of Shipowner Representative and Shipowner Agent Representative or any changes, and to allow the Archive Center to provide this information to the IP-Holder. The exchange of communications is anticipated to be carried out through the Shipowner Representative or the Shipowner Agent Representative.

- The Shipowner preserves, onboard the Ship, the archival records of Update of SCF Information, and any changes concerning the Ship such as the Ship’s name, flag State, the Class, and Purpose of Ship according to its safekeeping and access procedures. The Shipowner also notifies the Archive Center of their changes in a timely manner.

- In the event the Ship’s name changes, the original names written in SCF Information may not need to be physically changed as the IMO number of the Ship can be used to identify the Ship throughout the Ship’s Operational Lifetime.

3.5 Use of SCF Information for Purposes Other than Safe Operation Purpose of the Ship

- In principle, irrespective of information format, the Shipowner should agree in advance with the IP-Holder, on use of SCF Information, i.e., for the Shipowner’s internal use (either in office or onboard), or for disclosure to a Third Party, if the purpose of such use is other than Safe Operation Purpose of the Ship.

- However, where IP-Holder rights are not affected, the Shipowner may use internally the SCF Onboard for normal operation of the Ship other than Safe Operation Purpose without an agreement in advance, in line with Relevant Provisions.

- The Shipowner may, for example, also require detailed local hull form information in way of the proposed location for retrofitting energy saving device, which is contained in Master Lines plan, of Archive Center in accordance with the procedures shown in Table A1.1.

3.6 Notification and Treatment of SCF Information upon Change of Shipowner or Shipowner Agent

- The Shipowner, when the ownership of the Ship changes with a transfer of the ownership or other reasons, notifies the Archive Center of the event to facilitate contact between the new Shipowner and the Archive Center. The outgoing Shipowner promptly transfers SCF Information it possesses or controls to the new Shipowner and destroys all copies of such SCF Information, if any, or returns them to the Archive Center.

- The new Shipowner, promptly upon receipt of any new Electronic Media Onboard from the Archive Center, returns the old Electronic Media Onboard received from the previous Shipowner to the Archive Center.
The Shipowner, when it changes its Shipowner Agent, ensures prompt transfer of SCF Information it possesses or controls to the new Shipowner Agent and destroys all copies of such SCF Information, if any, or returns them to the Archive Center.

3.7 Notification and Treatment of SCF Information upon End of Ship’s Operational Lifetime

- When a Ship comes to the end of its Operational Lifetime, the Archive Center is notified of that event by the Shipowner. SCF Information and copies should either be destroyed in a controlled manner or returned to the Archive Center.

3.8 Change of Archive Center

- The Archive Center can be changed subject to agreement between the Shipowner and the IP-Holder.
4. IP-Holders Items

4.1 Preparation and Provision of SCF Information

- The Shipyard prepares and compiles SCF Information at new-building and when involved in significant events such as substantial repair, conversion or modification to the Ship structure that requires update of SCF Information of the Ship.

- The Shipyard provides the Shipowner and the Archive Center with SCF Information as described below and in Annex-2. As to SCF Information in a digital format, the Shipyard may task the Archive Center to carry out procedural tasks 1) and 2). The Shipyard provides:

  1) The SCF Onboard to the Ship;
  2) Copy of the SCF Onboard to the Shipowner’s Office Ashore; and
  3) Copy of the SCF Onboard and SCF Supplement Ashore, both in a digital format, to the Archive Center

4.2 Notification of Necessary Information for Management of SCF Information

- The IP-Holder communicates the information necessary, such as IP-Holder’s name, contact information to the Archive Center by the time of the delivery of the Ship or after any changes to it, and arranges for the Archive Center to make this information available to the Shipowner.

4.3 Access by IP-Holder

- IP-Holder may obtain SCF Information, of which IPR is possessed by the IP-Holder, from the Archive Center if there are justifications including e.g. loss of SCF documents/drawings, etc. Such access will be recorded by the Archive Center.

4.4 Change of IP-Holder

- The IP-Holder may transfer its intellectual property rights concerning SCF Information of the Ship to another party subject to assurance that the Relevant Provisions are applied to the said party. The IP-Holder notifies the Archive Center of the new IP-Holder’s name, address and other contact information.

4.5 Appointment of Archive Center

- The Archive Center appointed by the IP-Holder from accredited candidates at the time of new-building of the Ship needs to be agreed with the Shipowner.

