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**Feasibility Study on Electronic Certificates and
Documents for Reducing Administrative Burden
and its Impacts on the Chinese Shipping Sector**

By

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DECLARATION

I certify that all the material in this research paper that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

The contents of this research paper reflect my own personal views, and are not necessarily endorsed by the University

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ABSTRACT

Title of Dissertation: **Feasibility Study on Electronic Certificates and Documents for Reducing Administrative Burden and its Impacts on the Chinese Shipping Sector**

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As we all know, human factor is the most important cause in maritime casualties. Fatigue is one of the main factors that will let crews make mistakes. Therefore, how to reduce the workload of the crewmembers has become a hot issue nowadays.

Based on the Final report of the Ad Hoc Steering Group for Reducing Administrative Requirement (IMO, 2014a), an overview of framework for reducing the Administrative Burden has been established. According to the report, electronic certificates, documents and records were important and effective to let crewmembers invest more energy in security affairs because there is too much paper work especially for senior officers.

However, it still needs a lot of time for the acceptance of the electronic certificates and documents as a full alternative to paper versions, since it involves a lot of problems related to policy issues, technology issues and economic issues that need to be resolved.

As for Chinese shipping sector, it is different from western countries. The present Chinese shipping industry is large but not strong enough. We have a great many seafarers, ships and shipping companies, but we barely lead the development of the international shipping industry. Therefore, since the trend for the use of electronic certificates and documents cannot be stopped, it is necessary to focus on the impact

and response to the acceptance of the electronic certificates and documents on the side of Chinese shipping industry.

KEY WORDS: Administrative burden, electronic certificates and documents, Chinese shipping sector, policy,

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LIST OF ABBREVIATIONS

CA	Certificate Authority
CBA	Cost-Benefit Assessment
CCS	China Classification Society
COSCO	China Ocean Shipping Co.
DWT	Deadweight Tonnage
ECDIS	Electronic Chart Display And Information System
EDI	Electronic Data Interchange
EIAPP	Engine International Air Pollution Prevention Certificate
FAL	Facilitation Committee
FSC	Flag State Control
IMO	International Maritime Organization
ISO	International Standardization Organization
LRIT	Ship Long-Range Identify And Track System
MEPC	The Marine Environment Protection Committee
MSA	Maritime Safety Authority
MSC	Maritime Safety Committee
NPV	Net Present Value
P&A	Procedure and Arrangement
P&I Club	Protection and Indemnity Club
PC	Personal Computer

PDA	Personal Digital Assistant
PEST	Political, Economic, Social and Technological
PKI	Public Key Infrastructure
PSC	Port State Control
PSCOs	Port State Control Officers
R & D	Research and Development
RO	Recognized Organization
SMS	Safety Management System
SOPEP	Shipboard Oil Pollution Emergency Plan
UN/EDIFACT	United Nations/Electronic Data Interchange for Administrations, Commerce and Transport
WCO	World Customs Organization

CHAPTER 1

INTRODUCTION

1.1 Reducing the Administrative Burden- Easier said than done

The theme for the 2014 World Maritime Day¹ was: *IMO conventions: effective implementation!* It could be easily seen that there was something wrong with the IMO convention system. And “effective” was the key solution to this problem. Based on the “Selection of illustrative general comments on reduction of administrative burdens (C 113/INF.2)”, both crewmembers and ship owners complained about “too much paper work” and “the vast amount of administrative requirements”, which was “very burdensome” since there were too many “checklists and inspections” for the crewmembers which would draw attention to and focus on complying with these administrative requirements. Even if these requirements were justified, it would still make crewmembers spend a lot of time on administrative tasks rather than actual manning and operation of the ship. (IMO, 2014b).

Since it involved a lot of stakeholders among the world, revising IMO convention was never an easy thing. At its 27th session, the Assembly of IMO adopted resolution

¹ The IMO web site gives further information on courses:
<http://www.imo.org/en/MediaCentre/PressBriefings/Pages/29-WMD.aspx#.V10jll0cp2w>

A.1043 (27), which requests Council to establish the Ad Hoc Steering Group for Reducing Administrative Requirements. The final report by Ad Hoc Steering Group (IMO, 2014a) had suggested the use of electronic certificates and similar documents as a full alternative to paper versions. Accordingly, the administrative burden can be reduced through electronic information technology

However, regarding the universal acceptance of the electronic certificates and similar documents, a lot of problems including technical problems (authenticity of the E-certificates), cost-benefit problems, legal problems (national legislation), and coordination problems (how to cooperate with PSCOs) still need to be resolved. As for the technical and operational problems, the *Interim Guidelines for use of printed versions of Electronic Certificates* had been approved in 2013. Currently, in the 40th session of FAL, 2016, some details like the requirements for the electronic versions and the way of integrating the electronic means on vessel with the port information system were discussed and the report finalized. But for the economic problems, since different countries have different shipping industries, the attitudes towards electronic certificates are also different. This dissertation, based on IMO prevalent studies and debates on electronic certificates and the similar documents, focuses on what the administration of China should do to apply the electronic certificates on the ground of its own shipping industry and what impacts the application will have on Chinese shipping sector through feasibility analysis and investigation.

1.2 Objectives of research

The primary objective of this study is to illustrate the relationship between the electronic certificates and the reduction of Administrative Burden, as well as the work IMO had done to push the electronic certificates. The secondary objective will be the research on the feasibility analysis of the application of electronic certificates and

documents and how it could potentially impact on the Chinese shipping industry. After that, this dissertation will give suggestions on what China should do for the implementation of the E-certificates and documents.

1.3 Methodology

The relevant literature was widely reviewed beforehand, including appropriate IMO documents and circulars, international conventions, articles from contemporary journals, books and information from websites. Because of the limited time, advice was taken only by visiting three shipping companies and CCS during field-study trips.

1.4 Structure of dissertation

This dissertation consists of five chapters and two annexes. Chapter two focus on the origin and development of electronic certificates and documents by introducing the international framework and IMO's progresses in reducing administrative burden and electronic certificates. Chapter three conducts a feasibility analysis on the use and acceptance of electronic certificates and documents in terms of policy, economy, society and technology, and concludes with the cost-benefit assessment for the use of electronic certificates. Chapter four mainly concentrates on the impacts of the use of electronic certificates and documents on the Chinese shipping sector through the investigation into shipping companies and RO. Finally, the last chapter discourses the conclusions and suggestions.

CHAPTER 2

International framework of electronic certificates and documents and the measures for feasibility analysis

2.1 Introductory remarks

In order to reduce the operating cost, ship owners get out of their way to minimize the crewmembers of a vessel for many years. However, the increased checklists and inspections required by IMO Conventions and Mandatory Instruments made the crewmembers feel overburdened. According to the “Selection of illustrative general comments on reduction of administrative burdens”, the crewmembers reported that “downsizing crew and minimum safe manning may be adequate in numbers for arrival/departure stations, in case of any emergencies – but not for ships' maintenance” and they also mentioned that the crew have to work “for minimum 16 hours to 18 hours to get the work done” and “very often... get hardly 4 to 6 hours real rest”. (IMO, 2014b, p. 2).

Based on “Final report of the Ad Hoc Steering Group for Reducing Administrative Requirements”, they had completed 3,229 consultation documents (each commenting on one of the 563 administrative requirements included in the consultation and 86 general comments on the reduction of administrative burdens).(IMO, 2014a) And the overall response figures are shown in Table.2.1.

Table.2.1- Response to IMO consultation

BY CATEGORY OF INSTRUMENTS		BY STAKEHOLDER CATEGORY	
	No. of consultation documents		No. of consultation documents
SOLAS/Safety	1952	Government/Administration	1133
MARPOL/Environment	779	IMO (SG/Secretariat)	87
STCW	253	Surveyor/Recognized Org.	12
Liability	60	Ship's Management	1949
Passenger ships	33	Other specific stakeholders	1
Other	152	No specific stakeholder	47

Source: IMO, 2014a

However, it's worth noting that in recent years, the advanced technologies especially the electronic information technology has brought a revolution to the modern society, including the shipping industry (Mohd Bekri, R*.a, et. 2013). According to the analysis of the answers to the question (possible measures that could alleviate the administrative burden) (IMO, 2014), it is expected that 69 of the 182 administrative requirements (37.9%) need special measures to mitigate the related administrative burdens, and the rest could be mitigated by using the electronic certificates, recordings and required documents. The details are shown in Figure.2.1. In Annex 9 of the report, it also recommended a universal acceptance of electronic certificates and similar documents as a full alternative to paper versions and for provision of information, recording and reporting could be fulfilled by electronic means.

Besides that, the detentions of ships which caused by that crewmembers cannot find the originals of the certificates happen occasionally. For example, in November, 2013, a vessel was detained since the crewmembers could not find the original of EIAPP. Actually, the original of that certificate was on board. (Wu Weijun, et al. 2016)

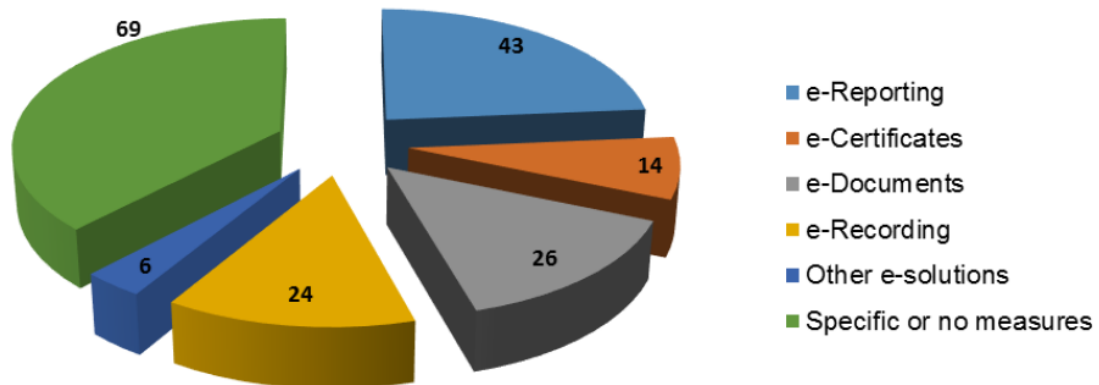


Figure.2.1- Possible measures for alleviating administrative burdens

Source: IMO, 2014a,

2.2 The international framework for the electronic certificates and documents

The research on electronic certificates has been carried on by IMO for many years. According to *REPORT OF THE FACILITATION COMMITTEE ON ITS THIRTY-NINTH SESSION*, the work on collecting the background information of “Online access to certificates and documents required to be carried on board ships”(IMO, 2014c) had been done since FAL 32. And in FAL 39, the following questions about E-business for the facilitation of maritime traffic had been discussed:

- The work had been done by MSC 91, MEPC 63 and MEPC 66 about electronic access to certificates and documents.
- How to make the electronic certificates and documents valid and what can be considered as “original” and “authentic”.
- Approval of the *Interim guidelines for use of printed versions of electronic certificates. (FAL.5/Circ.39) (IMO, 2014)*
- The potential difficulties on national legislation, acceptance by PSCOs and the uniform technical standards for electronic certificates.
- Establishment of the working group on Electronic Means for the Clearance of

Ships.

As the first guideline on the application of electronic certificates, *GUIDELINES FOR THE USE OF ELECTRONIC CERTIFICATES (FAL.5/Circ.39/Rev.1)*, was approved by FAL 39, making the first attempt on verification and acceptance of electronic certificates. It required the electronic certificates to have the following features: validity and consistency; protection from being edited, modified and revised without the authorization from the Administration; a unique tracking number for verifying and electronic signatures which meet the authentication standards. It also mentioned that all stakeholders should accept the electronic certificates and for the port state control officers, they should follow the *Procedures for Port State Control, 2011* (resolution A.1052 (27)). However, as an interim guideline, there were a million issues to work out at detailed level. Change which involves a lot of stakeholders is not easy. So, working groups had been established for the electronic certificates and documents. In 2016, the report of Correspondence Group for electronic versions of certificates, documents and record books, was submitted by United States in FAL 40(IMO, 2016). It focused on three main aspects, which were the model framework for implementing electronic certificates, drafting updated *Guidelines for use of electronic certificates* and proposing amendments to *Procedures for port State control, 2011*, respectively (see Figure.1.2). Besides that, the correspondence group also made an informal poll of ROs and other stakeholders for the use of electronic certificates. They had noted that except the “authenticity” and “reliability” problem, “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”. (IMO, 2014c)

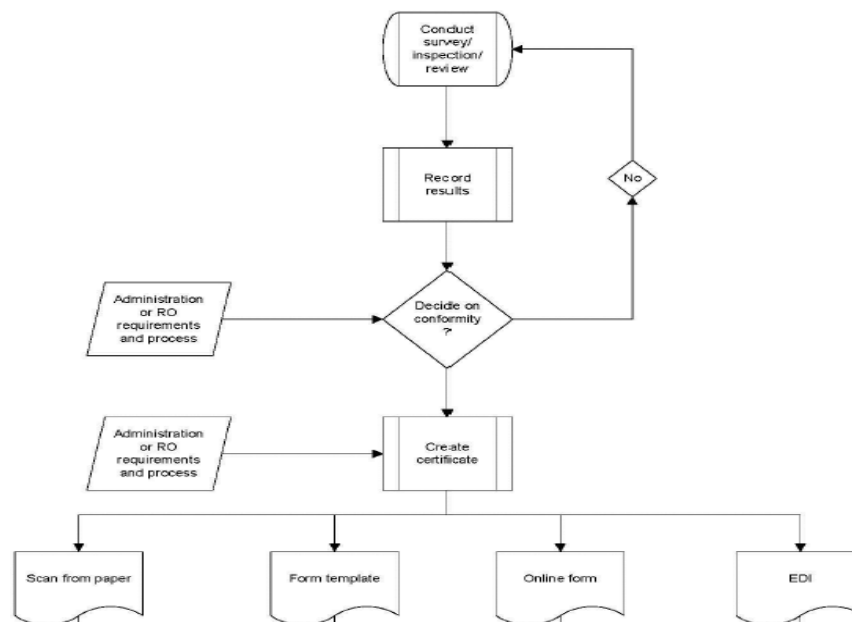


Figure.2.2- Framework for using electronic certificates

Source: IMO, 2016a, FAL 40/6.

For technical issues, the cooperation between IMO and World Customs Organization (WCO) on facilitation and electronic business should not be ignored. According to the *Review of the IMO Compendium on Facilitation and Electronic Business*, which was submitted by WCO, FAL 39 approved the mechanism that WCO took the charge of the technical maintenance of message standard of FAL forms while FAL Committee worked on policy making, like the development of new forms or amendments to existing ones. Based on United Nations/Electronic Data Interchange for Administrations, Commerce and Transport (UN/EDIFACT) functional standards, the FAL Form established the standards for the information of IMO General Declaration that was transmitted in EDI format (IMO, 2015a). Besides that, the work done by International Standardization Organization (ISO) on Standardization of Electronic Ship Certificates was also very important. (IMO, 2015b) ISO TC8 took part in the correspondence group on Electronic Access to Certificates and Documents. On the basis of the four different ways to issue electronic certificates that were put forward

by the correspondence group, ISO TC8 paid more attention to technical details of the fully digital and signed version of electronic certificates and the way they could be implemented. As for the fully signed electronic certificates, the required technical components include Certificate specifications, Performance standards for electronic certificates and signatures, Common information model (like UN/CEFACT), Template files for electronic certificates, Print templates, Signature mechanism, Printed signature specification, Encoding and validation software and Public Key Infrastructure (PKI) (IMO is already operating a PKI for the LRIT (see MSC 86/6) (IMO, 2015b). Figure.2.3 shows how they work together.

