Input paper: ARM9-10.5

Input paper for the following Committee(s): check as appropriate Purpose of paper:

**X** ARM **□** ENG **□** PAP **X** Input

**□** ENAV **□** VTS **□** Information

Agenda item [[1]](#footnote-1) (from agenda) 10

Workplan Task Number2 5.2.2

Working Group WG 2

Author(s) / Submitter(s) Fred Pot, Secretary, [Ship Reporting Correspondence Group](http://srcg.bergmann-marine.com/about)

WG2 Ship Reporting Task Group Input Paper to ARM Committee

Automated Ship Reporting System

# Purpose of the document

The ARM Committee - Task Plan 2018-2022 includes (ARM8-6.1 task 5.2.2):

Develop Guideline on ship reporting from the shore‐side perspective.

Expected outputs:

* 1. Ship Report Template Registry specifications and governance;
  2. Guideline on ship reporting tools;
  3. Minimum cyber security requirements for sharing ship report information;
  4. Guidance on migration from current ship reporting system to a harmonised and secure electronic system;

The purpose of this paper is to 1) to contribute to the Committee’s discussions on the development of this Guideline, 2) to invite the Committee to make comments as appropriate to guide the Ship Reporting Task Group in its work to fulfil its task and 3) to meet IALA's goal of contributing to IMO's work on e-navigation Prioritized Solution #2.

## Related documents

### [FAL 41/17 REPORT OF THE FACILITATION COMMITTEE ON ITS FORTY-FIRST SESSION](http://www.imo.org/en/OurWork/Facilitation/FALCommittee/Facilitation/FAL%2041-17%20-%20Table%20of%20contents%20(Secretariat).pdf)

### [NCSR 1/28 Annex 7 E-NAVIGATION STRATEGY IMPLEMENTATION PLAN](http://www.imo.org/en/OurWork/Safety/Navigation/Documents/enavigation/SIP.pdf)

### ARM8-6.1 ARM COMMITTEE TASK PLAN – 2018-2022

### ENAV20-12.4 Guideline on Vessel Shore Reporting System

### ENAV21-12.8 MSP 8 Vessel Shore Reporting Service

### ARM8-10.5 Description of Ship Report Registry

### ARM8-10.5.1 WG2 Presentation Standardized and Automated Ship Reporting

# Background

IMO’s e-navigation Strategy Implementation Plan (SIP) includes Prioritized Solution #2: “Standardized and Automated Ship Reporting to streamline ship-board and shore-side reporting processes and procedures” ([NCSR 1/8 Annex 7](http://www.imo.org/en/OurWork/Safety/Navigation/Documents/enavigation/SIP.pdf))

IMO FAL41 Invited Member States and international organizations to submit documents regarding the application of the Maritime Single Window (MSW) concept. (ref [FAL41‐17/5.53](http://www.imo.org/en/OurWork/Facilitation/FALCommittee/Facilitation/FAL%2041-17%20-%20Table%20of%20contents%20(Secretariat).pdf)):

The Committee invited Member States and international organizations to submit documents regarding the application of the MSW concept on such topics as:

1. electronic exchange of information, including machine-to-machine (M2M) communication, web-based services, and graphic user interfaces;
2. integration of other national agencies and stakeholders into MSW;
3. processes for streamlining government to business communication and clearance of ships and cargo;
4. the value and concerns about collection of information regarding national data requirements in excess of those recommended in the FAL Convention and annex;
5. ways the Committee can support application of MSW concepts in developing countries.

# DISCUSSION

# Where does IALA fit in the overall Automated Ship Reporting System?

IMO FAL41 Invited Member States and international organizations to submit documents regarding the application of the Maritime Single Window concept. (ref FAL41‐17/5.53):

To support IMO FAL in its program to implement a Maritime Single Window and to support IMO with implementation of “Standardized and Automated Ship Reporting to streamline ship-board and shore-side reporting processes and procedures”, IALA should consider developing a Guideline that contributes and is integral to IMO’s implementation of MSW and the Standardized and Automated Reporting system.

