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A COMPARATIVE STUDY ON THE EFFECTIVE IMPLEMENTATION OF THE MANDATORY IMO MEMBER STATE AUDIT SCHEME
A Case Study of the Republic of Korea

By

SEO, DONG MIN
Republic of Korea

A dissertation submitted to the World Maritime University in partial fulfilment of the requirements for the award of the degree of

MASTER OF SCIENCE
In
MARITIME AFFAIRS
(MARITIME SAFETY AND ENVIRONMENTAL ADMINISTRATION)

2010

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DECLARATION

I certify that all the material in this dissertation 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 dissertation reflect my own personal views, and are not necessarily endorsed by the University.

Signature: .................................................................

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ABSTRACT

Title of Dissertation: A Comparative Study on the Effective Implementation of the Mandatory IMO Member State Audit Scheme – A Case Study of the Republic of Korea

Degree: MSc

This dissertation is a study on the effective implementation of the IMO Member State Audit Scheme which is to become mandatory from 01 January 2015. The study is done by means of comparison with the ICAO Universal Safety Oversight Audit Programme (USOAP) and the Voluntary IMO Member State Audit Scheme (VIMSAS). The research is supported by the case study of the Republic of Korea.

Since 1995, the ICAO USOAP has evolved from the voluntary assessment with an Annex-by-Annex Approach to the mandatory audit programme with the Comprehensive Systems Approach and then to the Continuous Monitoring Approach. Compared to the ICAO USOAP, IMO is now planning to transit to the mandatory scheme from the voluntary scheme. Lessons learnt from the ICAO USOAP are collated and investigated in comparison with the ICAO USOAP and the IMO VIMSAS. According to the VIMSAS Consolidated Audit Summary Reports in 2010, initial actions (legislation) and strategy in the common areas of the Code for the Implementation of Mandatory IMO Instruments are highly ranked from the context of the number of findings. Solutions are examined, taking into account the exemplary SARPs Management & Implementation System (SMIS) and National Aviation Resources Management Information (NARMI) for ICAO USOAP, and IMO instruments Implementation and Management System (IIMS) for IMO VIMSAS developed by the Republic of Korea.
The concluding chapter provides the way how the mandatory IMO Member States Audit Scheme will be effectively implemented in order to achieve the goal of the Audit to promote maritime safety and environmental protection by assessing how effectively Member States implement and enforce the relevant standards of the IMO Instruments. A number of recommendations are developed concerning the need for further consideration and investigation in the subject.

**KEY WORDS:** ICAO Universal Safety Oversight Audit Programme (USOAP), Voluntary IMO Member State Audit Scheme (VIMSAS), Mandatory IMO Member State Audit Scheme, Implementation, Initial Actions (Legislation), Strategy
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LIST OF ABBREVIATIONS