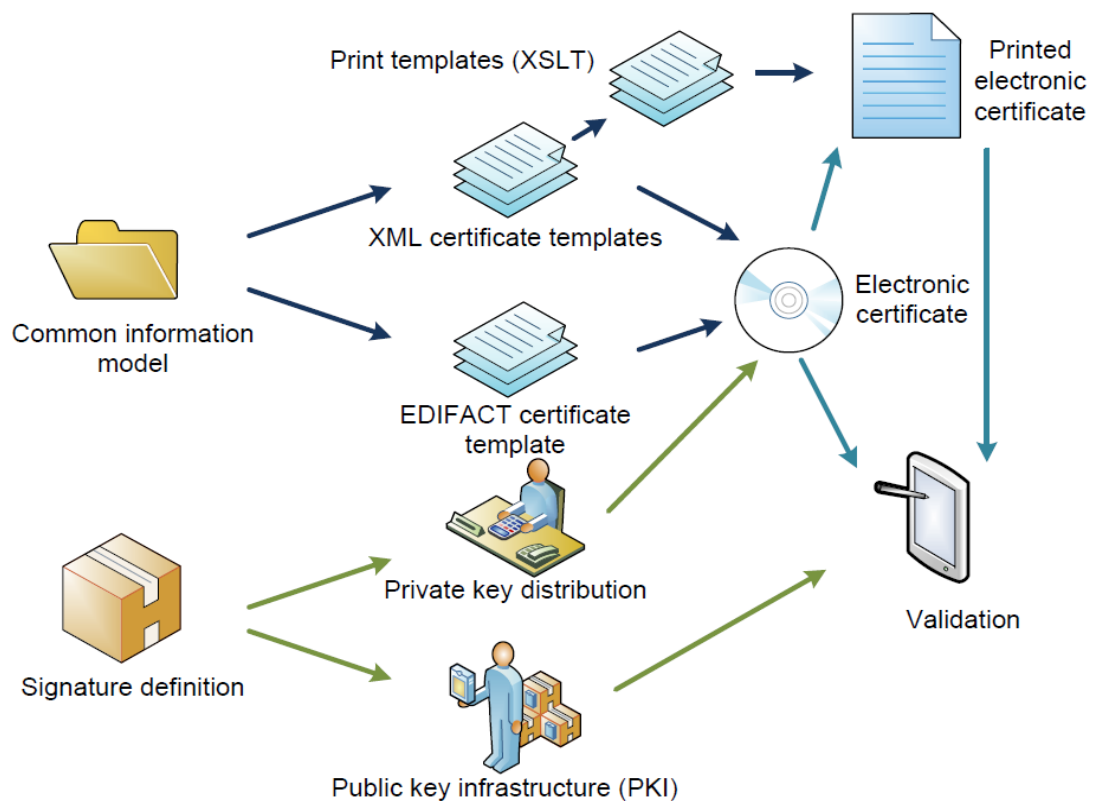


Figure.2.3- Usage scenario of electronic certificates

Source: IMO, 2015b

2.3 Measures for Feasibility Analysis

As previously stated, since a lot of stakeholders are involved, the use and acceptance of electronic certificates and documents are complicated. Therefore, the Feasibility Analysis is very necessary as it will provide information to administrations about what to do and how to do it. This dissertation has used PEST analysis and Cost-benefit Assessment for the Feasibility Analysis on the acceptance of electronic certificates and documents.

2.3.1 PEST Analysis

Political, Economic, Social and Technological Analysis (hereafter referred to “PEST Analysis”) was used to describe a framework of macro-environmental factors for the strategic management of the company. Usually, PEST analysis consists of four factors:

- Political factors are basically about how the government intervenes. It has areas including political stability, national law and so on.
- Economic factors refer to cost-benefit assessment, which will greatly affect how businesses operate and make decisions. For example, interest rates may affect a company’s cost of capital and therefore to what extent a business grows and expands.
- Social factors include the cultural aspects and health consciousness. High trends in social factors may affect the demand for a company's products and how that company operates.
- Technological factors include technological aspects like the rate of technological change. These can determine barriers to entry, minimum efficient production level and influence the outsourcing decisions (Collins Rob, 2014).

However, for the feasibility analysis on electronic certificates and documents, a little extension is needed for PEST Analysis. “P” stands for policy feasibility assessment; “E” stands for economic feasibility assessment, which refers to cost-benefit assessment; “S” stands for social acceptability, which refers to the acceptance of stakeholders and organizations like PSC regimes; and “T” stands for technical feasibility assessment. The relationship between them is shown in Figure.2.4.

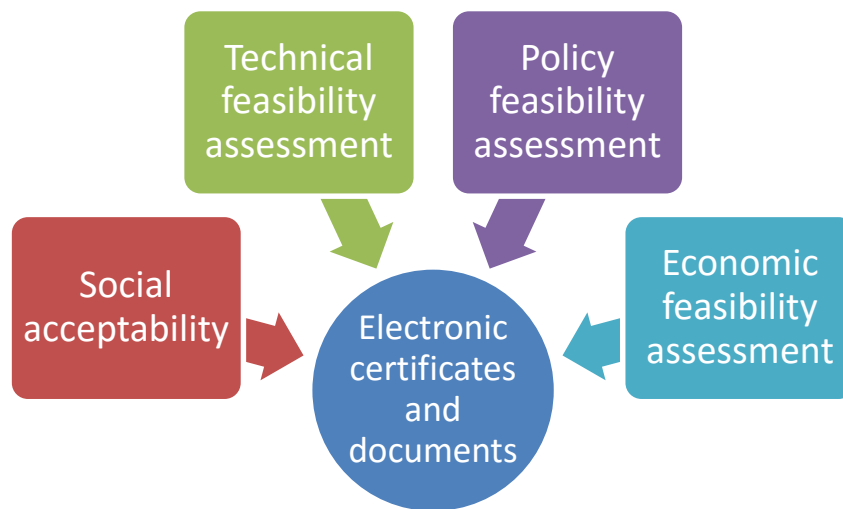


Figure.2.4- PEST Feasibility Analysis

Source: by Author

2.3.2 Cost-benefit Assessment

Since the financial crisis in 2008, operating status of shipping companies has been getting harder and harder. As Corbett said, in light of creating a new framework, a balance between economic development and environmental issues is very important (Corbett, 2009, p.593). The cost-benefit assessment is something that we should take into consideration since the use and acceptance of electronic certificates and documents ought to be leveled up to international participation and collective actions.

However, the shipping industries are different between regions and countries. This dissertation selects China which has the largest number of seafarers and ships for the cost-effectiveness assessment. In order to carry out a cost-benefit assessment of the electronic certificates and documents, the methodology consistent with the Formal Safety Assessment (FSA) approach will be used (IMO, 2000; IMO, 2007a). However, the use and acceptance of electronic certificates and documents were mainly designed to facilitate marine business and reduce the administrative burden, not for the safety of the ship. The risk reduction is hard to estimate. Therefore, this dissertation mainly focuses on the calculation of cost and economic benefit.

2.4 Concluding remarks

In conclusion, an overview of the framework that had been done by IMO on the use and acceptance of electronic certificates and documents has already been recalled. The measures for feasibility analysis, namely PEST Analysis and Cost-benefit Assessment, have been introduced. The suggestion on electronic certificates and documents dated from a final report on the administrative burden. Based on the investigation, many seafarers and stakeholders complained about too much paperwork and documents required by IMO mandatory instruments and thought it would be improved by using the electronic certificates and documents. After that, FAL Committee took charge of this research. *Guideline for use of electronic certificates* was approved in FAL 39 while the cooperation between IMO and WCO, IMO and ISO on technical issues has also been going on. But there is still a lot of work to do before the use and acceptance of the electronic certificates and documents since it involves a lot of stakeholders. So, the feasibility analysis is necessary for gathering and organizing the difficulties and calculating the cost and benefit.

CHAPTER 3

Feasibility Analysis on the use and acceptance of electronic certificates and documents

3.1 Introductory remarks

Even though the vast majority of research work had been done by IMO for the electronic certificates and documents, as it was mentioned in *Report of the Correspondence Group (FAL 40/6)*, “The use and acceptance of electronic certificates is a policy issue, not a technological one”. (IMO, 2016a, p.12) The implementation of the electronic certificates and documents is a complicated issue. This dissertation aims at solutions to reducing the difficulty in solving technical problems, cost-benefit problems, legal problems and coordination problems and applies PEST analysis for the feasibility analysis. However, before the introduction on the difficulties and feasibility analysis, an important conceptual needs to be pointed out: what are the certificates and documents?

3.2 Classification of the certificates and documents required by IMO

With the development of shipping industry, the IMO Convention System is getting

bigger and bigger and so are the administrative requirements. (IMO, 2014a) And most of the administrative requirements are bound up with certificates, documents and recordings which need to be checked out by someone. According to the statistics by author, there were 563 certificates, documents and recordings required by IMO mandatory instruments and conventions at the end of 2015. The details are shown in Annex B. Based on the requirements by IMO mandatory instruments, those certificates, documents and recordings could be divided into 8 classes:

- 1. Certificates which were issued by Administrations and ROs, like Certificate of Nationality, Cargo Ship Safety Equipment Certificate and so on.
- 2. Documentations which were approved by Administrations and ROs, like stability data, SOPEP, Procedure and Arrangement manual (P&A Manual) and so on.
- 3. Documents that were made by shipping companies or ships and audited by Administrations and ROs, like SMS Document, Ship Security Plan and so on.
- 4. Certificate of competency that were issued by Administrations.
- 5. Recordings that were generated by operation of ships, like Logbook, Engine Logbook, Oil Record Book, Garbage Record Book and so on.
- 6. Nautical charts and publications that were required by Conventions, like International Code of Signals, Nautical Chart and so on.
- 7. Certificate of measurement that were provided by Professional organization, like Weighted Record of CO₂, Magnetic Compass Calibration Check List Table, the proof of survey for Inflatable Liferaft and so on.
- 8. Others that were provided by manufacturer, like the instructions of Marine Product, training manual of ECDIS and so on.

3.3 Feasibility Analysis on Policy Factors

For the policy issue of electronic certificates and documents, the biggest challenge is legislation problems, which could be analyzed from two perspectives, IMO and Administrations.

3.3.1 The legal problems for IMO

In IMO, the procedure of amendment of conventions and mandatory instruments is very complicated, which needs to go through proposals, discussions, research of working group, Committee, Council. For the electronic certificates and documents, the following questions need to be addressed:

- What is the meaning of "originals" to be carried on board ships required by conventions and mandatory instruments?
- How can we ensure the “valid” and “authentic” of the electronic certificates and documents and make sure the certificates and documents are drawn up in the form corresponding to the requirements of relevant international convention or instrument?
- Is the use of electronic certificates viewed on device screens equivalent to traditional paper certificates and printed versions of electronic certificates (IMO, 2014c)?
- Do electronic certificates viewed from screen or websites meet the requirements of conventions to be “on board”?

However, what's worthy to be felicitated is that a lot of work has already been done by IMO since 2014. *The interim guideline for use of printed versions of electronic*

certificates has been approved by FAL Committee and has been amended twice. (IMO, 2014c) The Report of the Correspondence Group has been submitted in FAL 40. Based on the guideline, concepts of “electronic certificates”, “electronic authentication”, “Printed version”, “verifying” and others related to electronic certificates have been redefined. And specific regulations were drafted about features, acceptance, verification, notification and implementation of electronic certificates.(IMO, 2014d) Even though it is an interim guideline with no enforcement powers, it is worth looking forward to the mandatory instruments on the use and acceptance of electronic certificates and documents in one or two years.

3.3.2 The legal problems for Administrations

Between the IMO Convention and implementation, national legislation is a problem that needs to be resolved. According to FAL 39/16, “The potential difficulties to fully implement and accept such certificates as requested in the interim guidelines might be due to some national legislation which still required original paper certificates, both as a requirement of the flag State and for acceptance of certificates by authorities of the State”. (IMO, 2014c, p. 11) Therefore, national legislation on the acceptance of electronic certificates and documents is one of the key points to this issue.

3.3.3 The legislation overview of electronic certificates in the world

The legal research on electronic certificates and electronic signatures began from the mid-90s (Kan Kaili & Zhang Chu, 2000).

- In 1995, United States approved the *Utah Digital Signature Act*, which was the first law of the electronic signature of the whole world. It made the specific regulations on the management responsibility of Administration, licensing qualification and conditions of the certification authority and obligation of the certification authority. After that, the other states also enacted the law for electronic authentication. In 1996, *Digital Signature Guideline, DSG* was enacted by American Bar Association, which was a uniform criterion on legal issues related to Digital Signature. It was divided into five parts, which separately made rules on terms' definitions, certification authority, registrar of certificate, authenticator of certificate and digital signature. In this guideline, it stressed the importance of Quality Assurance for selecting a certification authority many times. (Zhang Chu, 2000)
- Malaysia approved *Digital Signature Act* in 1997. It acknowledged the legal validity of digital signature and required that the certification authority could only engage in the business with a license. In December 1997, Malaysian government announced that “Berhard”, their wholly-owned NPO, would become the first public key certification organization, to secure electronic transaction.
- Singapore approved *Electronic Transactions Act* in 1998, which regulated the finite liability of certification authorities. The license of certification authority was issued by administration and the certificates issued by the certification authority with license had strong evidentiary effect. (Zheng Chengsi & Xue Hong, 2000)
- In China, there is a distinct feature for the legislation of electronic certification, that is, the local legislation is preceded by national legislation. In fact, the legislation on electronic certificates had been proposed in 1999. And for some reasons, it was not approved in the two sessions. However, thousands of electronic certificates have already been issued by more than 70 certification authorities. In order to supervise and manage the electronic certificates and certification

authorities, some provincial governments enacted Local Government Acts on electronic certification, like *the tentative management measures for the digital certificate of Hainan Province*, *Shanghai Measures for the management of digital certification* and *Guangdong Province Electronic Transactions Regulations*. Nevertheless, due to the fact that the regulations vary in different places, the technical standards and the requirements of establishment for certification authorities cannot be unified, which could also hamper the facilitation in E-business. In August 2004, after two year's research, proposals, discussions and modifications, *Electronic Signatures Law of People's Republic of China* was adopted by National People's Congress Standing Committee. It endowed the digital signature and text signature with the same legal effect which ensured that the transaction of E-commerce can be conducted integrally. It also regulates the requirements and market entry conditions for the certification authorities. (Wang Jianhong & He Xiaohang, 2003)

3.3.4 Suggestions

Even though a lot of work has been done by IMO and Administrations, unity and cooperation is still a problem between different countries and ROs. For the use and acceptance of electronic certificates and documents, admission to the electronic certificates issued by other Administration and Cross Certification is the problem that needs to be resolved with the exciting conditions. Therefore, the following suggestions are given:

- With the reference to Model Law on Electronic Commerce enacted by United Nations Commission on International Trade Law (UNCITRAL), IMO should

stipulate an integrated technical standard instead of the principle of reciprocity in each country, which could reduce ambiguity caused by different regulations in different countries.

- Most of the certificates and documents are issued by ROs in different formats. And for the issuance of electronic certificates and documents, ROs may authorize it to different certification authorities. To solve the cross certification problem, a Root Certification Authority should be built by Administration in order to supervise the certification authorities. It could be a department in MSA or an independent third party organization as long as the stakeholders believe in the electronic certificates and documents.