4.6 Change of Archive Center

- The Archive Center involved in the management of SCF Information of the Ship may be changed to a new one subject to a mutual agreement by the IP-Holder and Shipowner. In case the change of Archive Center takes place, the Archive Center(s), regardless of whether they are the outgoing or incoming center, both should ensure ready access at all times during their period of responsibility.
5. **Archive Center Items**

5.1 **Provision of Archive Service**

- The Archive Center securely stores the SCF Supplement Ashore and copy of the SCF Onboard, both in a digital format provided by IP-Holders, and carries out procedures for their Update. The Archive Center needs to be operated to provide archive service at least in accordance with Annex-3.

- The Archive Center does not engage in examining and judging whether SCF Information fulfills the GBS requirements.

- If the Shipowner selects the SCF Information in a printed format the Archive Center should provide the SCF documents where such SCF document/drawing needs to be restored following loss or damage, through the archive printout service.

5.2 **Safekeeping and Access Management of SCF Information**

- The Archive Center manages the security of the IPR relating to SCF Information, and facilitates appropriate procedures so that the Shipowner and other Access Right Holders can effectively manage SCF Information in accordance with the Relevant Provisions.

- The Archive Center provides the SCF Supplement Ashore information when required by Shipowner in accordance with Annex-1 after checking whether:

  1) The party that required access to SCF Information is a registered Access Right Holder;
  2) The access is either made for the Ship’s Safe Operation Purposes or otherwise so agreed by the IP-Holder; and
  3) Required SCF Information is necessary and sufficient for the purpose.

- The Archive Center takes appropriate precautions to minimize the likelihood that SCF Information it has provided is not inappropriately used for purposes other than those in the access agreement between the IP-Holder and the Shipowner.

- The Archive Center takes appropriate measures to ensure that the SCF Supplement Information it has provided is either destroyed or returned by the agreed time.

5.3 **Update of SCF Information**

- The Archive Center may be tasked to carry out procedures for Update of SCF Information as appropriate. In such a case, the Archive Center needs to receive the Updated parts of SCF Information and update simultaneously all SCF Information in a digital format kept at various locations. When an update is made, the Archive Center does not replace any of its stored SCF Information with the Updated version but retains the original SCF Information together with the Updated Information.
5.4 Periodical Renewal of digital SCF information

- Password or equivalent for access to SCF Information in a digital format should be periodically renewed.

- Where an Archive Center provides Periodical Renewal of the SCF Onboard Information in a digital format in accordance with Annex-2, by providing a new Electronic Media Onboard to the Shipowner or by updating via the Internet prior to the expiration of the access period, or where new Electronic Media Onboard is provided, appropriate measures are to be taken to ensure that any copies of information that is out of date or no longer required are promptly returned to the Archive Center.

5.5 Notification of Necessary Information for Management of SCF Information

- The Archive Center communicates necessary information for implementation of the Relevant Provisions, such as the names, and other contact information of the IP-Holder, Shipowner and the Shipowner Agent to the Shipowner or IP-Holder as requested.

5.6 Audit

- In accordance with Annex-4, the Archive Center operates its services in accordance with relevant ISO standards concerning Information Security Management Systems (ISMS) and will need relevant ISO certification.

- The Archive Center needs to be inspected periodically whether the Archive Center complies with the Relevant Provisions by ISO Certification body.

5.7 Confidentiality

- The Archive Center limits the use of SCF Information to its employees or subcontractor engaging in managing access to, and safekeeping of SCF Information. The Archive Center keeps SCF Information confidential and does not use it for any purpose other than the purposes described in the Relevant Provisions.

5.8 Data Storage and Information Management

- The Archive Center may outsource the data storage tasks to a data handling professionals, such as IT companies, subject to agreement by the IP-Holder and the Shipowner.

- The Archive Center provides the necessary information to the Shipowner and the IP-Holder if it changes sub-contractor for outsourcing data storage tasks.

- The Archive Center may not outsource its information management tasks. Information management includes, for example, preparing the appropriate scope of partial information that will satisfy the requirements of the Access Holder.
5.9  **Prohibition against Assignment and Transfer without Permission**

- The Archive Center does not assign or transfer the rights and obligations related to the management and safekeeping of SCF Information to another party without obtaining advance agreement from the IP-Holder and the Shipowner.

5.10  **Change of Archive Center**

- When the Archive Center is changed, the previous Archive Center transfers all SCF Information and all records it keeps to the new Archive Center.