ACR  Audit Coordination and Reporting Section
ACRO  Aircraft Crashes Record Office
AFDD  Audit Findings and Differences Database
AMSA  Australian Maritime Safety Authority
ANB  Air Navigational Bureau
ASN  Aviation Safety Network
ASR  Audit Summary Report
CAD  Canadian Dollar
CASR  Consolidated Audit Summary Report
CBT  Computer Based Training
CCs  Compliance Checklists
CEs  Critical Elements
CMA  Continuous Monitoring Approach
COLREG 1972 Convention on the International Regulations for Preventing Collisions at Sea, 1972, as amended
CSA  Comprehensive Systems Approach
DGCA  Directors General of Civil Aviation
DMA  Danish Maritime Authority
DMLC  Declaration of Maritime Labour Compliance
FAA  Federal Aviation Administration
FOIA  Freedom of Information Acts
FSI  Sub-Committee on Flag State Implementation
FSIX  Flight Safety Information Exchange
GBP  Great British Pounds
GISIS  Global Integrated Shipping Information System
IAB  Independent Appeal Board
IACS  International Association of Classification Societies
IAF  International Accreditation Forum
IASA  International Aviation Safety Assessment Programme
ICAO  International Civil Aviation Organization
IIMS  IMO Instruments Implementation and Management System
ILO  International Labour Organization
IMO  International Maritime Organization
ISO  International Organization for Standardization
JWG  Joint Working Group
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>KR</td>
<td>Korean Register of Shipping</td>
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<tr>
<td>KST</td>
<td>Korea Society of Ship Inspection and Technology</td>
</tr>
<tr>
<td>LEI</td>
<td>Lack of Effective Implementation</td>
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<tr>
<td>MARDEP</td>
<td>Marine Department</td>
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<tr>
<td>MARPOL 73/38</td>
<td>International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto, as amended</td>
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<tr>
<td>MARPOL PROT 1997</td>
<td>Protocol of 1997 to amend the International Convention for the Prevention of Pollution from Ships, as modified by the Protocol of 1978 relating thereto</td>
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<tr>
<td>ME</td>
<td>Ministry of Environment</td>
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<td>MEPC</td>
<td>Maritime Environment Protection Committee</td>
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<td>MLC</td>
<td>Maritime Labour Certificate</td>
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<td>MLC 2006</td>
<td>Maritime Labour Convention, 2006</td>
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<tr>
<td>MLTM</td>
<td>Ministry of Land, Transport and Maritime Affairs</td>
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<tr>
<td>MND</td>
<td>Ministry of National Defense</td>
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<tr>
<td>MOFAT</td>
<td>Ministry of Foreign and Trade</td>
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<tr>
<td>MOLEG</td>
<td>Ministry of Government Legislation</td>
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<tr>
<td>MOMAF</td>
<td>Ministry of Maritime Affairs and Fisheries</td>
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<tr>
<td>MOPAS</td>
<td>Ministry of Public Administration and Security</td>
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<tr>
<td>MoU</td>
<td>Memorandum of Understanding</td>
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<td>MPA</td>
<td>Maritime and Port Authority</td>
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<tr>
<td>MSA &amp; IOS</td>
<td>Member State Audit and Internal Oversight Section</td>
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<tr>
<td>MSB</td>
<td>Maritime Safety Bureau</td>
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<td>MSC</td>
<td>Maritime Safety Committee</td>
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<tr>
<td>NARMI</td>
<td>National Aviation Resources Management Information</td>
</tr>
<tr>
<td>NCMMC</td>
<td>National Continuous Monitoring Coordinator(s)</td>
</tr>
<tr>
<td>NPM</td>
<td>New Public Management</td>
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<tr>
<td>PANS</td>
<td>Procedures for Air Navigation Services</td>
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<tr>
<td>PQs</td>
<td>Audit Protocol Questionnaires</td>
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<td>QMS</td>
<td>Quality Management System</td>
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<td>QMSP</td>
<td>Safety Oversight Audit Quality Management Systems Procedures</td>
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<td>ROK</td>
<td>Republic of Korea</td>
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<td>RPQs</td>
<td>Representative Protocol Questions</td>
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<td>SAAQ</td>
<td>State Aviation Activity Questionnaire</td>
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SARPs Standards and Recommendation Practices
SCMA-SG Safety and Security Audit Branch Continuous Monitoring Approach Study Group
SMIS SARPs Management and Implementation System
SOA Safety Oversight Audit Section
SOLAS 1974 International Convention for the Safety of Life at Sea, 1974, as amended
SOP Safety Oversight Programme
TCC Technical Co-operation Committee
TOMS Total Oversight Management System
USOAP Universal Safety Oversight Audit Programme
VIMSAS Voluntary IMO Member State Audit Scheme
CHAPTER 1
INTRODUCTION

1.1 Study background

The International Maritime Organization (IMO) Council, at its eighty-eighth session in June 2002, considered and approved, in principle, a proposal by 19 Member States for the development of an IMO Model Audit Scheme, which drew on the model of the International Civil Aviation Organization (ICAO) Universal Safety Oversight Audit Programme (USOAP) (Barchue, 2005).