Several IALA Members are National Competent Authorities (NCA) for ship reporting and for the development of a Single Window concept. The guideline will support the NCA’s in the development and implementation of digital ship reporting systems.

A Guideline on “Standardized and Automated Ship Reporting system” should include components that pertain IALA and specifically to the ARM Committee’s Ship Reporting Task.

* Description and IMO requirements
* The relation with e-navigation maritime service no 8 “Vessel Shore Reporting”
* Ship reporting systems for prearrival to port.
* SRS systems
* The SingleWindow concept.
* Digital information
* Stakeholders
* Benefits for stakeholders
* Human factors
* The role of IALA
* The role of other organizations
* System objective
* Guidelines on technical solutions
* Architecture
* System components
* Use of sensors like AIS for automatic reporting.
* Relevant s-100 product specifications
* Cyber security
* Harmonization and exchange of information
* Evaluation process

# dESCRIPTION OF a PotentiAL Standardized and automated ship reporting system

The Ship Reporting Task Group has received a description of a potential Standardized and Automated Ship Reporting System that is endorsed by several potential vendors of ship-board and shore-side reporting systems. They are Members of the [Ship Reporting Correspondence Group](http://srcg.bergmann-marine.com/about) ([srcg.bergmann-marine.com/about](file:///C:\Users\Fred%20Pot\Dropbox\IALA%20ARM%20WG2%20TG\srcg.bergmann-marine.com\about)).

To contribute to the discussion, the potential system is described in Annex 1.

# Action requested of the Committee

WG2 invites the ARM Committee to make comments as appropriate and contribute to the discussions and work on the guideline.

Annex 1 Standardised and Automated Ship Reporting system

**Standardized and Automated Ship Reporting System**

**Overall System Objective**

Streamline ship-board and shore-side reporting processes and procedures.

**How will the system work?**

The on-board ship reporting system will streamline the generation and submission of reports to shore-based Authorities and other stakeholders by:

* Automatically collecting most information that is required to generate ship reports from ship-board and other systems.
* Generating ship reports for shore-based stakeholders in the next port of call in the format that they require:
  + Identify their reporting requirements from the Ship Report Registry
  + Populate ship reports with Information collected from ship-board and other systems
* Automating ship report transmissions to ensure that the reports are submitted in the required (encrypted) format to the correct shore-based stakeholder by the required deadline using an appropriate communication channel.

Shore-based Authorities and other Stakeholders will use Ship Report Receiving Systems to receive ship reports, decrypt them and populate their proprietary (enforcement) systems with the information contained in the ship reports.

**Primary Stakeholders**

* Report recipients
  + Shore-based Authorities
  + Other Stakeholders
* Report Originators
  + Bridge Teams
  + Shore-based Entities
    - Port Agents
    - Shipping Company Personnel
    - Stevedores
    - Shippers
    - Crewing Agents
    - Waste Removal Agents
    - Etc.
* Ship Owners/Operators
* Vendors of Ship-board Systems
  + Ship Reporting (most are [CIRM](http://cirm.org/) Members and Members of the [SRCG](http://srcg.bergmann-marine.com/))
  + Voyage Planning (most are CIRM Members)
  + Crew/Pax Management
  + Waste Management
  + Stores Management
  + Ballast Management
  + Emissions Management
  + Etc.
* Vendors of shore-based stakeholders’ (enforcement) systems
* International Standards Organizations
  + IMO
  + IMO FAL
  + ISO TC8
  + WCO
  + IEC
  + IALA
  + IHO
  + Others

**What are the system components?**

1. Ship-board and other Systems that are sources of ship report information
   1. Voyage Planning
   2. Cargo/Pax Booking System
   3. Stevedoring System
   4. Crew/Pax Management
   5. Waste Management
   6. Stores Management
   7. Ballast Management
   8. Emissions Management
   9. Etc.
2. Ship-board Reporting System Components
   1. M2M interfaces to sources of ship report information (see above)
   2. Ship Report Registry (on-line repository of reporting requirements)
   3. Identity Registry of report addressees (Maritime Connectivity Platform or its equivalent)
   4. Maritime Messaging System (Maritime Connectivity Platform or its equivalent)
   5. Repository of Ship Report Instances (Common Maritime Data Structure)
   6. User interface for Bridge Team
3. Shore-side stakeholders’ Ship Report Receiving System Components
   1. Maritime Messaging System (Maritime Connectivity Platform or its equivalent)
   2. Identity Registry of report originators (Maritime Connectivity Platform or its equivalent)
   3. Repository of Ship Report Instances (Common Maritime Data Structure)
   4. M2M Interfaces to stakeholders’ proprietary (enforcement) systems
   5. Shore-based Stakeholders’ proprietary (enforcement) systems
   6. User Interface for shore-based stakeholders.