5.11  **Change of Shipowner or Shipowner Agent**

- The Archive Center, upon change of the Shipowner or the Shipowner Agent, makes appropriate notifications so that the previous Shipowner or the previous Shipowner Agent transfers to the new Shipowner or the new Shipowner Agent, or destroys or returns, all SCF Information it keeps.

- The Archive Center, upon change of the Shipowner, promptly provides any new Electronic Media required Onboard to the new Shipowner as tasked by the new Shipowner, and ensures the return of any relevant Electronic Media from the previous Shipowner.

- The SCF Onboard provided in a printed format to the Ship may be transferred directly from the previous Shipowner to the new Shipowner.

- The Archive Center facilitates the provision of any relevant SCF Information to the new Shipowner or the new Shipowner Agent who manages SCF Information in accordance with the access and safekeeping principles provided in the SCF IS.

5.12  **Procedures to be Followed upon End of Ship’s Operational Lifetime**

- The Archive Center, if notified by the Shipowner of the end of Ship’s Operational Lifetime, makes appropriate notifications so that all SCF Information either is destroyed by Shipowner or returned to the Archive Center.

- In such a case, the Archive Center needs to either return the all SCF Information to the IP-Holder or destroy it upon consultation with the IP-Holder.
6. Revision of Interim Supplementary Guidance

- In the event that the IMO requirement is amended, the SCF IS is revised or a relevant issue concerning IT progress or compliance with the SCF IS and/or this SCF SG arises and a proposal is made by any member of the cross industry group (see 1. Introduction for its definition) for the revision of this SCF SG, the cross industry group will consider the need for a revision to this SCF SG. Following agreement of such a need, this SCF SG may be revised as appropriate.

- In addition it is anticipated that in the absence of significant issues arising, a general review will be initiated by the cross industry group within 24 months to take account of experience gained in the initial use of this SCF SG.

References

Annex-1 Access and Safekeeping Management

A1.1 Access to and Safekeeping of SCF Information: General Principles

The Shipowner:

1) Manages SCF Information to keep it secure throughout the Ship’s Operational Lifetime taking into account the need for related IP rights including confidentiality to be duly protected;

2) Has “Unconditional access” to SCF Information. “Unconditional access” means that the IP-Holder may neither withhold Shipowner/Shipowner Agent from keeping and/or accessing SCF Information for Safe Operation Purposes and other purposes as stipulated in the second and third bullet points in 3.5 nor charge fees based on intellectual property rights;

3) Implements its safekeeping and access procedures for the SCF Onboard so that Seafarers follow them as appropriate. A model of those procedures is described in Annex-4;

4) Manages other Access Right Holders so that they follow its safekeeping and access procedures for SCF Information as appropriate. Establishes and implements procedures to prevent disclosure of SCF Information to unauthorized persons;

5) When the purpose of the access to SCF Information is accomplished, for example, SCF Information in a digital format is made unavailable by ending the session, printouts of the digital information should be destroyed and printed documents and drawings of SCF Information need to be returned to the designated storage location as appropriate; and

6) Establishes and implements procedures to mitigate the risk of activities such as reverse engineering, recomposition or inappropriate reproduction of SCF Information.

A1.2 General guidance on Access to SCF Information of each IP Level

a) **Ordinary IP Level information:** the company document management system as a part of the Quality Management Systems should include procedures for access management (e.g., recording of name of document or drawing, access date, name of accessing person/organization etc.)

b) **High IP Level information:** is stored at the Archive Center ashore. When the Shipowner initiates the procedures for access to the information, the Archive Center, in accordance with the specific procedures, provides the required information after obtaining confirmation by the IP-Holder. After the period of use, High IP Level information is to be returned to the Archive Center.

A1.3 Access, Safekeeping and Collection of SCF Onboard kept Onboard and at the Shipowner’s Office Ashore Provided in Digital Documents: Details

- For the SCF Onboard and copy of the SCF Onboard at each Shipowner’s Office Ashore stored in Electronic Media Onboard, appropriate measures such as secure storage in a locked cabinet need to be taken to prevent them going missing. For these documents and drawings provided in a digital format, a model of safekeeping and access procedures is shown in Table A4.1.