The Scheme was approved by the IMO Assembly, at its twenty-third session in November 2003 when it adopted resolution A.946(23) Voluntary IMO Member State Audit Scheme (VIMSAS). The resolution also mandated the further development of the scheme, to be implemented on a voluntary basis, and requested the IMO Council to develop, as a matter of high priority, procedures and other modalities for the implementation of the scheme. The 24th Assembly in November-December 2005 adopted resolution A.973(24), Code for the implementation of mandatory IMO instruments which provides the audit standard and resolution A.974(24), Framework and Procedures for the Voluntary IMO Member State Audit Scheme (IMO, 2005a & 2005b).

According to the IMO Council document C104/6, as at 18 March 2010, 55 Member States representing 33% of the total membership of the Organization had volunteered for the Audit. Of those, 36 Member States, one Associate Member and a dependent territory have been audited from all the 169 IMO Member States and 3 Associate
Members (IMO, 2010a, para.6 & 7). The IMO Member State Audit Scheme, set up on a voluntary basis among the IMO Member States, is expected to be made mandatory, under the plan which was agreed by the IMO Assembly, at its twenty-sixth session, which was held from 23 November to 02 December 2009.

According to the plan adopted by resolution A.1018(26), the IMO Member State Audit Scheme would be a mandatory scheme from 01 January 2015. The IMO Assembly, at its twenty-sixth session, also amended the existing Code for the implementation of mandatory IMO instruments, 2007, adopted by resolution A.996(25) by resolution A.1019(26) (IMO, 2007, 2009b and 2009c).

The purpose of the ICAO Universal Safety Oversight Audit Programme (USOAP) is to promote global aviation safety through auditing Contracting States of the ICAO periodically to determine States’ capability for safety oversight by assessing the effective implementation of the eight Critical Elements (CEs) of a safety oversight system and the status of States’ implementation of safety-relevant ICAO Standards and Recommended Practices (SARPs), associated procedures, guidance material and safety-related practices. The ICAO USOAP was launched on 1 January 1999, pursuant to the ICAO Assembly resolution A32-11, and on the basis of the recommendations made by the Directors General of Civil Aviation (DGCA) Conference on a Global Strategy for Safety Oversight held in 1997 (ICAO, n.d.b).


2 CE-1. Primary aviation legislation
CE-2. Specific operating regulations
CE-3. State civil aviation system and safety oversight functions
CE-4. Technical personnel qualification and training
CE-5. Technical guidance, tools and the provision of safety-critical information
CE-6. Licensing, certification, authorization and approval obligations
CE-7. Surveillance obligations
CE-8. Resolution of safety concerns
The Evolution of the ICAO assessment programme can be summarized as from voluntary to mandatory and from an Annex-by-Annex approach to comprehensive, transparent and continuous monitoring approach evolution (Rallo, 2008, July, pp.11-12).

Comparing to the ICAO’s USOAP, it can be said that the IMO is in the second stage of the mandatory audit scheme and the author is of opinion that the lessons learnt from the ICAO would be a one step further approach when the IMO is preparing the mandatory audit scheme. However, lessons would be limited because of the different characteristics between the two Organizations under the umbrella of the United Nations. On the other hand, the author is of opinion that IMO can learn on any lessons from the ICAO in many ways because it is the forerunner in the similar safety audit scheme. To this end, this dissertation will focus on the experience of the Republic of Korea (ROK) which finished the ICAO USOAP in 2008 and the IMO VIMSAS in 2007.