**Who governs each component?**

1. Ship-board and other Systems

Ship-board and other Systems that are sources of ship report information are governed by their vendors (i.e. they are proprietary systems)

1. Ship-board Reporting System

Vendors of Ship Reporting Systems govern their proprietary systems and integrate components that are governed by Sub-Component’s publishers:

* 1. M2M interfaces to sources of ship report information
     + Vendors of Ship-board and other Systems
     + M2M Governance Body
  2. Ship Report Registry (repository of reporting requirements)
     + Ship Report Registry Governance Body
  3. Identity Registry of Report Addressees (Maritime Connectivity Platform or equivalent)
     + Platform Governance Body
  4. Maritime Messaging System (Maritime Connectivity Platform or equivalent)
     + Platform Governance Body
  5. Repository of Ship Report Instances (S-100 Common Maritime Data Structure or CMDS)
     + International Standards Organizations
       - IMO
       - IMO FAL
       - ISO TC8
       - WCO
       - IEC
       - IALA
       - IHO

1. Shore-side stakeholder’s Ship Report Receiving System Components

Vendors of Shore-side Ship Report Receiving Systems govern their proprietary systems and integrate components that are governed by Sub-Component Suppliers:

* 1. Identity Registry of report originators (Maritime Connectivity Platform or equivalent)
     + Platform Governance Body
  2. Maritime Messaging System (Maritime Connectivity Platform or equivalent)
     + Platform Governance Body
  3. Repository of Ship Report Instances (S-100 CMDS)
     + International Standards Organizations
       - IMO
       - IMO FAL
       - ISO TC8
       - WCO
       - IEC
       - IALA
       - IHO
  4. M2M Interfaces to stakeholders’ proprietary (enforcement) systems
     + Vendors of stakeholders’ proprietary (enforcement) systems
     + M2M Governance Body
  5. Shore-based Stakeholders’ private (enforcement) systems
     + Vendors of these systems

**Where does IALA fit in the overall Automated Ship Reporting System?**

IMO FAL41 Invited Member States and international organizations to submit documents regarding the application of the Maritime Single Window concept. (ref [FAL41‐17/5.53](http://www.imo.org/en/OurWork/Facilitation/FALCommittee/Facilitation/FAL%2041-17%20-%20Table%20of%20contents%20(Secretariat).pdf)):

5.53 The Committee invited Member States and international organizations to submit documents regarding the application of the MSW concept on such topics as:

1. electronic exchange of information, including machine-to-machine communication, web-based services, and graphic user interfaces;
2. integration of other national agencies and stakeholders into MSW;
3. processes for streamlining government to business communication and clearance of ships and cargo;
4. the value and concerns about collection of information regarding national data requirements in excess of those recommended in the FAL Convention and annex;
5. ways the Committee can support application of MSW concepts in developing countries.

To support IMO FAL in its program to implement a Maritime Single Window and to support IMO with implementation of “Standardized and Automated Ship Reporting to streamline ship-board and shore-side reporting processes and procedures”, IALA is invited to consider taking the lead on the development and operation of the “Ship Report Registry”, which is a shore-based component that is crucial to the implementation of MSW and the Standardized and Automated Reporting system.