- The Shipowner could develop and apply equivalent safekeeping and access procedures for the SCF Onboard in line with the principles and procedures of the SCF IS.
A1.4 Access, Safekeeping and Return of SCF Onboard kept Onboard and at the Shipowner’s Office Ashore Provided in Printed Documents: Details

(1) SCF Onboard and copy of SCF Onboard at the Shipowner’s Office Ashore

- The printed documents and drawings of the SCF Onboard and the copy of the SCF Onboard at each Shipowners’ Office Ashore need to be kept in a location that can be secured. An inventory of the printed documents and drawings should be taken by the Shipowner at appropriate intervals to confirm that all the volumes are in place. If any of the volumes are found missing, the Shipowner should promptly notify the Archive Center of the name of the missing document or drawing and the reason, if known, so that replacement of the missing document or drawing in a printed format is provided without delay.

- For the SCF Onboard kept onboard the Ship and the copy of the SCF Onboard kept at the Shipowner’s Office Ashore provided in a printed format, a model of safekeeping and access procedures is shown in Table A4.2.

- The Shipowner could develop and apply equivalent safekeeping and access procedures for the SCF Onboard in line with the principles and procedures of the SCF IS.

(2) Complete set of SCF Onboard for emergency use

- Where the Shipowner and the Shipyard agree that the SCF will be provided electronically, if so requested by the Shipowner, a complete set of printed documents and drawings of the SCF Onboard may also be provided for emergency use. Such sets of printed documents should be stored in a secure location onboard allowing administrative procedures in case of emergency to be fulfilled in an appropriate manner. In case of emergency, relevant printed documents and drawings may be accessed by, for example, breaking the seal of their packaging. When purpose of emergency use is accomplished, relevant printed documents and drawings are restored to the package and sealed up again retaining a record of their use.

- In the event that the ownership of the Ship changes, the Shipowner in conjunction with the Archive Center should ensure that all SCF relevant documents, drawings and other information are transferred to the new owner. It being understood that the SCF Onboard will need to:
  - A. remain available on board as mandated by IMO; and
  - B. Continue to be managed under appropriate procedures taking into account the need for protection of IPR.

A1.5 Access, Safekeeping and Return of SCF Supplement Ashore kept at Archive Center: Details

- Access, safekeeping and return of the SCF Supplement Ashore kept at Archive Center should be carried out in accordance with the procedures shown in Table A1.1.
### Table A1.1: Specific Procedures to be arranged by Archive Center for Access to and Return of the SCF Supplement Ashore

<table>
<thead>
<tr>
<th>Accessing Person</th>
<th>Procedures</th>
<th>Security Measures to be Displayed or Embedded in Printed out Documents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Only Shipowner Representative&lt;sup&gt;1)&lt;/sup&gt;</td>
<td>(1) Shipowner Representative submits a requirement for access to the Archive Center stating the reason&lt;sup&gt;2)&lt;/sup&gt; for the requirement, the scope of information needed for Safe Operation Purposes or other purposes as stipulated in the third bullet point in 3.5, and the period of use.</td>
<td>(1) A message indicating that unpermitted access or copying is prohibited</td>
</tr>
<tr>
<td></td>
<td>(2) Archive Center notifies the Shipyard and/or equipment makers of the requirement to obtain permission for access after confirming that all information necessary for the requirement has been provided&lt;sup&gt;3)&lt;/sup&gt;.</td>
<td>(2) Information facilitative for deterring unpermitted access or copying (such as the name of the Shipowner Representative, the name of the organization to which the Shipowner Representative belongs, the date and time of printout, etc.)</td>
</tr>
<tr>
<td></td>
<td>(3) Archive Center prints out the scope of information necessary and sufficient for the purpose of the requirement for access and sends out the documents/drawings within a specified period while notifying the Shipowner Representative and the IP-Holder&lt;sup&gt;4)&lt;/sup&gt;. If there is compelling needs for more speedy delivery of the information, the information may be sent out in a digital format&lt;sup&gt;5)&lt;/sup&gt; via the Internet.</td>
<td>(3) Measures facilitative for tracking unpermitted copying</td>
</tr>
<tr>
<td></td>
<td>(4) After the end of the use period, Shipowner Representative promptly returns the printed documents and/or drawings to the Archive Center. In the case documents and/or drawings were sent out in a digital format, Shipowner Representative promptly deletes them and destroy their printouts, if any.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(5) Archive Center destroys the printed out documents and/or drawings after confirming that they are original and complete.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(6) Archive Center keeps access records throughout the Ship’s lifetime.</td>
<td></td>
</tr>
</tbody>
</table>