According to the report from the Ministry of Land, Transport and Maritime Affairs (MLTM) of the Republic of Korea, ROK finished its ICAO safety audit in May 2008 resulting in a safety standard compliance rating of 98.89 percent. The Republic of Korea tops the list of 108 countries that have so far undergone the audit. In the first evaluation conducted by ICAO in 2000, ROK ranked 53rd with a safety standard compliance rating of 79.79 percent among its 162 members (MLTM, 2008b). From the context of score obtained, ROK has experienced remarkable improvement. These best results caused by the continuous efforts of ROK with useful audit preparation and a continuous monitoring programme including SARPs (Standard and Recommended Practices) Management & Implementation System (SMIS) and National Aviation Resources Management Information (NARMI) developed by the Republic of Korea.
In April 2007, ROK finished VIMSAS which was based on resolution A.973(24), Code for the implementation of mandatory IMO instruments (hereinafter referred to as the Code) and resolution A.974(24), Framework and Procedures for the Voluntary IMO Member State Audit Scheme.

In accordance with paragraph 7 of the Code, when new or amended IMO mandatory instruments enter into force for a flag State, the State must implement and enforce the instrument through appropriate national legislation process. In the case of ROK, it accommodates the mandatory IMO instruments of the Code as Ship Safety Act, Marine Environment Protection and Management Act, Maritime Traffic Safety Act, Ship Tonnage Measurement Act and Ship Crew Act, and its subordinate enforcement ordinances and regulations.

However, the problem is that the Korean national legislation system is too complicated and there is no integrated management system to accommodate the amendments to the international conventions, frequently amended (MOMAF, 2007). For instance, the Ship Safety Act is the most important national legislation for maritime safety. This kind of high level of Acts should be submitted to the Parliament and the legislation is subject to the legislative calendar of the Parliament that may induce some delays. As an alternative, the Ministry of Land, Transport and Maritime Affairs (MLTM) has subsidiary enforcement decrees, but it is very difficult to find exactly where the SOLAS convention in its entirety was transposed into national legislation.

As a counter-measure, MLTM has decided to carry out a complete revision or review of the Acts and their subsidiary legislation to fully transpose the authentic convention text into national legislation. To help this, MLTM has developed a programme, called IMO instruments Implementation and Management System (IIMS) which shows a direct linkage between the international instruments and national legislation.
1.2 Objectives

This dissertation aims to achieve the following:

(a) Describe the background and considerations of the Mandatory IMO Member State Audit Scheme;
(b) Review of the Consolidated Audit Summary Report (CASR) of the Voluntary IMO Member State Audit Scheme;
(c) Analyse audit findings according to the Code for the implementation of mandatory IMO Instruments;
(d) Compare the IMO Member State Audit Scheme with the ICAO Universal Safety Oversight Audit Programme (USOAP);
(e) Identify lessons to be learnt from the ICAO USOAP;
(f) Examine the case study of the Republic of Korea which carried out IMO VIMSAS and ICAO USOAP; and
(g) Make recommendations for the effective implementation of the Mandatory IMO Member State Audit Scheme.

1.3 Scope of the study

In 2005, IMO, at its 24th Assembly, adopted resolution A.973(24), Code for the implementation of mandatory IMO instruments (the Code) which provides the audit standard and resolution A.974(24), Framework and Procedures for the Voluntary IMO Member State Audit Scheme and (IMO, 2005a & 2005b). The Code, which is composed of four parts: Common Areas, Flag States, Coastal States and Port States, has been amended by resolution A.996(25) and resolution A.1019(26) being the latest. Among these four parts, this dissertation mainly focuses on Part 1, Common Areas, especially on the initial actions (legislation) and strategy because more than 44 percent of the audit findings are related to this initial action followed by strategy (24%) (IMO, 2010c, para.10).
1.4 Research Methodology

The research methodology is mixed using quantitative and qualitative analysis by collating the Consolidated Audit Summary Reports which were issued after finishing the Voluntary IMO Member State Audits (see Table 3). The quantitative analysis mainly focuses on the non-conformities and observations of all the audit reports which have been released by IMO Circular Letters. On the other hand, the qualitative analysis focuses on general problems which Member States encountered during the audit and possible solutions against the problems with the case study of some of the Member States.