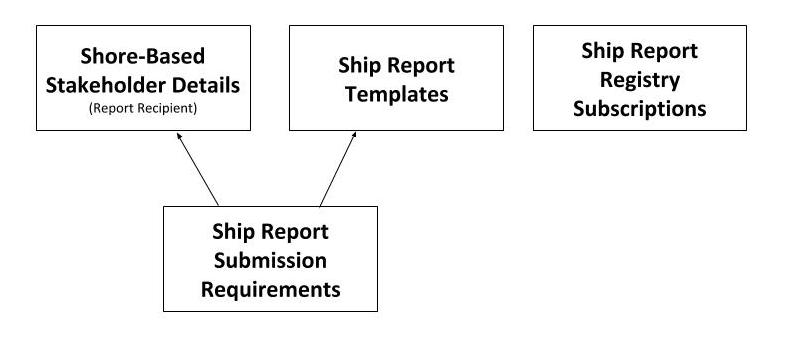
Vendors that are interested in offering ship-board and shore-based ship reporting systems are members of the [Ship Reporting Correspondence Group](http://srcg.bergmann-marine.com/charter). SRCG Members are encouraging IALA to take the lead on the development and operation of the Ship Report Registry because it will allow them to offer effective and affordable products and services that address ship reporting needs both for bridge teams and for shore-based stakeholders.

**What is the Ship Report Registry?**

The Ship Report Registry is an on-line repository of ship reporting requirements imposed on ships by Shore-Based Authorities and other stakeholders, most of whom are (represented by) IALA National Members.

It contains 4 Lists:

1. List of Shore-based Authorities and other stakeholders that require ship reports
2. List of report templates (standard FAL Forms, National Single Windows, S-127, S-421, etc. as well as unique country or even port specific reports)
3. List of submission requirements (which report needs to be submitted to what authority by when and in what format via which communications channel)
4. List of Ship Report Registry subscribers and their subscriptions



Ship-Board Reporting Systems will use an on-board copy of the Ship Report Registry to identify reporting requirements in the next port of call. The on-board copy will need to be updated periodically because reporting requirements are changing over time.

**Why is a Ship Report Registry needed?**

Ships are typically required to submit most of the of the following types of reports for each port call:

|  |  |
| --- | --- |
| 1. Arrival/General Declaration 2. Ballast Water Log 3. Cargo Declaration 4. Disembarkation Certificate 5. Ship Certificate 6. Crew Effect Declaration 7. Crew Vaccination Record 8. Crew List 9. Foreign Currency List 10. General/NIL List | 1. Health 2. Passenger List 3. Port of Call List (Voyage Memo) 4. Security Report 5. Ship’s Particulars 6. Ships Repairs 7. Ship Stores Declaration 8. Tank Condition 9. Waste Notification |

Many ports have adopted FAL Forms 1-7 for some of these reports but still require ships to submit them in hard copy to a group of shore-based stakeholders (see Annex 2 for an example for the Port of Guangzhou).

See ANNEX 3 for examples of other required ship reports in other ports.

Some countries have established a National Single Window (NSW) that allows ships to submit a combination of report types to a single shore-based authority. Unfortunately, these NSW vary country by country and many ports still require reports beyond the NSW report.

In all, Shore-based Authorities and other stakeholders require submittal of well over 1000 unique reports.

IMO FAL has been striving for decades to establish a globally harmonised “Maritime Single Window” (MSW). It has failed to materialise due, at least in part, because FAL doesn’t have the jurisdiction to enforce adoption of MSW.

Vendors of ship reporting systems could develop and maintain proprietary versions of the Ship Report Registry but doing so will likely significantly increase the cost of their systems to the point that few ship owners/operators will be able afford to provide their bridge teams with ship reporting systems.

**How would the Ship Report Registry be developed and maintained?**

IALA’s ARM Committee WG2’s Ship Reporting Task Group is considering several options to develop the Ship Report Registry including:

1. Surveying IALA National Members about their reporting requirements
2. Inviting shore-based authorities and other stakeholders to upload templates of their report forms to the Ship Report Registry along with other report submission requirements (address, format, data element specifications, deadline, telecommunications channel, etc.)
3. Subscribe to [IHS MarkIT “Ports and Terminals” Service](https://ihsmarkit.com/products/maritime-ports-terminals-guide-2019-2020.html) which contains an, albeit incomplete, listing of reporting requirements.