3.4 Cost-benefit Assessment on Economic Factors

Since the financial crisis in 2008, shipping industry has been in the trough for so many years. So, IMO should carry out the cost-benefit assessment before the new regulations since cost that caused by new regulations is also a certain kind of “Administrative Burden”. In order to reduce the “Administrative burden” especially for the shipping company, the methodology based on Formal Safety Assessment Guideline will be used for the cost-benefit assessment of the electronic certificates and documents. (IMO, 2000; IMO, 2007) In the cost-benefit assessment, the Gross Cost of Averting a Fatality (GCAF) and the Net Cost of Averting a Fatality (NCAF) are the two important indicators, which are defined as follows:

$$GCAF = \frac{\Delta Cost}{\Delta Risk}$$

$$NCAF = \frac{\Delta Cost - \Delta Economic Benefit}{\Delta Risk}$$

Since the electronic certificates and documents were designed to facilitate marine

business and reduce the administrative burden, $\Delta Risk$, or the risk reduction, refers to the reduced fatality rates, which is hard to estimate. Therefore, the cost-benefit assessment for electronic certificates and documents will focus on the relationship between $\Delta Cost$ and $\Delta Economic Benefit$.

For the calculation of $\Delta Cost$, based on Formal Safety Assessment Guideline, all future costs should be depreciated to a Net Present Value (NPV) and the depreciation rate is 5%. The cost model is shown in Figure.3.1. (Vanem & Skjong, 2006)

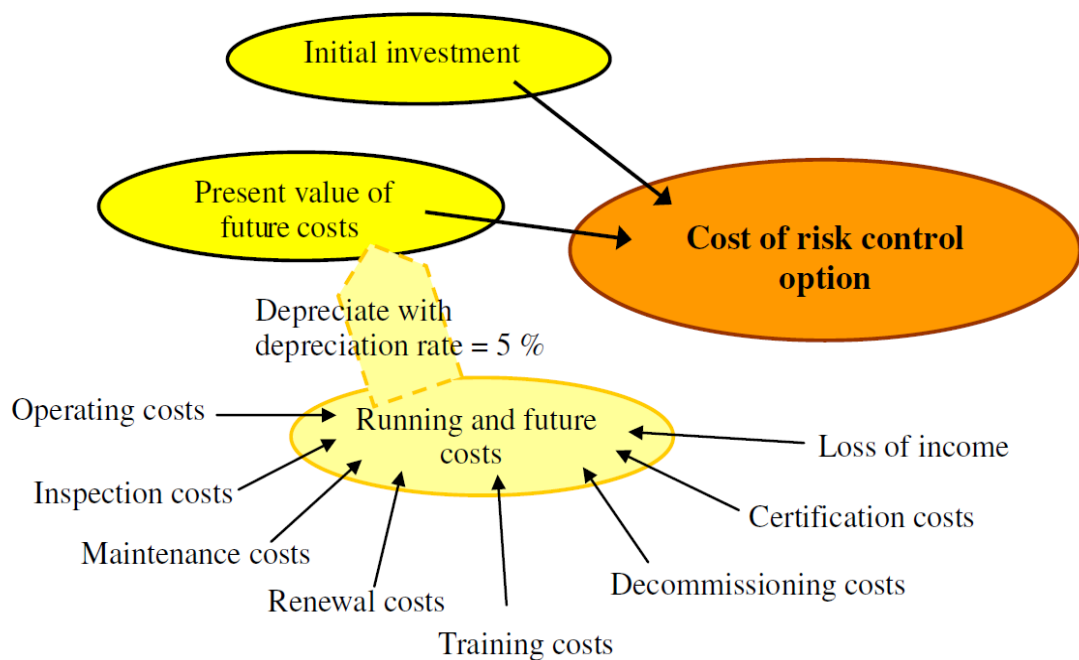


Figure.3.1- Cost model for the cost-benefit assessment

Source: Vanem & Skjong, 2006

Due to restrictions of time and information sources, all the data comes from Nanjing Ocean Shipping Co., Ltd. (NASCO) and Jiangsu Ocean Shipping Company. The estimated economic benefit will be based on the *Report of the Correspondence Group*

(IMO, 2016a) and the data from shipping companies.

3.4.1 Assumptions

Since the use of electronic certificates and documents has not been enforced, for the convenience of calculation, general assumptions are given as follows:

- The estimation of the cost and benefit should be regarded as crude and primary. Once the technical standards are uniformed and the use of electronic certificates and documents is enforced, the estimation should be updated.
- The electronic certificate system is supposed to be safe and reliable, which means there is no more cost after normal maintenance.
- The estimation of economic benefit is based on experts' experience about the time and cost saved through electronic certificates and documents.
- The lifetime of the ship is supposed to be 20 years and the number of crewmembers is 10.
- The depreciation rate is 5%.
- The result remains uncertain because of too many assumptions.

3.4.2 The calculation of the cost

For the cost of the electronic certificates and documents, it could be divided into two categories, namely initial cost and operational cost. The initial cost refers to the cost of acquisition of the software system and checking devices like PDA or PC for the viewing of the electronic certificates. And the operational cost refers to the cost during the lifetime of the ship (ship always need the certificates), like training cost,

maintenance cost and communication cost. The cost will be calculated through Net Present Value (NPV) and the depreciation rate is supposed to be 5%.

3.4.2.1 Initial cost

The initial cost of the electronic certificates and documents should consist of the costs of a software system for online access to electronic certificates, like LRIT system which relies on Public Key Infrastructure (PKI) technology, (IMO, 2016d) and checking and monitoring devices like tablet PC which is used for viewing the certificates and recording the information. Since the number of crewmembers is 10, according to the data from shipping companies, the cost of hardware devices is estimated to be RMB 200,000 Yuan. A ship does not need to bear the development cost of the software system. So, the cost of acquisition of the software system is estimated to be RMB 200,000 Yuan and the total initial cost is about RMB 400,000 Yuan.

3.4.2.2 Operational cost

According to the investigation in Nanjing Ocean Shipping Co., Ltd. (NASCO) and Jiangsu Ocean Shipping Company and the experience of ECDIS, the operational cost of electronic certificates and documents includes training cost, maintenance and software support cost, communication cost and renewal cost (Denmark, Finland, Norway and Sweden, 2007b; Vanem et al., 2007),.

- According to the investigation, the annual maintenance and software support cost is supposed to be RMB 40,000 Yuan. Under the depreciation rate of 5%, the

maintenance and software support cost is estimated to be about RMB 500,000 Yuan.

- As for the communication cost, since the electronic certificates need to be transferred through maritime satellites, which is not cheap, the communication cost should not be ignored. It is estimated to be RMB 20,000 Yuan per year. Under the depreciation rate of 5%, the NPV of communication cost is about RMB 250,000 Yuan.
- With the reference to the experience of ECDIS, the training cost should also be taken into consideration especially for the regulations related with Information Technology. Since the number of crewmembers of a ship is assumed to be 10, the annual training cost is estimated to be RMB 20,000 Yuan. Therefore, the its NPV is about RMB 250,000 Yuan.
- The renewal cost of hardware devices should not be ignored. Although these devices like tablet PC and communication equipment could be repaired, an annual loss of 5% should also be assumed on account of the loss and damage. Besides that, the lifetime of those devices are supposed to be 5 years. Under this hypothesis, the costs are estimated to be RMB 10,000 Yuan per year and RMB 200,000 Yuan every 5 years. Therefore, the NPV of the renewal cost is about RMB 560,000 Yuan.

3.4.2.3 Present Net Value of the Total Cost

After the investigation and calculation, the amount of each cost is shown in Table.3.1.

Table.3.1- NPV of each cost

<i>Cost (Yuan)</i>	<i>Initial cost</i>	<i>Software Support, maintenance</i>	<i>Communica tion cost</i>	<i>Renewal cost</i>	<i>Training</i>	<i>Total cost</i>
	400000	500000	250000	560000	250000	1960000

Source: by author

So, the Net Present Value (NPV) of the Total cost is:

$$NPV_{\text{cost of electronic certificates and documents}} = \text{RMB } 1.96 \text{ million}$$

In this calculation, the cost of the acquisition and maintenance of the software system is underestimated since this dissertation holds the opinion that governments or IMO should undertake the responsibility of developing and managing the software system and keeping it reliable, safe and authentic.

3.4.3 The estimation of economic benefit

Based on the study conducted by the correspondence group on requirements for access to, or electronic versions of, certificates, documents and records, the economic benefit mainly embodies in the savings of inspection time, postage of dispatching certificates and the reduction of incidence of detentions due to new or revised certificates not received (IMO, 2016, FAL 40/6). However, since there is no cost-benefit figures available between electronic certificates and traditional paper (IMO, 2016), it is hard to calculate the economic benefit. Therefore, this dissertation has investigated into the postage of dispatching certificates and the cost on detentions because of the lack of certificates that should be carried on board in three shipping companies, namely Nanjing Ocean Shipping Co., Ltd. (NASCO), Jiangsu Ocean Shipping Company and China Ocean Shipping Co., (COSCO). The average cost is RMB 200,000 Yuan per

year, which could be saved through electronic certificates. So, the economic benefit is supposed to be 200,000 Yuan per year. Under the depreciation rate of 5%, the NPV of economic benefit is about 2500,000 Yuan. So the Net Present Value (NPV) of the economic benefit is:

$$NPV_{economic\ benefit} = RMB\ 2.5\ million$$

Obviously, for the electronic certificates and documents, the NPV of economic benefit exceeds the cost.

3.4.4 Inadequacy and suggestions

Because of the restriction of time and information sources, a lot of data are based on the assumptions and the experience of senior employees in shipping companies. Besides that, the cost savings in the reduction of the ship's time in port are not taken into consideration because of the deficiency of the data. Update and improvement are needed after the test run of the electronic certificates and documents.

After investigation and calculation, to reduce the “Administrative Burden” of shipping companies, the following suggestions are given:

- The cost on development and maintenance of a software system is very high. This dissertation suggests that administration should take the responsibility of developing a software system for electronic certificates and documents and reducing the purchase cost for shipping companies.
- The communication cost through maritime satellites is high especially for small shipping companies. According to Nanjing Ocean Shipping Co., Ltd. (NASCO), the communication cost for one ship could be 320 U.S. dollars per month.

Administration should take some actions to lower the cost of transmission of the electronic certificates and documents.

3.5 Analysis on social acceptability

As a new policy, the social acceptability of electronic certificates and documents mainly refers to the acceptance of the related stakeholders, like shipping companies, ROs, PSCOs and other related organizations (like P&I Club). A survey about the view of electronic certificates and documents has been conducted separately on Nanjing Ocean Shipping Co., Ltd. (NASCO), Jiangsu Ocean Shipping Company, China Ocean Shipping Co. (COSCO) and China Classification Society (CCS). Based on Chapter 3.1, certificates and documents required by IMO could be divided into 8 groups. And through the investigation into shipping companies, the acceptance on different groups of certificates and documents is different. They all accepted that the trend of the use of electronic certificates and documents was irreversible. But the application of electronic records should be postponed by two or three years until the technology matures. (Annex A) The Detailed discussion and interpretation on the survey results are made in Chapter 4.

The acceptance by PSCOs should be treated with caution as it is the key point to the use of electronic certificates and documents. The *Guidelines for use of electronic certificates. (FAL.5/Circ.39/Rev.1)* required the PSCOs to follow *Procedures for Port State Control, 2011* (resolution A.1052 (27)). And based on the report of correspondence group in FAL 40, some amendments were proposed to the *Procedures for Port State Control, 2011*, which were:

- In paragraph 1.7.11, for the definition of “valid certificates”, it could be issued

electronically or on paper directly.

- In paragraph 2.2.4, for the inspection procedures of PSCOs, the part “The validity of electronic certificates should be verified, if necessary, by using the procedures retained on board for this purpose” was added. (IMO, 2016a)

Besides that, training on how to verify the electronic and documents for PSCOs is necessary since new technical standards and checking procedures will be used after the acceptance of electronic certificates and documents.

3.6 Feasibility analysis on technical factors

For the technical issues of electronic certificates, the key words are “authenticity” and “reliability”, which refers to information security and the reliability of modern electronic equipment. Besides that, a uniform technical standard should also be established by IMO since ships need to sail around the world with those certificates and documents.

3.6.1 The uniform standard and formats of electronic certificates and documents

According to the report of correspondence group, in order to meet the requirements by *Guidelines for use of electronic certificates*. (IMO, 2014a), the electronic certificates could be issued in four formats, which are scanned paper version, form template, online template and fully digital. The features of them are shown in Table 3.2

Table.3.2- Features of E-Certificate Formats

Electronic Certificate type	Setup cost	Personnel cost	Data analysis	Security	Storage requirement
Scanned paper version	Low: Software and equipment readily available.	Low: Training in scanner use; training in archiving.	Low: Scanning leaves no data fields.	Low: No embedded security features.	High: Large file sizes from scanned images.
Form template	Low: some configuration to create form.	Low: Training in new certificate format and field entries.	Medium: Fields searchable as text entries.	Medium: Embedded digital signature, stamp, or seal.	Medium: Smaller file sizes than scanned images.
Online template	Medium: website required and create form.	Medium: Training in template access, format, and field entries.	Medium: Fields searchable as text entries.	High: Access controlled, embedded digital signature, stamp, or seal.	Low: Only field data stored.
Fully digital	High: website required; software development; could be mitigated by common PKI approach.	Medium: Training in template access, format, and field entries.	High: Full data distinction.	High: Relies on website access control; embedded secure signature possible	Low: Digital certificate data.

Source: IMO, 2016a.

Among those formats of electronic certificates, the fully digital could make an obvious simplification of administrative procedures which scanned paper cannot achieved. (IMO, 2015b) So, to some extent, these formats show the growing trend of the electronic certificates. With the development of technology, cost will be lower and the security and efficiency will be more important. Through the cooperation with WCO, the UN/EDIFACT message standard was applied to the FAL Forms and security declarations. (IMO, 2015a) An example of IMO general declaration is shown in Annex B. Besides that, in the report by ISO, a possible example of electronic certificates is shown in Figure 3.2.

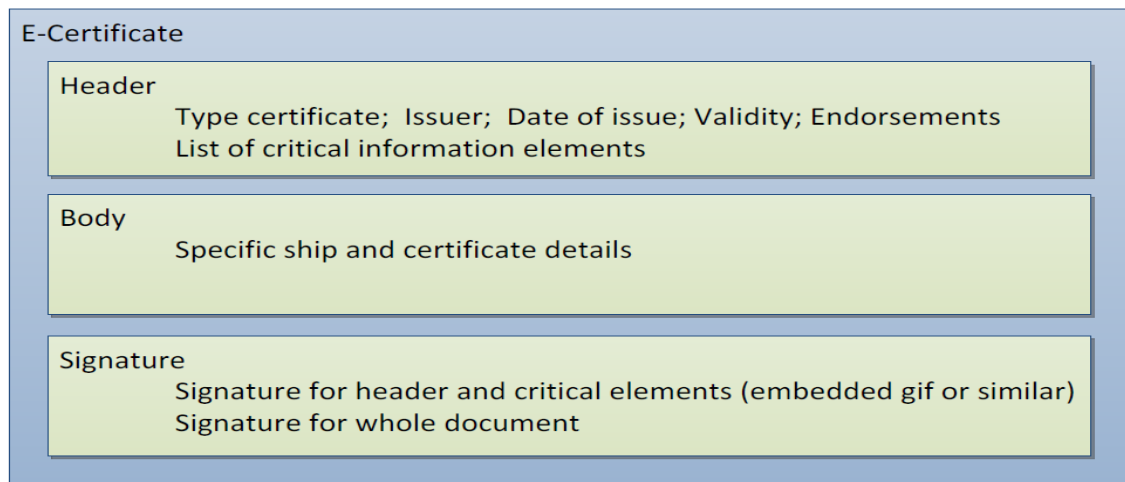


Figure.3.2- The format of electronic certificates

Source: ISO, 2015b

3.6.2 The “authenticity” and “reliability” of electronic certificates

For the “authenticity” of the electronic certificates and documents, a cooperation between IMO and International Standards Organization(ISO) was developed. According to the *Future Proof and Cost-Effective Standardization of Electronic Ship Certificates* submitted by ISO in 2015, the verification of electronic certificates could be simple by checking whether signature matches the appropriate public key and the content of the certificate. Figure 3.3 shows how PKI works in electronic certificates.