This dissertation also benchmarks the ICAO Universal Safety Oversight Audit Programme. The IMO Member State Audit Scheme is rooted from the ICAO USOAP. By comparing the two schemes, this dissertation identifies the items to be improved within the IMO Member State Audit Scheme and suggests recommendations for the effective implementation of the Mandatory IMO Member State Audit Scheme from the effective initial actions perspective. The information resources on the existing Voluntary IMO Member State Audit Scheme (VISMAS) are mainly supported by the documents offered by the Maritime Knowledge Centre and IMO Docs web site of the IMO.

The research work of the dissertation is composed of six chapters. The preliminary explanatory background information, objectives, scope of the study and research methodology are introduced in the first chapter. Chapter two describes background and development of the VIMSAS and analyses advantages and disadvantages of the mandatory IMO Member State Audit Scheme. It also reviews the Consolidated Audit Summary Reports and critically analyses audit findings according to the Code for the Implementation of Mandatory IMO Instruments. In addition, it evaluates several audit reports from some of the IMO Member States. Chapter three examines the evolution of the ICAO USOAP and strong point of the
USAOP Continuous Monitoring Approach. It also analyses USOAP audit results by Critical Elements and regions. Chapter four compares the ICAO USOAP and the IMO VIMSAS from the context of benchmarking advanced systems or lessons from the ICAO USOAP under the expected mandatory IMO audit scheme. It reviews audit principles, scopes, audit tools (e.g. checklists), certification of ISO 9001 Quality Management System, audit appeal procedure and future developments of the audit. Chapter five examines the case of the Republic of Korea which has already carried out ICAO USOAP in 2008 and IMO VIMSAS in 2007. It also describes the useful ICAO audit preparation and continuous monitoring programmes which were developed by the Republic of Korea such as SARPs (Standard and Recommended Practices) Management & Implementation System (SMIS) and National Aviation Resources Management Information (NARMI), but also IMO instruments Implementation and management system (IIMS) which shows a direct linkage between international instruments and national legislation. Lastly, the concluding Chapter six provides conclusion and recommendations for the effective implementation of the mandatory IMO Member State Audit Scheme.
CHAPTER 2
IMO MEMBER STATE AUDIT SCHEME

2.1 Introduction

This Chapter describes the background and development of the VIMSAS and analyses the advantages and disadvantages of the mandatory IMO Member State Audit Scheme. It also reviews the Consolidated Audit Summary Reports and critically analyses the number of findings according to the Code for the Implementation of Mandatory IMO Instruments. In addition, it evaluates several audit reports from some of the IMO Member States.

2.2 Voluntary IMO Member State Audit Scheme

2.2.1 Background and development of the VIMSAS

The International Maritime Organization (IMO) Council, at its eighty-eighth session in June 2002, considered a proposal contained in document C 88/13/2, which was submitted by nineteen Member States of the Organization, for the development of an IMO Model Audit Scheme to be implemented on a voluntary basis. The Council, at its eighty-eighth session, approved, in principle, the concept

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3 C 88/13/2 was issued as C 88/13/1/Add.1 on 15 May 2002.
4 Australia, Canada, Cyprus, Denmark, Finland, Germany, Hong Kong China, Indonesia, Italy, Japan, the Netherlands, Norway, the Republic of Korea, Marshall Islands, Singapore, Spain, Sweden, the United Kingdom and the United States (source from the IMO Docs web site and alphabetically ordered).
for such a Scheme. The Scheme inspired from the work that has already been done at the International Civil Aviation Organization (ICAO). In September 1995, ICAO endorsed the establishment of the ICAO Safety Oversight Programme (SOP) as ICAO resolution A29-13. The programme became operational in March 1996, incorporating safety oversight assessments of Member States by ICAO initially on a voluntary basis, with the objective of offering follow-up advice and technical assistance as necessary to enable States to implement ICAO standards (IMO, 2002).