Ship Report Registry development funding options could include the EU funding through the future STM BALT SAFE project, but other funding options are also being considered.

The ARM Committee WG2’s Ship Reporting Task Group is considering establishment of subscriptions for the use of the Ship Report Registry to fund its management and upkeep. One option being considered includes charging ships a nominal (US$50?) annual fee. Another is a “Pay As You Sail” (PAYS) option.

The ARM Committee WG2’s Ship Reporting task Group expects that Shore-based Authorities will likely keep their reporting requirements in the Registry up-to-date because they will benefit from doing so by improving compliance with their reporting requirements and to manage implementation of new or changed reporting requirements.

**What role will the Ship Report Registry play in cyber security?**

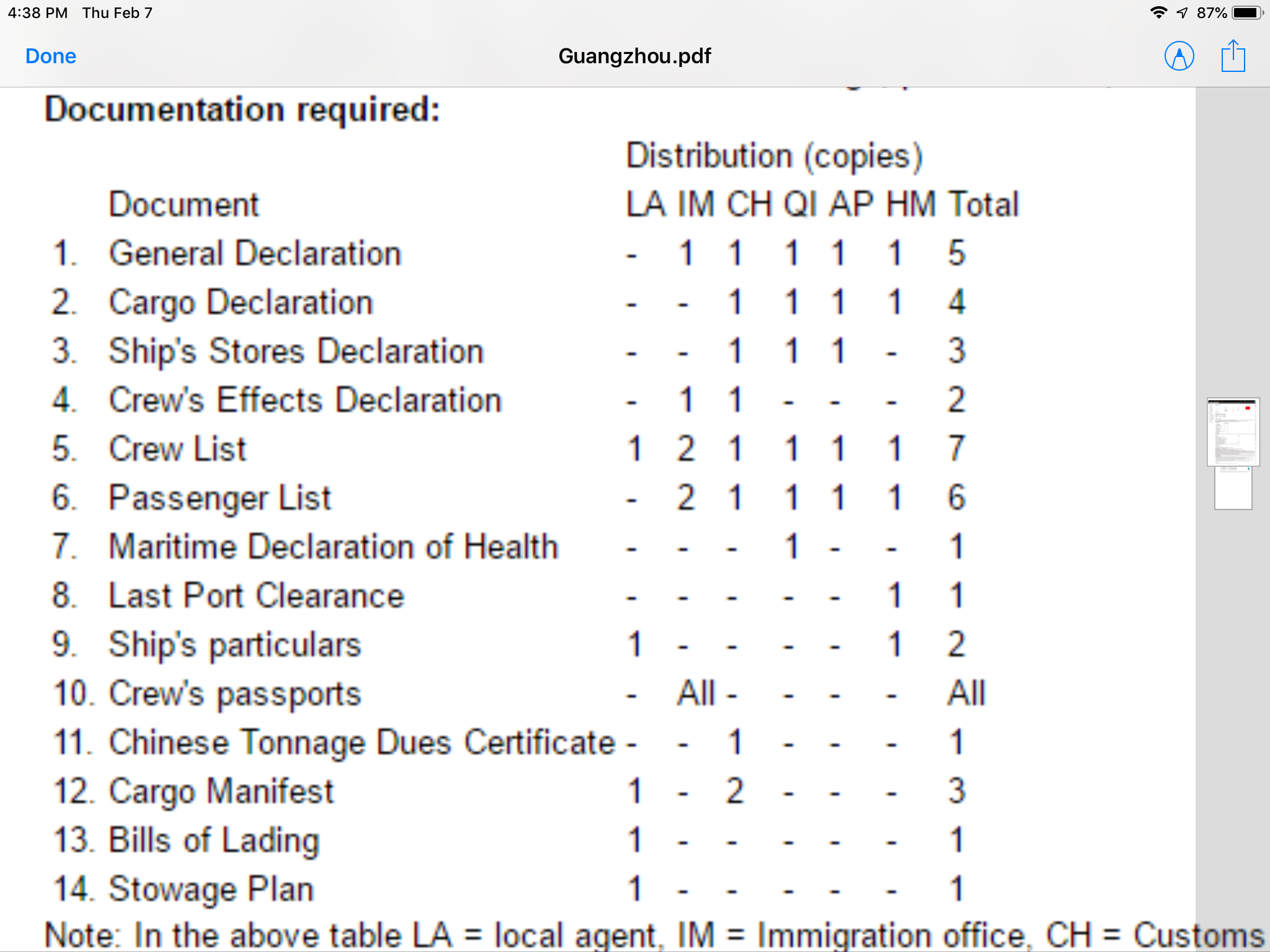
The ARM Committee WG2’s Ship Reporting Task Group expects that the Maritime Connectivity Platform or an equivalent platform will be the basis of all e-navigation services. The platform should include authentication, authorization and encryption functionality based on security certificates for all actors. This will allow shore-based authorities and other stakeholders to authenticate ship report originators and allow ship owners/operators to control dissemination of sensitive information contained in some ship reports (i.e. personal information about crew and passengers as well as trade secrets included in cargo manifests).