**Remarks:**
1) Other Access Right Holders may access through the Shipowner Representative.
2) Sensitive information in detail is not necessary. Archive Center and Shipyard and/or equipment makers should not divulge the reason.
3) If the Archive Center receives no confirmation from the Shipyard and/or equipment makers about whether to accept access within a predetermined period from the submission of the requirement, the Archive Center may accept access on behalf of the Shipyard and/or equipment makers. The standard predetermined period is 48 hours.
4) The standard predetermined period from the submission of the requirement is 48 hours. If the Archive Center believes that a request for information is not from an authorised person or is for a purpose outside the agreed scope, then the Archive Center must bring this to the attention of the Shipowner and the IP-holder within 24 hours.
5) The SCF Supplement information in a digital format is provided with exclusive password and the period of validity in line with the period of use stated.
Annex-2 Preparation of SCF and Provision for Shipowner

A2.1 Upon Delivery of New Ship

(1) **SCF Onboard**

- The Shipyard functioning as coordinator of all IP-Holders prepares and compiles the SCF Onboard. In that case, the Shipyard needs to provide the Shipowner with two sets of the SCF Onboard which are to be kept on board the Ship, in an agreed format (such as pdf files) on behalf of all the IP-Holders.

- Digital documents need to be provided with means to prevent inappropriate copying and stored in the Electronic Media Onboard provided with copy prevention measures. An electronic access expiration date may be updated by Periodical Renewal so that there is not any discontinuity of the services due to expiry.

- Digital documents need to be accompanied by appropriate viewing software (such as a dedicated browser) necessary for viewing the encrypted information in the Electronic Media Onboard. The documents may also be provided via the Internet if the equivalent level of security is provided and the Shipowner and the IP-Holder have so agreed.

- Printed documents and drawings, as referred to in 2.4 and A1.4, are accompanied by security measures, such as an embedded warning, against inappropriate copying or use of the subject document or drawing.

- Where digital documents are used, the Ship will be expected to have general information-processing equipment (such as personal computers, operating systems, printers and network environment) compatible for SCF browsing. The provision of an Uninterruptible Power Supply (UPS) should also be considered.

(2) **A copy of SCF Onboard at Shipowner’s Office Ashore**

- The same preparations and provisions as in A2.1 (1) will apply. Shipowner and Shipowner Agents, if any, are provided with two sets of the SCF Onboard each.

(3) **A full copy of SCF Onboard kept at Archive Center**

- The IP-Holder typically a shipyard, compiles a full copy of the SCF Onboard in a digital format (such as pdf files) and provides it to the Archive Center.

(4) **SCF Supplement Ashore kept at Archive Center**

- The IP-Holder, typically a shipyard, prepares and compiles the SCF Supplement Ashore in a digital format (such as pdf files) and provides it to the Archive Center.
A2.2 Upon Periodical Renewal and Update of Digital Data in Service


a) For SCF Onboard Kept Onboard the Ship:

- Where an Archive Center completes a Periodical Renewal, the Archive Center provides two sets of the Electronic Media storing the SCF Onboard, as standard in a digital format (such as pdf files) with an updated expiration date for access, to the Shipowner before the expiration of the access period of the SCF Onboard currently kept onboard the Ship.

- In that case, the Shipowner needs to replace the existing Electronic Media Onboard with the new one and return the existing Electronic Media Onboard to the Archive Center.

- The Periodical Renewal mentioned above may be carried out via the Internet if the equivalent level of security is provided and the Shipowner and the IP-Holder has agreed.

- Periodical Renewal of expiration date for access to the SCF Onboard Information in a digital format may be discontinued after elapse of ten years from the delivery of the Ship.

b) For Copy of the SCF Onboard Kept at Shipowner’s Office Ashore:

- The same preparation and provisions as in A2.2 (1) a) will apply.

(2) Update (as required by substantial repair, conversion or any modification to the ship structure, etc.)

- The same preparations and provisions as in A2.1 will apply.

- Upon updating, any existing SCF documents and drawings concerned need to be retained for traceability purposes and differential information in additional SCF documents and drawings needs to be provided in an incremental manner.

- Upon updating of SCF Onboard in a digital format, the Shipowner returns the existing Electronic Media Onboard to the Archive Center.

- The Update of digital SCF documents may be carried out digitally via the Internet if appropriate procedures have been agreed.