The proposal originated from the fact that substandard vessels are still being operated in the international seaborne trade. This is not because international instruments are inadequate, but because international maritime safety and environmental protection rules and regulations are not always persistently implemented by Member States of the Organization or are not effectively enforced, in cases where they are properly implemented. The primary responsibility for maritime safety and protection of the environment rests with ship owners and operators. Nevertheless, an effective international maritime safety and environmental protection system also relies upon Member States to implement and enforce the instruments (IMO, 2002).

As the Council, at its eighty-ninth session in November 2002, requested the establishment of a Joint Working Group (JWG), composed of the Maritime Safety Committee (MSC), the Marine Environment Protection Committee (MEPC) and the Technical Co-operation Committee (TCC), to develop the documents relating to the IMO Member State Audit Scheme. The JWG was convened during the MSC, at its seventy-seventh session in June 2003, and released its outcome report of the Joint MSC/MEPC/TCC Working Group (MSC 77/WP.14) including the objectives, strategy, timeframe and the documents for the Audit Scheme and the Code for the Implementation of Mandatory IMO Instruments (IMO, 2003b, para.7).
The Member State Audit Scheme was approved by the IMO Assembly, at its twenty-third session in November 2003 when it adopted resolution A.946(23) Voluntary IMO Member State Audit Scheme (VIMSAS). The resolution also mandated the further development of the scheme, to be implemented on a voluntary basis, and requested the IMO Council to develop, as a matter of high priority, procedures and other modalities for the implementation of the scheme. The IMO Assembly, at its twenty-fourth session in November-December 2005, adopted resolution A.973(24), Code for the Implementation of Mandatory IMO Instruments which provides the audit standard and resolution A.974(24), Framework and Procedures for the Voluntary IMO Member State Audit Scheme (IMO, 2005a & 2005b).

The scope of the VIMSAS is based on the ten mandatory IMO instruments, which are; SOLAS 74, SOLAS PROT 78, SOLAS PROT 88, MARPOL 73/78, MARPOL PROT 97, STCW 78, LL 66, LL PROT 88, TONNAGE 69 and COLREG 72. Table 1 shows the revision history of the Code for the Implementation of Mandatory IMO Instruments.

**Table 1** Revision history of the Code for the Implementation of Mandatory IMO Instruments, as at 02 August 2010

<table>
<thead>
<tr>
<th>Document number</th>
<th>Document Name</th>
<th>Adoption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution A.740(18)</td>
<td>Interim Guidelines to assist flag States</td>
<td>04/11/1993</td>
</tr>
<tr>
<td>Resolution A.973(24)</td>
<td>Code for the Implementation of Mandatory IMO Instruments</td>
<td>01/12/2005</td>
</tr>
<tr>
<td>Resolution A.1019(26)</td>
<td>Amendments to the Code for the Implementation of Mandatory IMO Instruments, 2007</td>
<td>02/12/2009</td>
</tr>
</tbody>
</table>
2.2.2 Initiative to encourage flag State performance

Every State shall effectively exercise its jurisdiction and control in administrative, technical and social matters over ships flying its flag in accordance with article 94 of UN Convention on the Law of the Sea (UNCLOS, 1982). This means that the flag State of a ship has duties vis-à-vis its registered ships and the duties include taking measures to ensure the safety of a ship flying the flag of the State with regard to, inter alia, construction, equipment and seaworthiness of the ship and survey of the ship by qualified surveyors of ships (Franson, 2009).

In accordance with the provision of regulation I/6 of SOLAS 74, regulation 4 of Annex I and regulation 10 of Annex II of MARPOL 73/78, article 13 of Load Lines 66 and article 6 of Tonnage 69, flag States may authorize and recognize organizations to act on their behalf in surveys and certification and measurement of tonnage as required by the conventions. This does not mean, however, that the Administration can delegate its responsibility to the recognized organization (Mukherjee, 2000).