The Ship Report Registry will have a list of valid Shore-based Authorities and other stakeholders. Ships could use (a local copy of) this on-line list to discover and authenticate addressees of their ship reports and simultaneously control access to sensitive report information via encryption.

Similarly, the Ship Report Registry will likely have a (valid) list of ships that subscribe to the service. This list could contain their security certificate. Shore-based Authorities and other stakeholders could discover and authenticate originators of ship reports by referring to this list.

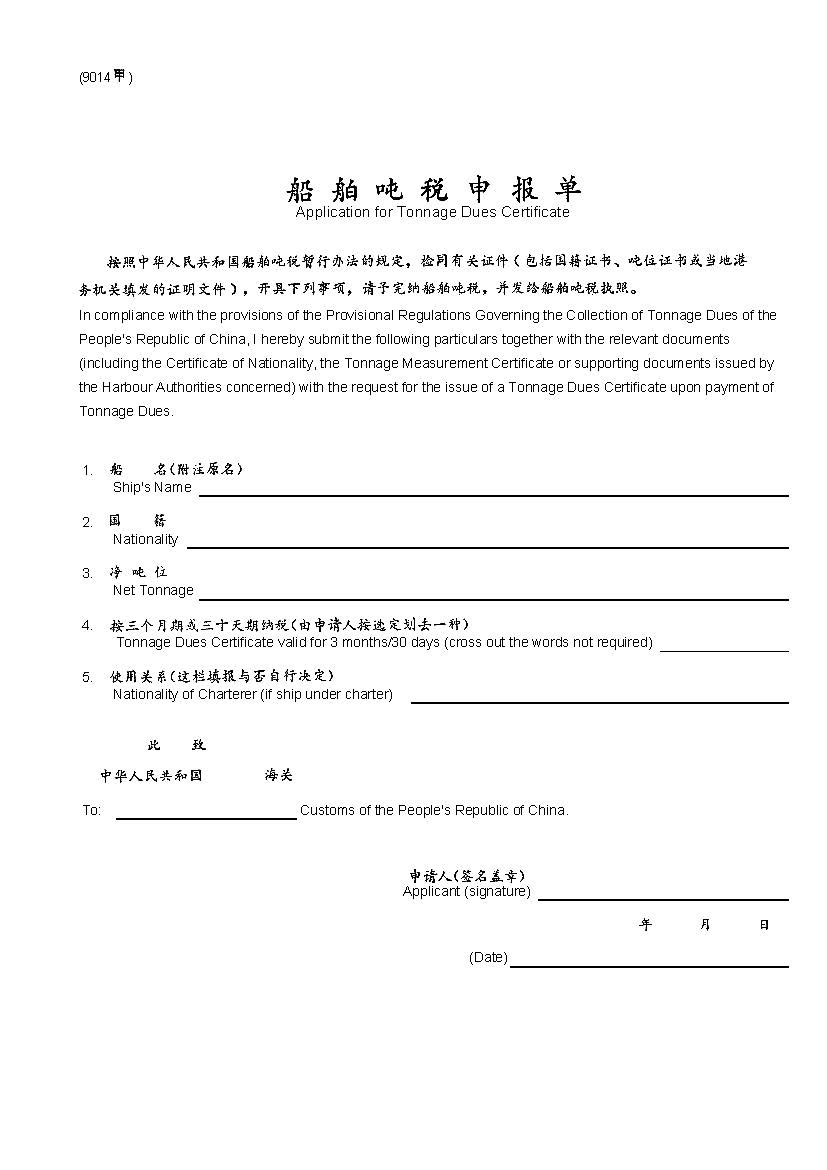
Annex 2 Example of reports required by the Port of Guangzhou