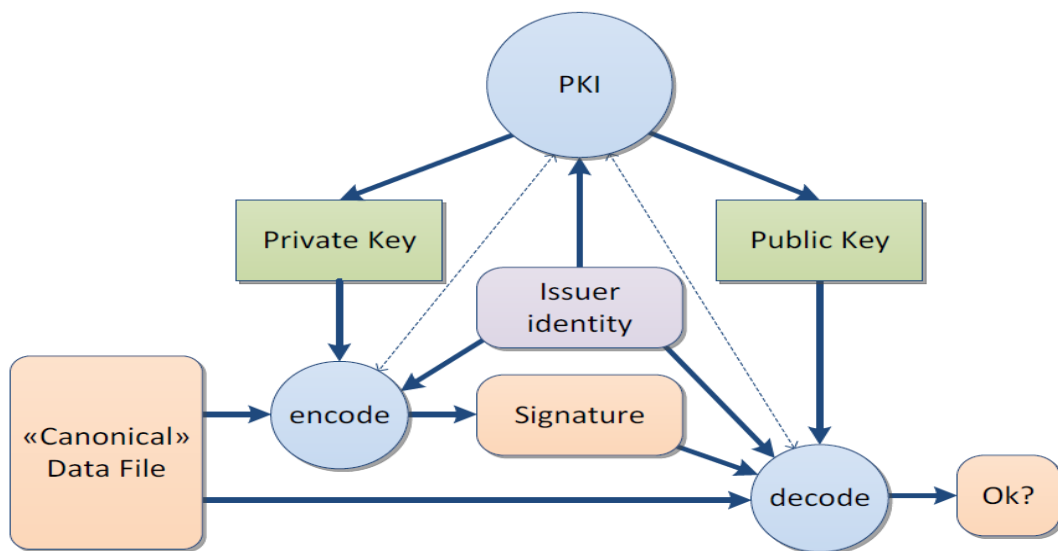
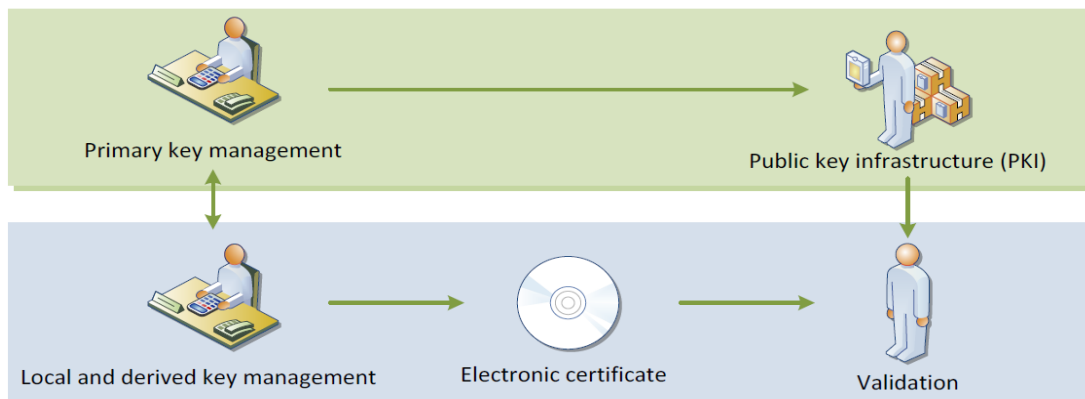


Figure.3.3- the working progress of PKI

Source: ISO, 2015b

The key point to the “authenticity” of electronic certificate is the digital signature, which should be issued by Flag States or ROs and guarantee the certificate is authentic and hard to be forged. The technology for the authenticity of digital signature used today is usually based on public-key cryptography which relies on asymmetric

encryption. However, for the security and reliability of the public-key cryptography, the following three components are very important:

- At least one public key that can be unconditionally relied on;
- A defined way to get hold of all relevant public keys; and
- The private keys should be safe.

PKI, which is Public Key Infrastructure for short, is the system that can ensure those three components. It refers to the system for distribution of the open public keys. The PKI will normally sign each key through Certificate Authority (CA) key in order to check the validity of each key. And it has also been used in LRIT system. (IMO, 2016c). For the electronic certificate and documents, this dissertation suggests the IMO should serve as the Certificate Authority, which is responsible for distributing private keys to Flag State Administrations. And GISIS could be used for distribution of the open public keys. Since there is only one top level key (IMO) that can sign public keys, it is relatively simple to keep the system security of the system for all users. Besides that, the integration framework of PKIs has previously been established by the International Civil Aviation Organization (ICAO) for machine readable passports (ISO, 2015b).

As for the reliability of the electronic certificates and documents, the standby devices are necessary. Besides that, the electronic certificates and documents should be updated regularly just in case the connection is bad.

3.7 Concluding remarks

In this chapter, a detailed analysis on feasibility of the electronic certificates and documents has been conducted through PEST analysis. A simple cost-benefit

assessment has been carried out in order to reduce the “administrative burden” of shipping companies. An investigation was made in Nanjing Ocean Shipping Co., Ltd. (NASCO), Jiangsu Ocean Shipping Company, China Ocean Shipping Co. (COSCO) and China Classification Society (CCS) in 2015. After research and analysis, the results reveal that most of the stakeholders are ready for the use of electronic and documents and consider that it will be widely implemented in a few years. The work on use and acceptance of the electronic certificates and documents has given initial results. The national legislation problem is not as difficult as we thought because of the relatively mature law on electronic certification and signature in some major countries. The cost-benefit issue is still the shipping companies’ foremost concern. And technology is mature for the electronic certificates. However, for the electronic records like fuel oil record, the acceptance of people and the way of recording them through electronic information measures are still not very clear.

CHAPTER 4

Impacts of implementing electronic certificates and documents in the Chinese shipping sector

4.1 Introductory remarks

The use and acceptance of electronic certificates and documents will bring a significant change to the shipping industry. Meanwhile, China, as a Flag State with 160 million DWT of shipping fleet capacity and 638,990 seafarers², is closely bound up with the reformation. Therefore, in 2015, an investigation into the use and acceptance of electronic certificates and documents was conducted. However, because of the limitation of time and budget, only a few shipping companies and related organizations were selected as the representatives. They were: Nanjing Ocean Shipping Co., Ltd. (NASCO), representing private shipping company; Jiangsu Ocean Shipping Company, representing small and medium state-owned shipping company; and China Ocean Shipping Co. (COSCO), the biggest shipping company in China and China Classification Society (CCS), and representing RO.

4.2 The view of shipping companies on the reformation

² Based on "Report of Chinese crewmembers, 2015", which published by the Ministry of Transportation, there were 638,990 seafarers in China until December, 2015, which included 168,000 shoalers.

For shipping companies and seafarers, electronic certificates and documents can save them from trouble of mailing paper archives by post, and improve efficiency of information management, especially on documentation reservation and lookup. COSCO has already started building their own ship information database, and by far they have managed to use it to send back reports regularly while on voyage. They store the scanned pieces of ship certificates and documents, and keep the original paper file at the same time. It is fair to say that paperless has been an irresistible trend. However, some issues should be taken into consideration before we put paperless into realization.

- Does electronic file have legal recognition? Currently neither international convention nor domestic legislation admits the validity of electronic documentation in terms. Therefore PSCOs have not formed a unified standard yet, which has obviously increased the difficulties of actual operation for people who might need to prepare both paper and electronic files for insurance purposes.
- Can seafarers take the new challenge? Some older or undereducated seamen might have difficulty in recording dynamic data, and people tend to be reluctant to learn new things once they get too used to old ways.
- Cost issues. Many shipping companies cannot afford to develop their own information management software system, and buying such expensive software on the market is not a good choice as well, not to mention the subsequent maintenance charges.
- Security problems. While electronic documentation enables people to find out certificates, it also increases the risk of divulging information, giving their rivals (sometimes even terrorists and pirates) chances to steal not only basic information of ships, like crew list and ship operation condition, but also commercial secrets such as ship construction plans. No company wants to face this situation.

4.3 The view of CCS on the reformation

CCS has built its own database, and they have provided external inquiries at their homepage. For the online access to the electronic certificates, CCS has granted differing access rights to administrations, ship owners and ship yards. As for internal management, CCS has developed Electro-archives Management System for the storage of the certificates and documents that had been issued. However, for the widely use of electronic certificates and documents, CCS has some concerns and suggestions as follows:

- Given the differences in economy, ideas and talents, the development of Information Technology in the world is not in balance (IMO, 2014). It may be difficult for the application of the uniform standards of electronic certificates and documents and online access to the electronic certificates and document in the world.
- Information security is another issue that should not be ignored. Once the electronic certificates and documents are implemented, it could be easy for querying information of the ship and the statistical data analysis of ship fleets. However, because of the military factor, political factors and trade secret, some information should not open to public. Besides that, the risk of cyber-attack should also be taken into consideration. According to incomplete statistics, the website of CCS was attacked by hackers more than 20 times in 2015. Therefore, CCS suggested that it was necessary for the database-independence of a Flag State, since it was hard to ensure the safety of unified public database among the world.
- Cost-benefit assessment also needs to be treated with caution. Obviously, the use of electronic certificates and documents could make a significant simplification of the maritime procedures and increase efficiency. However, in order to ensure the

profits of shipping companies, the relationship between cost and benefit still needs to be calculated.

4.5 Concluding remarks

In conclusion, the meaning of popularizing electronic documentation is not just about saving troubles from mailing paper archives by post and improving efficiency of information management, especially on documentation reservation and lookup. To implement this resolution will bring a huge change on PSC control, ship certification management, and internal operation system of shipping industries. It is the product of information and data era, brings great opportunities and great perils, and we should stand in the proper position and go with the flow.

CHAPTER 5

CONCLUSION and SUGGESTIONS

20 years ago, we might never imagined that we could get almost all the information we want at any time and any location (4G signal is needed). Information technology has brought a significant change to our society. So does the shipping industry. In order to reduce the administrative burden and improve the efficiency, the use of electronic certificates and documents has been developed and researched by IMO (IMO, 2014). However, new things always come with risks and concerns. Stakeholders are worried about cost-benefit, national legislation, technical standards and so on. Therefore, this dissertation has conducted a feasibility analysis through PEST analysis and made an investigation about the impact of the application of electronic certificates and documents in China. After the research and analysis, this dissertation finds that the legal and technical basis is strong due to the work done by IMO and other related organizations. However, since it involves a lot of stakeholders and will bring a significant change to shipping industry, the use of electronic certificates and documents should be treated carefully. The reduction of administrative burden should be the principle and purpose of the electronic certificates and documents and the

information security is the problem that needs to be solved. Therefore, this dissertation has given the following suggestions:

- Classify the certificates, documents and records required by IMO mandatory instruments. Conduct a detailed analysis of each kind about how and when to transform them into electronic data since the requirements and formats of each kinds are different. It is recommended that the implementing of electronic certificates and documents should start from ship's statutory certificates, which could let IMO and administrations collect experience for implementing electronic documents and records.
- The legal force of the electronic certificates and documents should be clearly identified through IMO mandatory instruments and national legislation. Especially the acceptance of PSOs should be treated carefully in case ships have to provide both paper certificates and electronic certificates because of misdoubt of PSCOs on electronic certificates and documents.
- Ensure the information security through PKI and other technical measures. Set up the permission mechanism for online access to electronic certificates and documents in order to prevent bad men like pirates and terrorists from getting detailed information of the ship.
- Set up a unified technical standard in order to reduce the research and development costs of shipping companies. IMO should originate the technical assistance and cooperation to the developing countries which need good implementation and unified technique standard.

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APPENDIX: A

The original version of the investigation

(A) The investigation into Nanjing Ocean Shipping Co., Ltd. (NASCO)

船舶证书文书电子化调研（船公司）

时间：2015 年 4 月 10 日星期五 1600 时-1730 时

受访对象：南京远洋运输有限公司

调研问题与结果

1. 对于办理船舶和船员纸质证书、文件，公司安排了多少人力、物力？

办理船员证书，有 3 个人负责换证，电子化之后可以减为一人，但要考虑到人员培训费用，软件初始费用，维护费用；船舶证书没有专人负责，是由每艘主管人员负责。

2. 为了保证船舶持有纸质证书、文书航行，是否需要专人到有关机构办理证书、文书，并送达上船？

没有专人，但是有人送到船上。

3. 航海日志、轮机日志、油类记录簿等法定记录簿的购买，存在哪些不便之处或行政负担？

纸质版需要到指定地点购买。

4. 主管机关签发的证书（如国籍证书、安全配员证书等）与船舶检验机构签发的船舶法定检验证书，是否存在有效期时间差，这样的时间差是否对船舶营运产生障碍或不便利？
5. 关于船舶和船员证书、文书，公司是如何开展内部管理的？是否有自己的内部管理系统？

每艘船舶的法定检验证书均在公司有电子版存档，船员证书管理主要依托自己开发的船员证书管理系统，可以实现船员资历记录。船员工资发放等功能；公司内部有自主研发的管理系统，可以查询船舶基本信息，可以通过互联网使用。

6. 关于要求船舶配备的强制性技术资料，如稳性资料、海洋（油）污染应急计划、P&A 手册、SMS 体系文件、高速船操作手册、保安计划、防火控制图等，能否全部可被电子文本和电子查阅取代？是否需要保持纸质与电子文本并存？

电子化是未来的趋势，但是纸质文件也是有必要的，并且在很长一段时期里纸质文件还是主流，我认为稳性资料等随船文件新船配有电子版，老船可能就比较困难，最好新船新办法，老船老办法。

7. 船舶日常营运工作记录，如航海日志、轮机日志、油类记录簿、货物记录簿、SMS 体系运行及监控记录、日常维护保养记录、检查检测记录、应急演练演练记录，实现电子化的现

状如何？公司是否希望通过电子查阅这些记录？如果实现电子化文本和查阅，如何保证此类记录的真实性？

如果能够对于此类工作记录进行电子化查阅肯定能更加方便公司管理，但是有几个问题必须得解决，首先是费用问题，信息整合软件以及设备的初始投入费用和后期维护成本。其次是记录真实性问题，电子记录在一定程度上比纸质记录更容易修改，所以我认为这些记录电子化比较困难。

8. 除了公约所要求的法定证书、文书的电子化外，按照公约规定所产生的设施和设备的法定要求是否需要形成电子化的工作清单？如消防器材、救生器材的使用周期。电子化的可行性和便利性？

这有实施的可能性，但是这牵扯到设备更换成本，目前我们公司船舶上此类设备的人工维修保养均依靠负责人员手工记录。

9. 公司雇佣或外聘船员时，是否需要通过电子查阅的方式对船员的基本信息和适任资历进行核查？

需要，外聘船员通过海事系统查询资历，聘用前，核查服务簿，再与海事系统核对，聘用外国船员，通过当地服务机构查询证书真实性，我认为中国在船员证书电子化方面已经有相当的基础。

10. 记录保管要求的证书文件，船舶需要安排多少人力，物力？

船长靠岸之后主要就忙这件事，基本没有精力管其他事。

11. 你认为哪些证书文书可以被电子化？哪些暂时还不具备电子化的基础？

证书，船员证书有电子化基础，但是纸质文件还是得存在；稳性资料等随船文件新船有电子化基础，老船没有；记录暂时还不具备电子化基础。

12. 如果船舶证书文书电子化，如何做好保密工作？

这个问题我们认为相当重要，证书电子化很有可能造成船舶信息，船员信息的泄露，货主或者其他公司能够掌握船舶和船员信息。希望证书、文书电子化以后，对可以查看的人员加以限制。

(B) The investigation into Jiangsu Ocean Shipping Co.