- The procedures for Update of SCF Documents in a printed format, as referred to in 2.4, also need to be managed and in particular, the Updated SCF Documents, need to be provided to the Archive Center in a digital format. Updating of digital files due to system changes, such as standard operating system software will be undertaken by the Archive Center, in consultation with the Shipowner to ensure that all relevant digital information is available in a consistent format that is compatible with the Ship’s systems.
Annex-3 Operational Requirements for Archive Center

- Archive Center is operated in accordance with the following principles.

**A3.1 Basic Operational Requirements**

1) Archive Center takes a nonpartisan stance.
2) Archive Center provides services 24 hours and 365 days in accordance with a predetermined operational plan in order to respond to any global and urgent requirement to provide SCF Information kept at the Archive Center in a digital format.
3) Archive Center provides services at least in English.
4) Archive Center makes and keeps backup copies of the digital documents it keeps.
5) Archive Center provides the information on necessary hardware and software, and on relevant software updates/upgrades, so that accessing individual may access SCF Information in a digital format as provided by the Archive Center. The details of the related information processing equipment used are expected to be discussed between the Archive Center and the Shipowner so that the equipment will satisfy the general requirements of the Archive Center, and the Shipowner.
6) Archive Center provides dedicated tools such as browser software to view SCF Information.
7) Archive Center may, on a voluntary and optional basis, provide SCF Information kept at the Archive Center to the Access Right Holders on demand via Internet services if the equivalent level of security is provided and the IP-Holders have agreed. In doing so, Archive Center requires the Access Right Holders to comply with Annex-1.
8) A minimum suspension of services at the Archive Center for less than one day as standard for system maintenance and other inevitable reasons is permitted. In such a case, Archive Center makes best possible efforts to notify potential users of the planned service suspension in advance.
9) The Archive Center will have means to print documents so that SCF Information in a printed format may be provided to the Shipowner in cases where it is necessary to replace a lost or damaged document and/or drawings.

**A3.2 Information Security Policy**

- Archive Center provides its services in accordance with the latest versions of relevant ISO standards concerning Information Security Management Systems (ISMS) and needs to obtain relevant ISO certification through inspection by an independent ISMS certification organization accredited by a recognised accreditation institution:

- Archive Center pays due attention to internal control management processes to avoid opportunities for inappropriate access and to ensure that information held at the Archive Center is not compromised. Archive Center, if requested, discloses its information security policy and, if necessary, improves the policy.

- In case Archive Center outsources its data storage tasks to another party, the Archive Center needs to confirm the contractor’s ISMS compliance and appoint a senior manager to ensure regular reconfirmation of such compliance.
- The Archive Center may not outsource its information management tasks.

- Archive Center also operates its services in accordance with the latest versions of ISO standards concerning service availability and continuity management, such as:

  1) ISO/IEC 20000-1: Information technology – Service management – Part 1: Service management system requirements
Annex 4 Models of Safekeeping and Access Procedures for SCF Onboard

- For the SCF Onboard kept onboard the Ship and copy of the SCF Onboard kept at the Shipowner’s Office Ashore provided in a digital format, example of a model of safekeeping and access procedures is shown in Table A4.1.

- For the SCF Onboard kept onboard the Ship and copy of the SCF Onboard kept at the Shipowner’s Office Ashore provided in a printed format, example of a model of safekeeping and access procedures is shown in Table A4.2.

- The Shipowner could develop and apply equivalent safekeeping and access procedures for the SCF Onboard in line with the principles and procedures of the SCF IS.
Table A4.1: Example of Model Procedures to be Arranged by Archive Center for Access to and Collection of SCF Onboard Provided in a Digital Format