The following lists the Documentation Requirements for Guangzhou as of November 14, 2016 according to [IHS MarkIT](https://ihsmarkit.com/products/maritime-ports-terminals-guide-2019-2020.html).

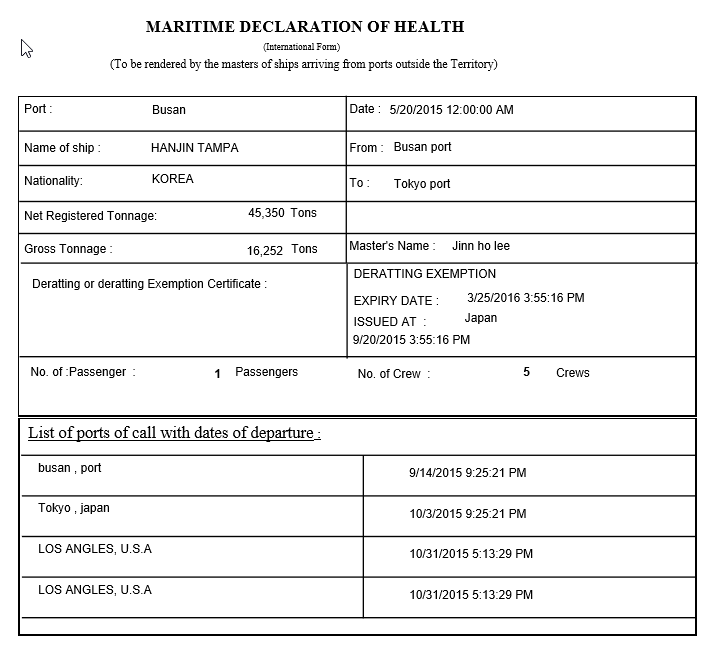


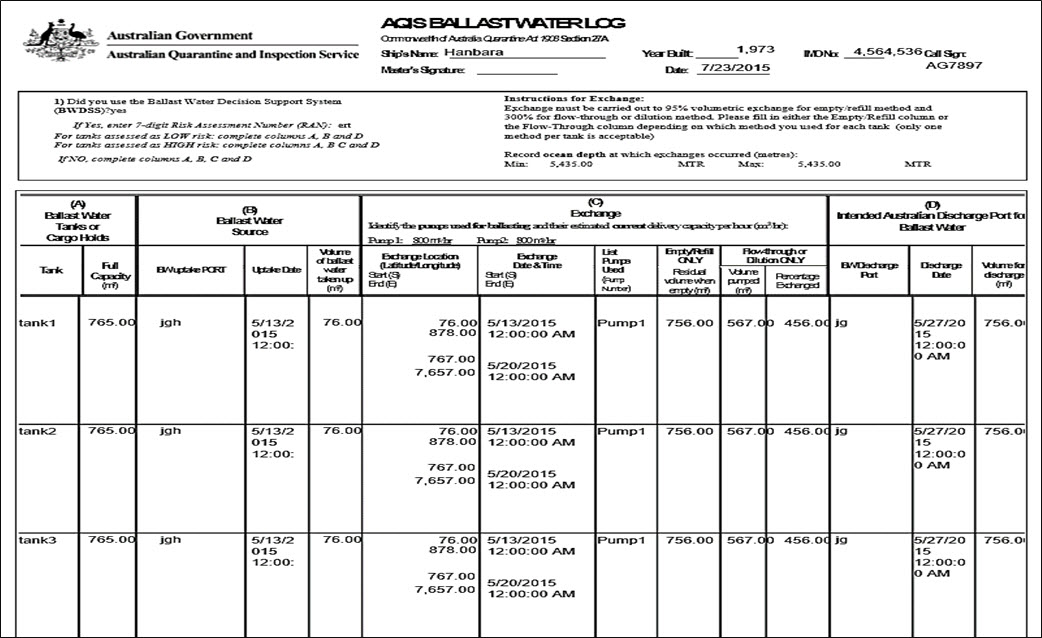
|  |  |
| --- | --- |
| LA = Local Agent  IM = Immigration Office  CH = Customs House | QI = Quarantine Inspection Office  AP = Animal and Plant Inspection Office  HM = Harbour Master |