船舶证书文书电子化调研（船公司）

时间：2015 年 4 月 9 日星期四 0930 时-1140 时

受访对象：江苏远洋运输有限公司，黄西柳（高级船长，总经理），骆成华（主任，注册安全工程师，船长）黄明轩（轮机长，经理）

调研问题与结果

10. 对于办理船舶和船员纸质证书、文件，公司安排了多少人力、物力？

有专人分别负责船舶证书管理以及船员证书管理，并且船舶资料多，打印证书费时，保存不易，而且一旦新的公约生效，必须打印成纸质送到船上，很费事。

11. 为了保证船舶持有纸质证书、文书航行，是否需要专人到有关机构办理证书、文书，并送达上船？

是的

12. 航海日志、轮机日志、油类记录簿等法定记录簿的购买，存在哪些不便之处或行政负担？

购买不便，并且一些制度设计有问题，比如购买油类记录簿必须将原件交给主管机关才能买到新的，而且一次只能购买一本，对于跑远洋航线的船舶十分不便。

13. 主管机关签发的证书（如国籍证书、安全配员证书等）与船舶检验机构签发的船舶法定检验证书，是否存在有效期限时间差，这样的时间差是否对船舶营运产生障碍或不便利？

14. 关于船舶和船员证书、文书，公司是如何开展内部管理的？是否有自己的内部管理系统？

每艘船舶的法定检验证书均在公司有电子版存档，船员证书管理主要依托江苏海事局船员技术档案电子化管理系统，船舶文书，记录暂时还没实现电子化管理，内部暂时没有统一的综合管理系统，这方面华林船舶管理公司（青岛或者上海）做的比较好。

15. 关于要求船舶配备的强制性技术资料，如稳性资料、海洋（油）污染应急计划、P&A 手册、SMS 体系文件、高速船操作手册、保安计划、防火控制图等，能否全部可被电子文本和电子查阅取代？是否需要保持纸质与电子文本并存？

电子化是未来的趋势，但是纸质文件也是有必要的，并且在很长一段时期里纸质文件还是主流，首先 PSC 检查官进行检查时还是需要纸质文件，进行电子版查阅需要统一的格式以及查阅途径，其次对于防火控制图、稳性资料等，纸质文件便于紧急情况下查看，保安计划由于保密性，我认为不适合进行电子化。

16. 船舶日常营运工作记录，如航海日志、轮机日志、油类记录簿、货物记录簿、SMS 体系运行及监控记录、日常维护保养记录、检查检测记录、应急演练演练记录，实现电子化的

现状如何？公司是否希望通过电子查阅这些记录？如果实现电子化文本和查阅，如何保证此类记录的真实性？

如果能够对于此类工作记录进行电子化查阅肯定能更加方便公司管理，但是有几个问题必须得解决，首先是费用问题，第一个是电子化文件记录的传输费用，船舶进行文件传输基本使用卫星传输，费用按照时间以及流量计算，价格很高；第二个是此类信息整合软件以及设备的初始投入费用和后期维护成本。其次是记录真实性问题，电子记录在一定程度上比纸质记录更容易修改，因此电子记录的真实性以及能否得到 PSC 检查官的认可是一个关键问题。

17. 除了公约所要求的法定证书、文书的电子化外，按照公约规定所产生的设施和设备的法定要求是否需要形成电子化的工作清单？如消防器材、救生器材的使用周期。电子化的可行性和便利性？

这有实施的可能性，但是这牵扯到设备更换成本，而且我认为中国目前暂时还没有能力生产此类设备。

18. 公司雇佣或外聘船员时，是否需要通过电子查阅的方式对船员的基本信息和适任资历进行核查？

需要，我们公司一般首先查看船员的服务簿，并上船员技术档案电子化管理系统查看船员工作经历，我认为对船员

的工作经历，工作表现，以及工作中出现的问题建立电子档案是十分必要的，这对于我们公司决定是否聘用该船员起到关键性作用。

10. 记录保管要求的证书文件，船舶需要安排多少人力，物力？

船长靠岸之后主要就忙这件事，基本没有精力管其他事。

11. 你认为哪些证书文书可以被电子化？哪些暂时还不具备电子化的基础？

法定文书，公司管理体系有电子化基础，但是纸质文件还是等存在，记录暂时还不具备电子化基础。

12. 如果船舶证书文书电子化，如何做好保密工作？

这个问题我们也发生过很多，因为船舶不方便联网，电脑一旦中病毒后很难处理，希望政府能够建立专门渠道。

APPENDIX: B

IMO General Declaration IMO GENERAL DECLARATION

1.1 Name and type of ship 1.2 IMO number 1.3 Call sign 1.4 Voyage number		<input type="checkbox"/> Arrival <input type="checkbox"/> Departure		3. Date - time of arrival/depart ure
		2. Port of arrival/departure		
4. Flag State of ship	5. Name of master	6. Last port of call/Next port of call		
7. Certificate of registry (Port; date; number)		8. Name and contact details of ship's agent		
9. Gross tonnage	10. Net tonnage			
11. Position of the ship in the port (berth or station)				
12. Brief particulars of voyage (previous and subsequent ports of call; underline where remaining cargo will be discharged)				
13. Brief description of the cargo				
14. Number of crew (incl. master)	15. Number of passengers	16. Remarks		
Attached documents (indicate number of copies)				
17. Cargo Declaration	18. Ship's Stores Declaration			
19. Crew List	20. Passenger List	21. The ship's requirements in terms of waste and residue reception facilities		
22. Crew's Effects Declaration*	23. Maritime Declaration of Health*			
24. Date and signature by master, authorized agent or officer				

**Table (1): Screening schedule of the certificates and documents required by
IMO**

[Screening schedule of the certificates and documents required by IMO.xls](#)

NO.	INSTRUMENT	ADMINISTRATIVE REQUIREMENT	REQUIREMENT TYPE	ADDRESSED STAKEHOLDERS	SIMILAR RECOMM ON BURDEN17	CONCLUSION / RECOMMENDATION SG-RAR	
						ON REQUIREMENT18	ON BURDEN19
3	INTACT STABILITY	Paragraph 2.1.6	Carriage of booklet	COMPA & ADMIN		Not meeting AB criteria	E-Solutions
4	SOLAS CHAPTER VI	Regulation VI/7.2	Carriage of booklet	COMPA		Not meeting AB criteria	E-Format
6	SOLAS CHAPTER V	Regulation V/18.8	Carriage of certificate	MASTR		Not meeting AB criteria	E-Certificates
7	SOLAS CHAPTER V	Regulation V/18.9	Carriage of certificate	MASTR		Not meeting AB criteria	E-Certificates
8	IGC CODE	Paragraph 1.5.4.2	Carriage of certificate	COMPA & MASTR		Not meeting AB criteria	E-Certificates
9	SOLAS CHAPTER IX	Regulation IX/4.2	Carriage of certificate	COMPA & MASTR		Not meeting AB criteria	E-Certificates
	ISM CODE	Paragraph 13.6	Carriage of certificate	COMPA		Not meeting AB criteria	E-Certificates
11	2000 HSC CODE	Paragraph 1.8.1	Carriage of certificate	COMPA & MASTR		Not meeting AB criteria	E-Certificates
12	RES MEPC.94(46)	Paragraph 13.3	Carriage of certificate	COMPA & MASTR		Not meeting AB criteria	E-Certificates
13	BCH CODE	Paragraph 1.6.4.3	Carriage of certificate	COMPA & MASTR		Not meeting AB criteria	E-Certificates
14	IBC CODE	Paragraph 1.5.4.3	Carriage of certificate	COMPA & MASTR		Not meeting AB criteria	E-Certificates
15	STCW 78	Regulation I/2.11	Carriage of certificate	COMPA & SHIPC		Not meeting AB criteria	E-Certificates
16	BUNKERS 2001	Article 7/5	Carriage of certificate	REGIS			
17	CLC 69	Article VII/4	Carriage of certificate	COMPA & MASTR		Not meeting AB criteria	E-Certificates
18	IGC CODE	Paragraph 18.1.3	Carriage of Code	COMPA & MASTR		Not meeting AB criteria	E-Format
19	BCH CODE	Paragraph 5.2.1	Carriage of Code	COMPA & MASTR		Not meeting AB criteria	E-Format
20	IBC CODE	Paragraph 16.2.1	Carriage of Code	COMPA & MASTR		Not meeting AB criteria	E-Format
21	SOLAS CHAPTER II	Regulation II-1/3-10.4	Carriage of document	SHIPP	E-Format		
22	SOLAS CHAPTER II	Regulation II-1/55.4.2	Carriage of document	COMPA & MASTR	E-Format		
23	SOLAS CHAPTER II	Regulation II-2/17.4.2	Carriage of document	COMPA & MASTR	E-Format		

24	RES A.744(18)	Paragraph 6.1.2	Carriage of document	COMPA & MASTR		Not meeting AB criteria	E-Format
25	SOLAS CHAPTER III	Regulation III/38.4.2	Carriage of document	COMPA & MASTR		Not meeting AB criteria	E-Solutions
26	GRAIN CODE	Paragraph	Carriage of	COMPA &	E-Format		
27	GRAIN CODE	Paragraph 3.4	Carriage of document	COMPA & MASTR		Not meeting AB criteria	E-Format
28	SOLAS CHAPTER VII	Regulation VII/4.5	Carriage of document	MASTR		Not meeting AB criteria	E-Solutions
29	MARPOL ANNEX 1	Regulation 28.5	Carriage of document	COMPA		Not meeting AB criteria	E-Format
30	RES	Paragraph	Carriage of	COMPA	E-Format		
31	MARPOL PROT 97	Regulation 18.6	Carriage of document	COMPA & MASTR		Not meeting AB criteria	E-Format
32	NOX TECHNICAL	Paragraph 7.4	Carriage of document	COMPA & MASTR	E-Format		
33	BCH CODE	Paragraph 5.2.2	Carriage of information	COMPA & MASTR		Not meeting AB criteria	E-Format
34	SOLAS	Regulation	Carriage of	COMPA &	E-Format		
35	SOLAS CHAPTER V	Regulation V/30.2	Carriage of list	COMPA & MASTR		Not meeting AB criteria	E-Format
36	STCW CODE	Section A-	Carriage of	IMOSG	E-Format		
37	SOLAS CHAPTER II	Regulation II-1/3-6.4.1	Carriage of manual	COMPA & MASTR		Not meeting AB criteria	E-Format
38	SOLAS CHAPTER II	Regulation II 2/15.2.3.1	Carriage of manual	COMPA & MASTR		Not meeting AB criteria	E-Format
39	SOLAS CHAPTER II	Regulation II-2/15.3.2	Carriage of manual	COMPA & MASTR	E-Format		
40	SOLAS CHAPTER II	Regulation II-2/16.1.1	Carriage of manual	COMPA & MASTR		Not meeting AB criteria	E-Format
41	SOLAS CHAPTER II	Regulation II-2/16.2.2	Carriage of manual	COMPA & MASTR		Not meeting AB criteria	E-Format
42	SOLAS CHAPTER II	Regulation II-2/18.8.1	Carriage of manual	COMPA & MASTR	E-Format		
43	SOLAS	Regulation	Carriage of	COMPA &	E-Format		
44	SOLAS	Regulation	Carriage of	COMPA &	E-Format		

45	SOLAS CHAPTER III	Regulation III/20.3.2	Carriage of manual	COMPA & MASTR	E-Format		
46	SOLAS CHAPTER III	Regulation III/35.2	Carriage of manual	COMPA & MASTR		Not meeting AB criteria	E-Format
47	SOLAS	Regulation	Carriage of	COMPA &	E-Format		
48	GRAIN CODE	Paragraph	Carriage of	COMPA	E-Format		
49	IGC CODE	Paragraph	Carriage of	COMPA &	E-Format		
50	SOLAS	Regulation	Carriage of	COMPA &	E-Format		
51	1994 HSC CODE	Paragraph 1.12.1	Carriage of manual	ADMIN, COMPA &	E-Format		
52	1994 HSC	Paragraph	Carriage of	COMPA &	E-Format		
53	1994 HSC	Paragraph	Carriage of	COMPA &	E-Format		
54	1994 HSC	Paragraph	Carriage of	COMPA &	E-Format		
55	1994 HSC	Paragraph	Carriage of	COMPA &	E-Format		
56	2000 HSC CODE	Paragraph 1.12.1	Carriage of manual	ADMIN, COMPA &		Not meeting AB criteria	E-Format
57	2000 HSC CODE	Paragraph 8.4.1	Carriage of manual	COMPA & MASTR		Not meeting AB criteria	E-Format
58	2000 HSC CODE	Paragraph 8.4.2	Carriage of manual	COMPA & MASTR		Not meeting AB criteria	E-Format
59	2000 HSC CODE	Paragraph 8.4.5	Carriage of manual	COMPA & MASTR		Not meeting AB criteria	E-Format
60	2000 HSC CODE	Paragraph 8.9.2.1	Carriage of manual	COMPA & MASTR		Not meeting AB criteria	E-Format
61	MARPOL ANNEX 1	Regulation 18.8.4	Carriage of manual	COMPA & MASTR		Reconsider relevance	
62	MARPOL ANNEX 1	Regulation 27.3	Carriage of manual	COMPA		Not meeting AB criteria	E-Solutions
63	MARPOL	Regulation	Carriage of	COMPA	E-Format		
64	MARPOL	Regulation	Carriage of	COMPA	E-Format		
65	MARPOL ANNEX II	Regulation 5.3.5	Carriage of manual	COMPA & MASTR		Not meeting AB criteria	E-Format
66	MARPOL	Regulation	Carriage of	COMPA	E-Format		
67	1994 HSC	Paragraph	Carriage of	COMPA	E-Format		
68	SOLAS CHAPTER II	Regulation II-1/3-7.1	Carriage of plan	OWNER / SHIPY	E-Format		
69	SOLAS CHAPTER II	Regulation II 2/14.2.2.2	Carriage of plan	COMPA & MASTR	E-Format		
70	INF CODE	Paragraph	Carriage of	COMPA &	E-Format		
71	2000 HSC CODE	Paragraph 7.9.1	Carriage of plan	COMPA & MASTR		Not meeting AB criteria	E-Solutions
72	2000 HSC CODE	Paragraph 7.9.2	Carriage of plan	COMPA & MASTR		Not meeting AB criteria	-
73	MARPOL ANNEX 1	Regulation 37.1	Carriage of plan	COMPA & MASTR		Not meeting AB criteria	E-Solutions
74	MARPOL ANNEX II	Regulation 17.1	Carriage of plan	COMPA & MASTR		Not meeting AB criteria	E-Format
75	IBC CODE	Paragraph	Carriage of	COMPA &	E-Format		
76	MARPOL ANNEX V	Regulation 9(2)	Carriage of plan	COMPA & MASTR		Not meeting AB criteria	E-Format