<table>
<thead>
<tr>
<th>Accessing Person</th>
<th>Authentication</th>
<th>Activation</th>
<th>Viewing</th>
<th>Printout from Digital Documents</th>
<th>Copying of Digital Document</th>
<th>Validity Period</th>
<th>Collection</th>
<th>Access Registration&lt;sup&gt;1)&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipowner, Seafarer or Shipowner Agent&lt;sup&gt;1)&lt;/sup&gt;</td>
<td>Password or IC-ID card or alternative/equivalent such as Onetime Password&lt;sup&gt;2)&lt;/sup&gt;</td>
<td>Specific terminals need to be designated for access.</td>
<td>The information should be stored on a secure system, for example dedicated browser software could be provided.</td>
<td>A notification warning that unpermitted copying of and access to a printout are prohibited needs to be displayed.</td>
<td>Copying of Digital Documents is prohibited. Capturing and photographing of screen are prohibited. Hardcopying or copying into a digital document such as by scanning of printout is permitted only for Safe Operation Purpose of the Ship or other purposes as stipulated in the second and third bullet points in 3.5.</td>
<td>The Archive Center may complete Periodical Renewal of the SCF Onboard Information in a digital format in accordance with Annex-2, by providing a new Electronic Media Onboard to the Shipowner or by updating via the Internet prior to the expiration of the access period. Procedures should be implemented to ensure that Passwords or IC-ID cards are renewed at agreed intervals and/or on changeover of personnel joining the Ship.</td>
<td>Any out of date Electronic Media Onboard should be identified, collected and returned to the Archive Center at the time of Periodical Renewal. If new Electronic Media Onboard storing Updated SCF digital documents is delivered to the Shipowner’s Office Ashore for replacement, the old ones kept at various locations should be collected and either destroyed or returned to the Archive Center.</td>
<td>The system should ensure that the following information is available. . Date and time of access/print out) . Scope of access (Name of documents and drawings accessed printed-out) . Name of accessing person and organization</td>
</tr>
</tbody>
</table>

Remarks:
1) Authorities and their Recognized Organizations, registered classification societies and Sub-contractors may view, use, print, and/or keep such information following the contents of Annex-1 subject to the Shipowners’ acknowledgement and agreement for such access, and access registration.
2) Onetime Password needs access via the Internet or equivalent.
3) It is anticipated that information listed in the Access Registration column of the Table above will be automatically recorded by browser software for the SCF Onboard in Electronic Media Onboard. Where agreed by the Shipowner, the Archive Center through Periodical Renewal of the Electronic Media Onboard may securely keep the information for the Shipowner. Alternatively, recording of the information may be automatically carried out via the Internet when access to the SCF Onboard is made via the Internet. The information will subsequently be available, if needed, only through the Shipowner. These records of access should be maintained for ten years after the delivery of the Ship.
Table A4.2: Example of Model Procedures to be Arranged by Shipowners for Safekeeping, Access to and Return of SCF Onboard Provided in a Printed Format

<table>
<thead>
<tr>
<th>Accessing Person</th>
<th>Storage (^2)</th>
<th>Security Measures</th>
<th>Copying of Printed Document</th>
<th>Return to the Storage Location</th>
<th>Return to Archive Center</th>
<th>Access Record (^3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipowner, Seafarer or Shipowner Agent (^1)</td>
<td>Printed Documents are stored in a dedicated cabinet or locker.</td>
<td>A notification warning that unpermitted copying and access are prohibited needs to be displayed. A reminder of the need for appropriate confidentiality should also be displayed.</td>
<td>Hardcopying of documents and drawings or copying into a digital document such as by scanning is permitted only for Safe Operation Purpose of the Ship or other purposes as stipulated in the second and third bullet points in 3.5.</td>
<td>Printed Documents need to be returned to the relevant storage location(s) when the purposes of the access are accomplished.</td>
<td>If new Printed Documents Onboard are delivered for replacement, old (deteriorated) Printed Documents, if any, are promptly returned to the Archive Center,</td>
<td>The following information should be recorded within the onboard document management procedures, for example with a written document log.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Name of document or drawing</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Name of the accessing organization</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Legibly-written name of the accessing person</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Signature of the accessing person</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Borrowing date</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Return date</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Confirmation signature of the accessing person when the document is returned</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Note as to whether or not any additional hard copies have been used</td>
</tr>
</tbody>
</table>

Remarks:
1) Authorities and their Recognized Organizations, registered classification societies and Sub-contractors may view, use, print, and/or keep such information following the contents of Annex-1 subject to the Shipowners’ acknowledgement and agreement for such access, and access registration.
2) The document management system should include an inventory of the printed documents and drawings. Periodic audits of the documents and drawings should be undertaken at appropriate intervals. If any of the volumes are found missing, the Shipowner should promptly notify the Archive Center of the name of the missing document or drawing and the reason, if known, and request a replacement.
3) Records of access should be maintained for ten years after the delivery of the Ship. However, it may be good practice to subsequently continue to record use of the documents and drawings, and periodically review the inventory of documents and drawings to ensure continuing availability of a complete set of documents and drawings.
ClassNK Archive Center is the solution for GBS-SCF data storage and related services.

ClassNK Archive Center can store GBS-SCF for ships registered with any classification society.