Nr. 11 The “Chinese Tonnage Dues Certificate” is depicted below:



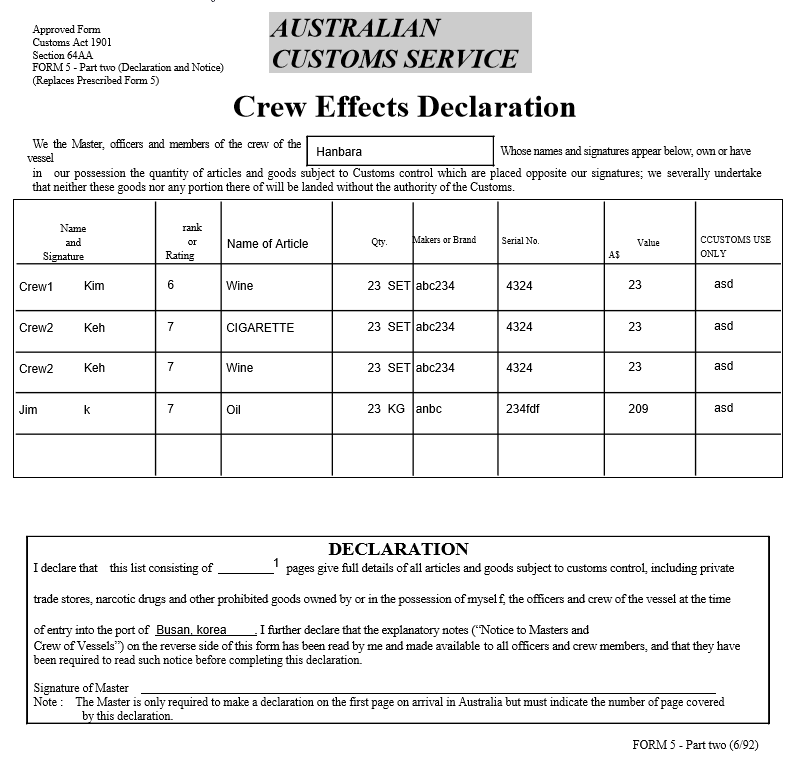
Annex 3 Examples of currently required ship reports





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Description automatically generated



A screenshot of a cell phone

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Description automatically generated

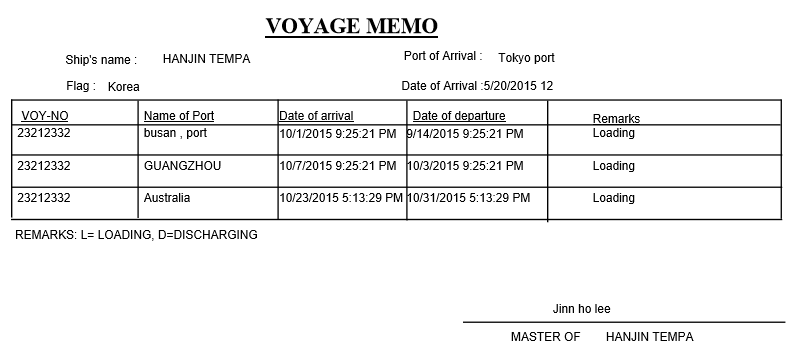
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1. Input papers should be assigned to a work task as listed in the Committee work plan which is available in input papers. Leave open if uncertain but consider how the paper is to be processed if not relevant to a work task [↑](#footnote-ref-1)