77	MARPOL PROT 97	Regulation 15.6	Carriage of plan	COMPA & MASTR		Not meeting AB criteria	E-Format
78	RES A 744(18)	Paragraph 8.2.3	Carriage of report	COMPA & MASTR		Not meeting AB criteria	-
79	1994 HSC	Paragraph	Carriage/	COMPA &	E-Format		
80	RES MEPC.94(46)	Paragraph 6.1.2.1	Carriage/ development	COMPA	E-Format		
81	STCW 78	Regulation I/2.13	Certification	SHIPC		Not meeting AB criteria	E- Certificates
82	SOLAS CHAPTER II	Regulation II-1/19.1	Display of information	COMPA	E-Format		
83	SOLAS CHAPTER II	Regulation II 2/13.7.2.2	Display of information	COMPA & MASTR	E-Format		
84	SOLAS CHAPTER II	Regulation II 2/15.2.4.2	Display of information	COMPA & MASTR		Not meeting AB criteria	E-Format
85	SOLAS	Regulation	Display of	COMPA &	E-Format		
86	SOLAS	Regulation	Display of	COMPA &	E-Format		
87	1994 HSC CODE	Paragraph 7.7.2.1.7	Display of information	COMPA & MASTR	E-Format		
88	1994 HSC	Paragraph	Display of	COMPA &	E-Format		
89	1994 HSC CODE	Paragraph 8.4.3	Display of information	COMPA & MASTR	E-Format		
90	1994 HSC	Paragraph	Display of	COMPA &	E-Format		
91	2000 HSC CODE	Paragraph 7.7.2.1.7	Display of information	COMPA & MASTR		Not meeting AB criteria	-
92	2000 HSC CODE	Paragraph 8.4.3	Display of information	COMPA & MASTR		Not meeting AB criteria	E-Format
93	2000 HSC CODE	Paragraph 8.5	Display of information	COMPA & MASTR		Not meeting AB criteria	-
94	MARPOL ANNEX V	Regulation 9(1)	Display of information	COMPA & MASTR		Not meeting AB criteria	-
95	SPACE STP	Annex Rule	Display of	COMPA &	E-Format		
96	FSS CODE	Chapter 8, paragraph	Display of information	COMPA & MASTR			
97	FSS CODE	Chapter 9, paragraph	Display of information	COMPA & MASTR	E-Format		
98	FSS CODE	Chapter 10, paragraph	Display of information	COMPA & MASTR	E-Format		
99	SOLAS CHAPTER II	Regulation II-1/3-7.2	Maintenance of document	COMPA			
##	RES	Paragraph	Maintenance	COMPA			
##	ISM CODE	Paragraph 3.2	Other (specific)	COMPA		Not meeting AB criteria	-
##	ISM CODE	Paragraph 5.1	Other (specific)	COMPA		Not meeting AB criteria	-
##	STCW 78	Regulation I/6	Other (specific)	ADMIN & training		Not meeting AB criteria	-
##	RES	Paragraph	Other	COMPA &			
##	SOLAS CHAPTER II	Regulation II-1/3-10.4	Recording	COMPA & MASTR		Reconsider relevance	E- Recording
##	SOLAS CHAPTER II	Regulation II-1/21.4	Recording	MASTR		Not meeting AB criteria	E- Recording
##	SOLAS CHAPTER II	Regulation II-1/22.6	Recording	MASTR		Not meeting AB criteria	E- Recording

##	SOLAS CHAPTER II	Regulation II-1/22.12	Recording	MASTR		Not meeting AB criteria	-
##	SOLAS CHAPTER II	Regulation II-1/23.5	Recording	MASTR		Not meeting AB criteria	E- Recording
##	SOLAS CHAPTER II	Regulation II-1/24.3	Recording	MASTR		Not meeting AB criteria	E- Recording
##	SOLAS CHAPTER II	Regulation II-1/46.3	Recording	COMPA	E-Recording		
##	SOLAS CHAPTER II	Regulation II-1/22.16	Recording	COMPA & MASTR	E-Recording		
##	SOLAS CHAPTER II	Regulation II-	Recording	MASTR		Not meeting AB criteria	E- Recording
##	RES MSC.215(82)	Paragraph 3.4.3	Recording	COMPA & MASTR		Not meeting AB criteria	E- Recording
##	RES MSC.215(82)	Paragraph 3.4.4	Recording	COMPA & MASTR		Not meeting AB criteria	E- Recording
##	RES MSC.215(82)	Paragraph 3.4.5	Recording	COMPA & MASTR		Not meeting AB criteria	E- Recording
##	RES MSC.215(82)	Paragraph 6.1.3	Recording	Coating Inspectors			
##	SOLAS CHAPTER III	Regulation III/19.5	Recording	MASTR		Not meeting AB criteria	E- Recording
##	SOLAS CHAPTER III	Regulation III/20.6	Recording	MASTR		Not meeting AB criteria	E- Recording
##	SOLAS CHAPTER III	Regulation III/20.7.2	Recording	MASTR		Not meeting AB criteria	E- Recording
##	SOLAS	Regulation	Recording	COMPA &	E-Recording		
##	SOLAS	Regulation	Recording	MASTR	E-Recording		
##	SOLAS	Regulation	Recording	MASTR	E-Recording		
##	SOLAS CHAPTER V	Regulation V/26.6	Recording	MASTR		Not meeting AB criteria	E- Recording
##	SOLAS CHAPTER V	Regulation V/28.1	Recording	MASTR		Not meeting AB criteria	E- Recording
##	SOLAS CHAPTER V	Regulation V/28.2	Recording	COMPA & MASTR		Not meeting AB criteria	E- Recording
##	SOLAS CHAPTER VI	Regulation VI/7.8	Recording	MASTR		Not meeting AB criteria	E- Recording
##	GRAIN CODE	Paragraph 4	Recording	ADMIN, COMPA	E-Recording		
##	SOLAS	Regulation	Recording	MASTR	E-Recording		
##	1994 HSC CODE	Paragraph 18.5.7	Recording	MASTR		Not meeting AB criteria	E- Recording
##	2000 HSC CODE	Paragraph 18.5.8.1	Recording	MASTR		Not meeting AB criteria	-
##	2000 HSC CODE	Paragraph 18.5.8.2	Recording	MASTR		Not meeting AB criteria	-
##	SOLAS CHAPTER XI	Regulation XI-1/5.10	Recording	COMPA & MASTR		Not meeting AB criteria	E- Recording
##	SOLAS CHAPTER XI	Regulation XI-2/9.2.3	Recording	MASTR		Not meeting AB criteria	E- Recording
##	ISPS CODE	Paragraph 10.1	Recording	MASTR		Reconsider relevance	-
##	RES MSC	Paragraph	Recording	COMPA &	E-Recording		
##	CSC 72	Regulation	Recording	MANUF			

##	MARPOL ANNEX 1	Regulation 36.1	Recording	COMPA & MASTR		Not meeting AB criteria	E-Recording
##	MARPOL ANNEX 1	Regulation 36.7	Recording	COMPA & MASTR		Not meeting AB criteria	E-Recording
##	RES	Paragraph	Recording	COMPA &	E-Recording		
##	MARPOL	Regulation	Recording	IMOSG			
##	MARPOL ANNEX II	Regulation 15.1	Recording	COMPA		Not meeting AB criteria	E-Recording
##	MARPOL	Regulation	Recording	COMPA &	E-Recording		
##	MARPOL ANNEX V	Regulation 9(3)	Recording	COMPA & MASTR		Not meeting AB criteria	E-Recording
##	MARPOL PROT 97	Regulation 2.6.1	Recording	PORTS			
##	MARPOL PROT 97	Regulation 3.5.2.2.6	Recording	MASTR		Not meeting AB criteria	E-Recording
##	MARPOL PROT 97	Regulation 18(7)	Recording	PARTY			
##	STCW 78	Regulation	Recording	PARTY			
##	SAR 79	Paragraph 2.1.6	Recording	PARTY			
##	RES MEPC.94(46)	Paragraph 9.2	Recording and	RECOR			
##	STP 71	Annex, rule 6	Posting of certificates	COMPA & MASTR		Not meeting AB criteria	E-Certificates
##	STCW 78	Article I(2)	Promulgation	PARTY			
##	MARPOL	Article 8.2	Provision of	IMOSG	E-Notification		
##	SOLAS	Regulation	Provision of	NOMSU /			
##	SOLAS	Regulation	Provision of	NOMSU /			
##	SOLAS CHAPTER II	Regulation II-1/55.3	Provision of information	COMPA			
##	SOLAS CHAPTER II	Regulation II-2/17.3	Provision of information	COMPA			
##	RES	Paragraph	Provision of	RECOR			
##	RES	Paragraph	Provision of	MANUF			
##	SOLAS	Regulation	Provision of	COMPA			
##	SOLAS CHAPTER V	Regulation V/11.7	Provision of information	MASTR		Reconsider - Harmonize	-
##	IGC CODE	Paragraph	Provision of	NOMSU /			
##	SOLAS	Regulation	Provision of	COMPA &			
##	1994 HSC	Paragraph	Provision of	NOMSU &			
##	1994 HSC	Paragraph	Provision of	COMPA			
##	2000 HSC	Paragraph	Provision of	NOMSU &			
##	2000 HSC	Paragraph	Provision of	COMPA			
##	SOLAS CHAPTER XI	Regulation XI-2/9.3.1	Provision of information	PORTS		Not meeting AB criteria	-
##	SOLAS PROT 78	Annex replacement for chapter I, regulation	Provision of information to ADMIN	NOMSU / RECOR			
##	CSC 72	Article VI/2	Provision of information	PARTY		Not meeting AB criteria	E-Notification
##	CSC 72	Regulation	Provision of	MANUF			

##	MARPOL ARTICLES	Article 6(2)	Provision of information	PSCOF		Not meeting AB criteria	-
##	MARPOL	Regulation	Provision of	PARTY			
##	RES	Paragraph	Provision of	COMPA			
##	RES	Paragraph	Provision of	COMPA			
##	RES	Paragraph	Provision of	RECOR			
##	MARPOL	Regulation	Provision of	NOMSU /			
##	MARPOL	Regulation	Provision of	PARTY			
##	BCH CODE	Paragraph	Provision of	NOMSU /			
##	BCH CODE	Paragraph 2.2.5	Provision of information	COMPA, MASTR		Not meeting AB criteria	E-Notification
##	IBC CODE	Paragraph	Provision of	NOMSU /			
##	MARPOL	Regulation	Provision of	NOMSU &			
##	MARPOL	Regulation	Provision of	COMPA &		Not meeting	-
##	MARPOL	Regulation	Provision of	PARTY			
##	MARPOL	Regulation	Provision of	NOMSU /			
##	MARPOL	Regulation	Provision of	PARTY			
##	MARPOL	Regulation	Provision of	PSCOF		Not meeting	-
##	MARPOL PROT 97	Regulation 11.3	Provision of information	PARTY			
##	NOX TECHNICAL	Paragraph 2.2.8.2	Provision of information	ADMIN			
##	AFS 2001	Article 11(3)	Provision of information to ADMIN	PARTY			
##	AFS 2001	Annex 4, regulation	Provision of information	NOMSU / RECOR			
##	MARPOL ARTICLES	Article 6(3)	Provision of information	PARTY		Not meeting AB criteria	-
##	1994 HSC CODE	Paragraph 2.7.2	Provision of information	COMPA & ADMIN			
##	1994 HSC CODE	Paragraph 2.7.4	Provision of information	COMPA			
##	1994 HSC CODE	Paragraph 2.7.5	Provision of information	COMPA			
##	1994 HSC CODE	Paragraph 2.14.2	Provision of information	COMPA			
##	1994 HSC CODE	Paragraph 2.14.3	Provision of information	COMPA			
##	2000 HSC CODE	Paragraph 2.7.3	Provision of information	COMPA & ADMIN			
##	2000 HSC CODE	Paragraph 2.7.5	Provision of information	COMPA			
##	2000 HSC CODE	Paragraph 2.7.6	Provision of information to ADMIN	COMPA			
##	2000 HSC CODE	Paragraph 2.14.2	Provision of information	COMPA			
##	2000 HSC CODE	Paragraph 2.14.3	Provision of information	COMPA			
##	MARPOL ANNEX 1	Regulation 6.3.3.	Provision of information	NOMSU / RECOR			
##	MARPOL PROT 97	Regulation 18.2.4	Provision of information	MASTR			

##	RES MEPC.94(46)	Paragraph 6.1.1.2	Provision of information	COMPA		Reconsider relevance	-
##	RES MSC.215(82)	Paragraph 3.2	Provision of information	SHIPY & COMPA			
##	SOLAS CHAPTER XI	Regulation XI-2/6.7	Provision of information	CONTS			
##	SOLAS PROT 78	Annex replacemen t for chapter I, regulation	Provision of information to ADMIN, NOMSU and	COMPA & MASTR		Reconsider relevance	-
##	SOLAS CHAPTER I	Regulation I/11(c)	Provision of information	COMPA & MASTR		Reconsider relevance	-
##	MARPOL ANNEX II	Regulation 8.3.3	Provision of information	COMPA & MASTR		Not meeting AB criteria	Standard format
##	MARPOL PROT 97	Regulation 5.6	Provision of information	OWNER / MASTR		Not meeting AB criteria	Standard format
##	MARPOL ANNEX 1	Regulation 6.4.3.	Provision of information	MASTR / COMPA		Not meeting AB criteria	-
##	SOLAS	Regulation	Provision of	CONTS			
##	CSC 72	Regulation	Provision of	ADMIN			
##	CSC 72	Regulation	Provision of	ADMIN			
##	SOLAS	Regulation	Provision of	MASTR			
##	SOLAS CHAPTER VII	Regulation VII/7-4.1	Provision of information	MASTR			
##	MARPOL PROT 78	PROT I, Article I(1)	Provision of information	MASTR			
##	SOLAS CHAPTER	Regulation VIII/12	Provision of information	COMPA & MASTR			
##	RES	Paragraph	Provision of	RECOR			
##	INTERVENTI ON 69	Article III/f	Provision of information	COASS		Not meeting AB criteria	-
##	SOLAS CHAPTER V	Regulation V/19.1.8.2	Provision of information	IMOSG	E-Notification		
##	SOLAS CHAPTER V	Regulation V/19.1.9.2	Provision of information	IMOSG	E-Notification		
##	SOLAS CHAPTER V	Appendix, paragraph 5	Provision of information	IMOSG		Reconsider relevance	-
##	SOLAS CHAPTER XI	Regulation XI-2/9.2.1	Provision of information	COMPA & MASTR		Not meeting AB criteria	-
##	SOLAS CHAPTER XI	Regulation XI-2/13	Provision of information	IMOSG	E-Notification		
##	ISPS CODE	Paragraph 7.8	Provision of information	ADMIN		Reconsider relevance	-
##	STOCKHOLM AGREEMENT	Article 7.3	Provision of information	IMOSG		Reconsider - Harmonize	-
##	LL 66	Article 6(3)	Provision of information	IMOSG		Not meeting AB criteria	E- Notification
##	LL 66	Article 8(2)	Provision of information	IMOSG		Not meeting AB criteria	E- Notification
##	LL 66	Article 17(2)	Provision of	CONTS			
##	LL 66	Article 26(2)	Provision of information	CONTS		Not meeting AB criteria	-
##	LL 66	Article 27(2)	Provision of	IMOSG	E-Notification		
##	BCH CODE	Paragraph	Provision of	IMOSG	E-Notification		