**Fully compliant with IMO GBS and SCF Industry Standard**

ClassNK Archive Center fully complies with the functional requirements of IMO GBS Guidelines and SCF Industry Standard developed in consultation with cross industry groups such as Shipbuilders’ Associations, Shipowner’s Associations and the International Association of Classification Societies (IACS).

**Robust security system**

ClassNK Archive Center combines cloud-based infrastructure developed by IBM to provide a fully secure and user-friendly system to stakeholders.

Following the adoption of a new SOLAS regulation II-1/3-10 on Goal-based ship construction standards (GBS) for bulk carriers and oil tankers at the 87th session of the IMO’s MSC meeting, oil tankers and bulk carriers of 150m or more in length for which a building contract is placed on or after July 2016 or which are delivered on or after July 2020, are required to have a GBS compliant Ship Construction File (GBS-SCF) available on board.

As the new GBS-SCF requires the inclusion of highly-sensitive intellectual property data such as Lines plan and Structural strength calculations belonging to shipyards and ship designers, the new SOLAS requirement specifies that this information can be stored in an archive center ashore.

**ClassNK Archive Center allows GBS-SCF to be stored safely ashore.**
Functional requirements for the onshore archive center as specified in Guideline for SCF (MSC 87/5/4)

- Neutral among intellectual property holders
- International service
- Long-term data storage
- Robust security system
- Quick data backup and recovery
- High quality and cost-effective
- Accessible 24 hours a day, 365 days a year

How ClassNK Archive Center ensures smooth operations and compliance with the functional requirements specified in Guideline for SCF (MSC 87/5/4)?

- ClassNK operates the archive center as an independent third party.
- Data is managed and stored in a highly-secured facility that complies with industry standard. The facility is installed with an electronic lockage system and access is controlled through biometric identification and ID card use.
- Certified according to ISMS (ISO-27001)*
- Use of IBM Japan's cloud computing technology together with robust data security and a user-friendly system
- Our servers are located in 2 different countries to ensure operational continuity in the event of an environmental or widespread disaster.
- Our center is operational 365 days a year 24/7.

The Access Right holders and data browsing

- Access Right holders such as ship owners and operators access the SCF drawings specified with an Ordinary IP level via the cloud platform and browse or print as necessary.
- For SCF drawings defined with a high IP level, as a rule, shipowner can receive SCF drawings in paper format once the IP holder has authenticated our disclosure request on behalf of the SCF holder. This printed copy is then returned to the Archive Center where it is destroyed.

*The ClassNK Archive Center responds to disclosure requests 24/7, 365 days a year.

Example of data defined as High level IP

- Lines plan
- Structural strength calculations
- Yard plans

ClassNK Archive Center can be used as a platform to store any ship drawings.

In addition to GBS-SCF, ClassNK Archive Center can be used as a platform to store various ship drawings of vessel. (Note that permission from the IP holder will be required.)

Using this service will enable you to centralize your ship drawings or documents and save storage space. ship information such as ship outfitting drawings, manufacturers' operation manuals or drawings etc all ship information will be securely stored in a database that is protected from illegal external access.
Overview of ClassNK Archive Center

Drawings can be uploaded for newbuildings or existing ships

- The ClassNK Archive Center service allows you to upload your SCF drawings and documents to a secure cloud-based platform.
- Upon delivery of the ship, the shipbuilder or intellectual property holder defines the IP level for each of the SCF drawings and documents as Ordinary or High level according to Industry Standards.
- The uploaded SCF drawing is then encrypted and stored securely in a database that cannot be accessed externally.

Drawing or documentation for all ships types.

Documentation required by regulations or information that the ship owner wants to upload for any type of documentation. However, any documentation required by regulations or information that the ship owner wants to upload for any type of documentation may also be stored in the ClassNK Archive Center. As with the GBS-SCF, the system will be accessible 24/7, 365 days a year by authorized users.
Main security features

- Detects illegal activity and is equipped with intrusion prevention system to block intruders. The system also blocks access when illegal access attempts are made.
- The data can only be viewed using a dedicated browsing system.
- An identification mark, sign and the name of the SCF Holder will be always embedded and a precaution will be displayed when printing drawings.

Operating Environment

- Windows 7 or later (recommended)
- Internet Explorer 11 or later
- Java Runtime Environment (JRE) 8 Update 51 or later
  https://java.com/ja/download/windows_xpi.jsp
- A dedicated drawing viewer (This software can be downloaded from the ClassNK Archive Center.)

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