##	BCH CODE	Paragraph	Provision of	IMOSG	E-Notification		
##	IBC CODE	Paragraphs 1.5.1.3	Provision of information	IMOSG	E-Notification		
##	MARPOL	Regulation	Provision of	IMOSG	E-Notification		
##	LC PROT 96	Annex 3, article 1.3	Provision of information	IMOSG		Not meeting AB criteria	E-Notification
##	STP 71	Article III	Provision of	IMOSG	E-Notification		
##	STP 71	Article V	Provision of	IMOSG	E-Notification		
##	STP 71	Article IX(c)	Provision of	IMOSG	E-Notification		
##	FAL 65	Article	Provision of	IMOSG	E-Notification		
##	TONNAGE 69	Article 16(2)	Provision of	IMOSG	E-Notification		
##	TONNAGE 69	Article 20(3)	Provision of	IMOSG	E-Notification		
##	IBC CODE	Paragraph 1.4.2	Provision of information	IMOSG	E-Notification		
##	IGC CODE	Paragraph 1.4.2	Provision of information	IMOSG	E-Notification		
##	IGC CODE	Paragraph 1.5.1.2	Provision of information	IMOSG	E-Notification		
##	FAL 65	Article XIV	Provision of information	IMOSG	E-Notification		
##	SOLAS PROT 78	Annex replacement for chapter I,	Provision of information to FLAGS	PSCOF			
##	LL 66	Article 21(3)	Provision of	PSCOF			
##	TONNAGE 69	Article 12(3)	Provision of	PORTS			
##	SOLAS PROT 78	Annex replacement for chapter I, regulation	Provision of information to FLAGS and PORTS	PORTS		Not meeting AB criteria	-
##	SOLAS CHAPTER I	Regulation I/19(d)	Provision of information	PSCOF	E-Notification		
##	SOLAS CHAPTER V	Regulation V/4	Provision of information	CONTS			
##	SOLAS CHAPTER V	Regulation V/31.2	Provision of information	CONTS			
##	SOLAS CHAPTER XI	Regulation XI-2/10.3	Provision of information	CONTS			
##	SOLAS	Article IX(b)	Provision of	CONTS	E-Notification		
##	SOLAS ARTICLES	Article III	Provision of information	CONTS		Reconsider relevance	-
##	SOLAS ARTICLES	Article V	Provision of information	CONTS		Not meeting AB criteria	E-Notification
##	SOLAS CHAPTER I	Regulation I/4	Provision of information	ADMIN		Not meeting AB criteria	E-Notification
##	SOLAS CHAPTER I	Regulation I/5	Provision of information	ADMIN		Not meeting AB criteria	E-Notification
##	SOLAS CHAPTER I	Regulation I/6(b)	Provision of information	ADMIN		Not meeting AB criteria	E-Notification
##	SOLAS CHAPTER I	Regulation I/19(d)	Provision of information	PSCOF		Reconsider - Harmonize	-
##	SOLAS	Regulation	Provision of	CONTS	E-Notification		

##	CASUALTY INVESTIGATION CODE	Paragraph 4.1	Provision of information to IMOSG	CONTS	E-Notification		
##	CASUALTY INVESTIGATION CODE	Paragraph 14.1	Provision of information to IMOSG	INVES	E-Notification		
##	CASUALTY INVESTIGATION CODE	Paragraph 14.2	Provision of information to IMOSG	INVES	E-Notification		
##	SOLAS	Regulation	Provision of	ADMIN	E-Notification		
##	SOLAS CHAPTER II	Regulation II-1/55.5	Provision of information	ADMIN	E-Notification		
##	SOLAS CHAPTER II	Regulation II-2/17.5	Provision of information	ADMIN	E-Notification		
##	INTACT STABILITY	Paragraph 1.2	Provision of information	ADMIN	E-Notification		
##	FTP CODE	Paragraph	Provision of	ADMIN	E-Notification		
##	SOLAS CHAPTER III	Regulation III/20.8.5	Provision of information	ADMIN		Not meeting AB criteria	E-Notification
##	SOLAS CHAPTER III	Regulation III/38.5	Provision of information	ADMIN		Not meeting AB criteria	E-Notification
##	SOLAS CHAPTER IV	Regulation IV/3.3	Provision of information	ADMIN		Not meeting AB criteria	E-Notification
##	SOLAS	Regulation	Provision of	CONTS	E-Notification		
##	SOLAS CHAPTER V	Regulation V/3.3	Provision of information	ADMIN		Reconsider relevance	-
##	SOLAS	Regulation	Provision of	CONTS	E-Notification		
##	SOLAS CHAPTER V	Regulation V/19.1.8.2	Provision of information	CONTS	E-Notification		
##	SOLAS CHAPTER V	Regulation V/19.1.9.2	Provision of information	ADMIN	E-Notification		
##	SOLAS CHAPTER V	Appendix, paragraph 5	Provision of information	Contributing		Reconsider relevance	-
##	IGC CODE	Paragraph 1.4.2	Provision of information	ADMIN		Not meeting AB criteria	E-Notification
##	IGC CODE	Paragraph 1.5.1.2	Provision of information	ADMIN		Reconsider relevance	-
##	ISM CODE	Paragraph	Provision of	OWNER	E-Notification		
##	1994 HSC	Paragraph	Provision of	ADMIN	E-Notification		
##	1994 HSC	Paragraph	Provision of	ADMIN	E-Notification		
##	1994 HSC	Paragraph	Provision of	ADMIN	E-Notification		
##	1994 HSC CODE	Paragraph 14.3.3	Provision of information	ADMIN		Not meeting AB criteria	E-Notification
##	2000 HSC	Paragraph	Provision of	ADMIN	E-Notification		
##	2000 HSC	Paragraph	Provision of	ADMIN	E-Notification		
##	2000 HSC	Paragraph	Provision of	ADMIN	E-Notification		
##	2000 HSC CODE	Paragraph 8.9.11	Provision of information	ADMIN		Not meeting AB criteria	E-Notification
##	2000 HSC CODE	Paragraph 14.3.3	Provision of information	ADMIN		Not meeting AB criteria	E-Notification
##	SOLAS CHAPTER XI	Regulation XI-2/9.3.1	Provision of information	PORTS		Not meeting AB criteria	E-Notification
##	SOLAS CHAPTER XI	Regulation XI-2/12.1	Provision of information	ADMIN		Not meeting AB criteria	E-Notification

##	SOLAS CHAPTER XI	Regulation XI-2/12.2	Provision of information	CONTS		Not meeting AB criteria	E- Notification
##	SOLAS CHAPTER XI	Regulation XI-2/13	Provision of information	CONTS	E-Notification		
##	SOLAS PROT 78	Article III	Provision of information	PARTY		Reconsider relevance	-
##	SOLAS PROT	Article IV/2	Provision of	PARTY	E-Notification		
##	SOLAS PROT 78	Annex replacemen t for	Provision of information to IMOSG	ADMIN	E-Notification		
##	SOLAS PROT	Article III	Provision of	PARTY	E-Notification		
##	SOLAS PROT	Article IV.2	Provision of	PARTY	E-Notification		
##	STOCKHOLM AGREEMENT	Article 7.2	Provision of information	CONTS	E-Notification		
##	STOCKHOLM AGREEMENT	Annex, paragraph 2	Provision of information	CONTS	E-Notification		
##	CSC 72	Article IV/2	Provision of information	ADMIN		Not meeting AB criteria	E- Notification
##	CSC 72	Article VII/4	Provision of information	PARTY	E-Notification		
##	LL 66	Article 6(3)	Provision of	ADMIN	E-Notification		
##	LL 66	Article 8(2)	Provision of	ADMIN	E-Notification		
##	LL 66	Article 9(2)	Provision of	ADMIN	E-Notification		
##	LL 66	Article 23(2)	Provision of	CONTS	E-Notification		
##	LL 66	Article 26(1)	Provision of information	CONTS		Reconsider relevance	-
##	LL 66	Article 27(2)	Provision of	CONTS	E-Notification		
##	LL PROT 88	Article III	Provision of information	PARTY		Reconsider relevance	-
##	LL PROT 88	Article IV/2	Provision of	PARTY	E-Notification		
##	MARPOL ARTICLES	Article 11(1)	Provision of information	PARTY		Reconsider relevance	-
##	MARPOL	Article 12(2)	Provision of	PARTY	E-Notification		
##	MARPOL	Article 13(2)	Provision of	PARTY	E-Notification		
##	MARPOL	Article 14(2)	Provision of	PARTY	E-Notification		
##	MARPOL	Article IV.2	Provision of	PARTY	E-Notification		
##	MARPOL PROT 78	PROT II, Article X(1)	Provision of information	ARBIT	E-Notification		
##	MARPOL	Regulation	Provision of	ADMIN	E-Notification		
##	MARPOL	Regulation	Provision of	ADMIN	E-Notification		
##	MARPOL	Regulation	Provision of	ADMIN	E-Notification		
##	MARPOL	Regulation	Provision of	PARTY	E-Notification		
##	MARPOL	Regulation	Provision of	ADMIN	E-Notification		
##	MARPOL	Regulation	Provision of	PARTY	E-Notification		
##	MARPOL	Regulation	Provision of	ADMIN	E-Notification		
##	MARPOL	Regulation	Provision of	PARTY	E-Notification		
##	RES	Paragraph	Provision of	ADMIN	E-Notification		
##	MARPOL	Regulation	Provision of	ADMIN	E-Notification		
##	MARPOL	Regulation	Provision of	ADMIN	E-Notification		
##	MARPOL	Regulation	Provision of	CONTS	E-Notification		
##	MARPOL	Regulation	Provision of	ADMIN	E-Notification		

##	MARPOL	Regulation	Provision of	PARTY	E-Notification		
##	MARPOL	Regulation	Provision of	PARTY	E-Notification		
##	MARPOL	Regulation	Provision of	PARTY	E-Notification		
##	MARPOL	Regulation	Provision of	PARTY	E-Notification		
##	BCH CODE	Paragraph 1.5.2	Provision of information	ADMIN		Not meeting AB criteria	E-Notification
##	BCH CODE	Paragraph 1.6.1.2	Provision of information	ADMIN		Not meeting AB criteria	E-Notification
##	IBC CODE	Paragraph 1.4.2	Provision of information	ADMIN		Not meeting AB criteria	E-Notification
##	IBC CODE	Paragraph 1.5.1.3	Provision of information	ADMIN		Reconsider relevance	-
##	MARPOL ANNEX IV	Regulation 4.4	Provision of information	ADMIN	E-Notification		
##	MARPOL ANNEX IV	Regulation 12.2	Provision of information	PARTY		Not meeting AB criteria	E-Notification
##	MARPOL ANNEX V	Regulation 5(4)(b)	Provision of information	PARTY	E-Notification		
##	MARPOL ANNEX V	Regulation 7(2)	Provision of information	PARTY		Not meeting AB criteria	E-Notification
##	MARPOL	Article 5.2	Provision of	PARTY	E-Notification		
##	MARPOL PROT 97	Regulation 4(2)	Provision of information	ADMIN	E-Notification		
##	MARPOL PROT 97	Regulation 15.2	Provision of information	PARTY	E-Notification		
##	MARPOL PROT 97	Regulation 17.2	Provision of information	PARTY		Not meeting AB criteria	E-Notification
##	MARPOL PROT 97	Regulation 17.3	Provision of information	PARTY		Not meeting AB criteria	E-Notification
##	MARPOL PROT 97	Regulation 18.2.5	Provision of information	PARTY	E-Notification		
##	MARPOL PROT 97	Regulation 18(7)	Provision of information	PARTY		Not meeting AB criteria	E-Notification
##	AFS 2001	Article 9(1)	Provision of	PARTY	E-Notification		
##	AFS 2001	Article 16(6)	Provision of	PARTY	E-Notification		
##	AFS 2001	Article 17(3)	Provision of	PARTY	E-Notification		
##	LC 72	Article IV/3	Provision of	PARTY	E-Notification		
##	LC 72	Article V/2	Provision of	PARTY	E-Notification		
##	LC 72	Article VII/4	Provision of	PARTY	E-Notification		
##	LC 72	Article XV/3	Provision of	PARTY	E-Notification		
##	LC PROT 96	Article 4.2	Provision of information	PARTY	E-Notification		
##	LC PROT 96	Article 7.3	Provision of	PARTY	E-Notification		
##	LC PROT 96	Article 8.1	Provision of	PARTY	E-Notification		
##	LC PROT 96	Article 8.2	Provision of	PARTY	E-Notification		
##	LC PROT 96	Article 10.4	Provision of	PARTY	E-Notification		
##	LC PROT 96	Article 24.3	Provision of	PARTY	E-Notification		
##	LC PROT 96	Article 26.1	Provision of information	PARTY		Reconsider relevance	-
##	LC PROT 96	Article 26.3	Provision of information	PARTY		Reconsider relevance	-
##	LC PROT 96	Annex 3, article 1.2	Provision of information	PARTY	E-Notification		

##	OPRC 90	Article 10	Provision of	PARTY	E-Notification		
##	OPRC 90	Article 15(2)	Provision of	PARTY	E-Notification		
##	OPRC PROT HNS 2000	Article 4(3)	Provision of information	PARTY	E-Notification		
##	OPRC PROT HNS 2000	Article 12(7)	Provision of information	PARTY	E-Notification		
##	OPRC PROT HNS 2000	Article 13(2)	Provision of information	PARTY	E-Notification		
##	STCW 78	Article IV(1)	Provision of information	PARTY		Reconsider relevance	-
##	STCW 78	Article VIII(3)	Provision of information	PARTY		Not meeting AB criteria	-
##	STCW 78	Article IX(2)	Provision of information	PARTY		Not meeting AB criteria	E- Notification
##	STCW 78	Article	Provision of	PARTY	E-Notification		
##	STCW 78	Regulation I/7.1	Provision of information	PARTY		Not meeting AB criteria	E- Notification
##	STCW 78	Regulation I/8.3	Provision of information	PARTY		Not meeting AB criteria	E- Notification
##	STCW 78	Regulation I/10.3	Provision of information	PARTY		Not meeting AB criteria	E- Notification
##	STCW 78	Regulation	Provision of	PARTY	E-Notification		
##	STCW 78	Regulation I/13.5	Provision of information	ADMIN		Not meeting AB criteria	E- Notification
##	STCW 78	Regulation	Provision of	PARTY		Not meeting	E-
##	STCW CODE	Section A-	Provision of	PARTY		Reconsider	E-
##	BUNKERS 2001	Article 7/3(b)	Provision of information	PARTY		Not meeting AB criteria	E- Notification
##	BUNKERS 2001	Article 12/3	Provision of information	PARTY		Not meeting AB criteria	--
##	BUNKERS 2001	Article 13(2)	Provision of information	PARTY		Not meeting AB criteria	E- Notification
##	CLC 69	Article XIIter (PROT	Provision of information to IMOSG	PARTY	E-Notification		
##	CLC 69	Article XIIter	Provision of information	PARTY		Reconsider relevance	
##	FUND 92	Article 36	Provision of	PARTY	E-Notification		
##	FUND PROT	Article 19.4	Provision of	CONTS	E-Notification		
##	FUND PROT 2003	Article 20	Provision of information	CONTS	E-Notification		
##	LLMC 76	Article 16/3	Provision of information	PARTY	E-Notification		
##	LLMC PROT 96	Article 10/3	Provision of information	PARTY	E-Notification		
##	NUCLEAR 71	Article 5.3	Provision of	PARTY	E-Notification		
##	NUCLEAR 71	Article 8.1	Provision of information	PARTY	E-Notification		
##	NUCLEAR 71	Article 8.3	Provision of	PARTY	E-Notification		
##	PAL 74	Article 22.2	Provision of information	PARTY	E-Notification		
##	PAL 74	Article 23.3	Provision of information	PARTY	E-Notification		
##	SPACE STP	Article III	Provision of	PARTY	E-Notification		

##	SPACE STP	Article IV	Provision of	PARTY	E-Notification		
##	SPACE STP 73	Article VIII(a) and	Provision of information	PARTY & UN	E-Notification		
##	STP 71	Article III	Provision of information	PARTY		Reconsider relevance	
##	STP 71	Article V	Provision of	PARTY	E-Notification		
##	STP 71	Article IX(a)	Provision of	PARTY	E-Notification		
##	STP 71	Article IX(b)	Provision of	PARTY	E-Notification		
##	COLREG 72	Article II/3	Provision of	PARTY	E-Notification		
##	FAL 65	Article	Provision of	CONTS	E-Notification		
##	FAL 65	Article	Provision of	CONTS	E-Notification		
##	FAL 65	Article X(2)	Provision of	CONTS	E-Notification		
##	INTERVENTI	Article III/f	Provision of	COASS		Not meeting	-
##	INTERVENTI	Article X/1	Provision of	PARTY	E-Notification		
##	INTERVENTI ON PROT 73	Article III.2	Provision of information	PARTY	E-Notification		
##	INTERVENTI ON PROT 73	Article V.1	Provision of information	PARTY	E-Notification		
##	SAR 79	Article IV(2)	Provision of	PARTY	E-Notification		
##	SAR 79	Paragraph	Provision of	PARTY	E-Notification		
##	SAR 79	Paragraph	Provision of	PARTY	E-Notification		
##	SAR 79	Paragraph	Provision of	PARTY	E-Notification		
##	SALVAGE 89	Article 4.2	Provision of	PARTY	E-Notification		
##	SALVAGE 89	Article 28/3	Provision of	PARTY	E-Notification		
##	SUA 88	Article 6/3	Provision of	PARTY	E-Notification		
##	SUA 88	Article 15/1	Provision of	PARTY	E-Notification		
##	SUA 88	Article 15/2	Provision of	PARTY	E-Notification		
##	SUA 88	Article 17/3	Provision of	PARTY	E-Notification		
##	SUA PROT 88	Article 3/3	Provision of	PARTY	E-Notification		
##	SUA PROT 88	Article 5/3	Provision of	PARTY	E-Notification		
##	SUA 2005	Article 6/3	Provision of	PARTY	E-Notification		
##	SUA 2005	Article 8/15	Provision of	PARTY	E-Notification		
##	SUA 2005	Article 17/3	Provision of	PARTY	E-Notification		
##	SUA PROT	Article 6/3	Provision of	PARTY	E-Notification		
##	SUA PROT	Article 8/3	Provision of	PARTY	E-Notification		
##	TONNAGE 69	Article 15	Provision of information	CONTS		Reconsider relevance	-
##	TONNAGE 69	Article 16(2)	Provision of	CONTS	E-Notification		
##	TONNAGE 69	Article 20(1)	Provision of	UN /	E-Notification		
##	MARPOL ARTICLES	Article 4(3)	Provision of information	ADMIN		Not meeting AB criteria	-
##	MARPOL ARTICLES	Article 8(4)	Provision of information	PARTY	E-Notification		
##	LC 72	Article VI/4	Provision of information	PARTY	E-Notification		
##	LC PROT 96	Article 9.4	Provision of information	PARTY	E-Notification		
##	STOCKHOLM AGREEMENT	Article 5(3)	Provision of information	CONTS	E-Notification		
##	INTERVENTI	Article III/b	Provision of	COASS			

##	SOLAS CHAPTER IV	Regulation IV/5-1.2	Provision of information	CONTS			
##	SOLAS CHAPTER VI	Regulation VI/2.1	Provision of information	SHIPP		Not meeting AB criteria	-
##	CSS CODE	Paragraph	Provision of	SHIPP			
##	SOLAS CHAPTER XI	Regulation XI-2/5	Provision of information	COMPA		Not meeting AB criteria	E- Notification
##	MARPOL PROT 97	Regulation 11.3	Provision of information	PARTY			
##	FAL 65	Regulation	Provision of	PUBAU			
##	SOLAS CHAPTER II	Regulation II-1/5-1.1	Provision of information	COMPA			
##	SOLAS CHAPTER VII	Regulation VII/2.4	Provision of information	CONTS			
##	SOLAS CHAPTER VII	Regulation VII/7-1.3	Provision of information	CONTS			
##	STCW 78	Article X(2)	Provision of information	PSCOF		Reconsider relevance	-
##	1994 HSC CODE	Paragraph 2.7.3	Provision of information	COMPA			
##	1994 HSC CODE	Paragraph 2.7.6	Provision of information	COMPA			
##	2000 HSC CODE	Paragraph 2.7.4	Provision of information	COMPA			
##	2000 HSC CODE	Paragraph 2.7.7	Provision of information	COMPA			
##	2000 HSC CODE	Paragraph 18.2	Provision of information	COMPA			
##	1994 HSC CODE	Paragraph 1.11.2	Provision of information	IMOSG		Not meeting AB criteria	E- Notification
##	2000 HSC CODE	Paragraph 1.11.2	Provision of information	IMOSG		Not meeting AB criteria	E- Notification
##	1994 HSC CODE	Paragraph 1.14.1	Provision of information	IMOSG		Reconsider - Harmonize	-
##	2000 HSC CODE	Paragraph 1.14.1	Provision of information	IMOSG		Reconsider - Harmonize	-
##	MARPOL PROT 97	Regulation 17.3	Provision of information	IMOSG	E-Notification		
##	AFS 2001	Article 9(2)	Provision of	IMOSG	E-Notification		
##	FAL 65	Regulation	Provision of	CONTS			
##	CASUALTY INVESTIGATI ON CODE	Paragraph 5.1	Provision of information to other	FLAGS			
##	CASUALTY INVESTIGATI ON CODE	Paragraph 5.2	Provision of information to other	FLAGS & COASS			
##	CASUALTY INVESTIGATI ON CODE	Paragraph 13.1	Provision of information to other	INVES			
##	OPRC PROT HNS 2000	Article 3(3)	Provision of information	PARTY			
##	SUA 88	Article 7/5	Provision of	PARTY			
##	SUA 88	Article 14	Provision of	PARTY			
##	SUA 2005	Article 13	Provision of	PARTY			

##	SUA 88	Article 15/3	Provision of information	IMOSG		Not meeting AB criteria	E-Notification
##	SUA 2005	Article 14	Provision of information to other	IMOSG	E-Notification		
##	CSC 72	Regulation	Provision of	ADMIN			
##	CSC 72	Regulation	Provision of	ADMIN			
##	CSS CODE	Paragraph 1.9.1	Provision of information	SHIPP			
##	MARPOL ARTICLES	Article 6(4)	Provision of information	ADMIN		Not meeting AB criteria	-
##	SOLAS PROT	Article III	Provision of	IMOSG	E-Notification		
##	CSC 72	Article IV/2	Provision of	IMOSG	E-Notification		
##	LL PROT 88	Article III(b)	Provision of	IMOSG	E-Notification		
##	MARPOL	Article 11(2)	Provision of	IMOSG	E-Notification		
##	MARPOL	Article 13(3)	Provision of	IMOSG	E-Notification		
##	MARPOL	Article 14(4)	Provision of	IMOSG	E-Notification		
##	MARPOL	Regulation	Provision of	IMOSG	E-Notification		
##	MARPOL	Regulation	Provision of	IMOSG	E-Notification		
##	MARPOL	Regulation	Provision of	IMOSG	E-Notification		
##	MARPOL	Regulation	Provision of	IMOSG	E-Notification		
##	MARPOL ANNEX 1	Regulation 21.8.2	Provision of information	IMOSG	E-Notification		
##	MARPOL	Regulation	Provision of	IMOSG	E-Notification		
##	MARPOL	Regulation	Provision of	IMOSG	E-Notification		
##	RES	Paragraph	Provision of	IMOSG	E-Notification		
##	MARPOL	Regulation	Provision of	IMOSG	E-Notification		
##	MARPOL ANNEX II	Regulation 5.2	Provision of information	IMOSG	E-Notification		
##	MARPOL	Regulation	Provision of	IMOSG	E-Notification		
##	MARPOL	Regulation	Provision of	IMOSG	E-Notification		
##	MARPOL	Regulation	Provision of	IMOSG	E-Notification		
##	MARPOL	Regulation	Provision of	IMOSG	E-Notification		
##	MARPOL	Regulation	Provision of	IMOSG	E-Notification		
##	MARPOL	Regulation	Provision of	IMOSG	E-Notification		
##	MARPOL	Regulation	Provision of	IMOSG	E-Notification		
##	MARPOL	Regulation	Provision of	IMOSG	E-Notification		
##	MARPOL	Regulation	Provision of	IMOSG	E-Notification		
##	MARPOL PROT 97	Regulation 4(2)	Provision of information	IMOSG	E-Notification		
##	MARPOL PROT 97	Regulation 11.4	Provision of information	ADMIN			
##	MARPOL PROT 97	Regulation 11.5	Provision of information	PORTS			
##	AFS 2001	Article 9(3)	Provision of	PARTY /			
##	LC 72	Article VIII	Provision of	IMOSG	E-Notification		
##	LC 72	Article XV/3	Provision of	IMOSG	E-Notification		
##	OPRC 90	Article 10	Provision of	IMOSG	E-Notification		
##	OPRC PROT HNS 2000	Article 12(6)	Provision of information	IMOSG	E-Notification		

##	OPRC PROT HNS 2000	Article 12(7)	Provision of information	IMOSG	E-Notification		
##	STCW 78	Article IV(2)	Provision of	IMOSG	E-Notification		
##	STCW 78	Article IX(2)	Provision of information	IMOSG		Not meeting AB criteria	E- Notification
##	STCW 78	Article	Provision of	IMOSG	E-Notification		
##	STCW 78	Regulation	Provision of	IMOSG	E-Notification		
##	STCW 78	Regulation I/13.5	Provision of information	IMOSG		Not meeting AB criteria	E- Notification
##	STCW 78	Regulation	Provision of	IMOSG	E-Notification		
##	STCW CODE	Section A-	Provision of	ADMIN			
##	COLREG 72	Article II/3	Provision of information	IMOSG		Not meeting AB criteria	-
##	INTERVENTI ON PROT 73	Article III.5	Provision of information	IMOSG	E-Notification		
##	SAR 79	Paragraph	Provision of	IMOSG	E-Notification		
##	MARPOL PROT 97	Regulation 15.4	Provision of information	IMOSG	E-Notification		
##	MARPOL ARTICLES	Article 6(5)	Provision of information	PORTS			
##	STCW 78	Regulation I/2.15	Provision of information	PARTY			
##	SPACE STP 73	Article IV	Provision of information	IMOSG	E-Notification		
##	SPACE STP 73	Article VIII(c)	Provision of information	IMOSG	E-Notification		
##	STCW 78	Article	Provision of	IMOSG	E-Notification		
##	AFS 2001	Article 16(7)	Provision of information to PARTY	IMOSG	E-Notification		
##	MARPOL PROT 97	Regulation 17.2	Provision of information	IMOSG	E-Notification		
##	MARPOL PROT 97	Regulation 18(7)	Provision of information	IMOSG	E-Notification		
##	INTERVENTI ON PROT 73	Article III.2	Provision of information	IMOSG	E-Notification		
##	MARPOL ARTICLES	Article 5(3)	Provision of information	PARTY			
##	SOLAS	Regulation	Provision of	NOMSU /			
##	SOLAS CHAPTER I	Regulation I/11(c)	Provision of information	COMPA & MASTR		Reconsider relevance	-
##	IGC CODE	Paragraph	Provision of	NOMSU /			
##	1994 HSC	Paragraph	Provision of	NOMSU &			
##	2000 HSC	Paragraph	Provision of	NOMSU &			
##	SOLAS CHAPTER XI	Regulation XI-2/4.5	Provision of information	COMPA & MASTR		Not meeting AB criteria	-
##	SOLAS CHAPTER XI	Regulation XI-2/9.2.2	Provision of information	MASTR		Not meeting AB criteria	-
##	SOLAS PROT 78	Annex replacemen	Provision of information	NOMSU / RECOR			

##	SOLAS PROT 78	Annex replacement for chapter I, regulation	Provision of information to PORTS	COMPA & MASTR		Reconsider relevance	-
##	MARPOL ANNEX 1	Regulation 6.4.3.	Provision of information	MASTR / COMPA		Not meeting AB criteria	-
##	MARPOL	Regulation	Provision of	NOMSU /			
##	MARPOL ANNEX II	Regulation 8.3.3	Provision of information	COMPA & MASTR		Not meeting AB criteria	Standard format
##	BCH CODE	Paragraph	Provision of	NOMSU /			
##	IBC CODE	Paragraph	Provision of	NOMSU /			
##	MARPOL	Regulation	Provision of	NOMSU &			
##	MARPOL ANNEX IV	Regulation 4.9	Provision of information	COMPA & MASTR		Not meeting AB criteria	Standard format
##	MARPOL PROT 97	Regulation 5.3.3	Provision of information	ADMIN / NOMSU /			
##	AFS 2001	Annex 4, regulation	Provision of information	ADMIN / NOMSU /			
##	SOLAS CHAPTER XI	Regulation XI-2/9.3.2	Provision of information	PORTS		Not meeting AB criteria	-
##	FAL 65	Regulation	Provision of	CONTS			
##	SOLAS	Article I(b)	Provision of	CONTS			
##	CASUALTY INVESTIGATION CODE	Paragraph 14.4	Provision of information to public and	INVES			
##	SOLAS CHAPTER XI	Regulation XI-2/9.3.1	Provision of information	PORTS		Not meeting AB criteria	-
##	RES	Paragraph	Provision of	ADMIN			
##	RES	Paragraph	Provision of	COMPA			
##	RES	Paragraph	Provision of	COMPA			
##	RES	Paragraph	Provision of	ADMIN			
##	FAL 65	Regulation 3.3.6	Provision of information to	PUBAU			
##	ISPS CODE	Paragraph 4.2	Provision of information	CONTS		Reconsider relevance	-
##	STOCKHOLM AGREEMENT	Annex, paragraph 2	Provision of information	IMOSG		Reconsider - Harmonize	-
##	SOLAS CHAPTER XI	Regulation XI-2/6.6	Provision of information	ADMIN			
##	SAR 79	Article IV(3)	Provision of	IMOSG	E-Notification		
##	FUND 92	Article 14.1	Provision of	PARTY			