From the perspective of responsibility, shipping companies and operators are primary responsible for the safe operation and environmental protection from

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5 It contains amendments to the Code of the Implementation of Mandatory IMO Instruments, 2007, adopted by resolution A.1019(26). With a view to reducing the volume of paper, the MSC and MEPC agreed that, every uneven session of the Assembly, whole of the revised Code for the Implementation of Mandatory IMO Instruments incorporating all amendments is adopted in a consolidated version but, every even session of the Assembly, only amendments to the Code are adopted with the proviso that a consolidated version of the Code is prepared by the Secretariat and posted on IMO web site.

6 The date does not mean adoption date, but posting date on the IMO Docs web site by the Secretariat.
their ships because they are the first entity. However, the regulation of shipping by Governments, in their capacity as flag State, is vital to ensure safe and pollution-free operations (Mansell, 2009, pp.221). To this end, the IMO has largely addressed the issues of flag State implementation and enforcement of the IMO instruments, for example **resolution A.739(18), resolution A.789(19) and MSC/Circ.710-MEPC/Circ.307**7, through the work of the Sub-Committee on Flag State Implementation (FSI).

The Voluntary IMO Member State Audit Scheme aims to promote maritime safety and environmental protection by assessing how effectively member States implement and enforce relevant standards of the IMO Instruments and by providing them with feedback and advice on their current performance (United Nations, 2004, para.211). Furthermore, Barchue (2005, pp.7) identified that the IMO Member State Audit Scheme will promote flag State performance through the following:

- full reporting to IMO on the implementation treaty obligations;
- better investigations of casualties and port state control detention;
- more rigorous delegation of authority to recognized organizations;
- better trained and properly certificated seafarers;
- better communication between flag and port States;
- acceptance of the need to improve performance;
- closer monitoring and accountability by companies (shipowners); and
- greater awareness of the need to establish measures to protect coastal and marine resources.

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7 resolution A.739(18), Guidelines for the authorization of organizations acting on behalf of the Administration; resolution A.789(19), Specifications on the survey and certification functions of recognized organizations acting on behalf of the Administration; MSC/Circ.710-MEPC/Circ.307, Model agreement for the authorization of recognized organizations acting on behalf of the Administration.
Through the implementation of the IMO Member State Audit Scheme, the author is of opinion that the Member States themselves not only identify their own strengths but also learn their weaknesses.

### 2.2.3 Audit Status of the Member States

According to the IMO Council document **C104/6**, as at 18 March 2010, 55 Member States representing 33% of the total membership of the Organization had volunteered for the Audit. The number of States volunteering for audits represents **one-third** of IMO Member States. Of those, 36 Member States, one Associate Member and a dependent territory have been audited from all the 169 IMO Member States and 3 Associate Members (IMO, 2010a, para.6 & 7).

### 2.3 Mandatory IMO Member State Audit Scheme

#### 2.3.1 Progress to make the Audit Mandatory

The IMO Member State Audit Scheme, set up on a voluntary basis among the IMO Member States, is expected to be made mandatory, under the plan which was agreed by the latest IMO Assembly, at its twenty-sixth session, which was held from 23 November to 02 December 2009. According to the plan adopted by **resolution A.1018(26)**, the IMO Member State Audit Scheme will be phased in as an institutionalised, mandatory scheme from **01 January 2015**, through the introduction of appropriate requirements in the relevant mandatory IMO instruments. Amendments to these instruments will be adopted in 2013, for entry into force on **01 January 2015** and Member States will be audited every seventh year (Matthews, 2009).
In relation to the time frame and schedule of activities for the institutionalization of the Scheme, the IMO Council, at its 104th session in June 2010 considered establishing a Joint Working Group (JWG), comprising MSC, MEPC, TCC and FAL Committee members, to review the existing Framework and Procedures for the Scheme, **resolution A.974(24)**, in the context of making it mandatory and the Council reverted to this matter at the Council 105th session scheduled in November 2010 (IMO, 2010a).

Thus, the MSC, at its eighty-seventh session in May 2010, instructed FSI 18 to consider how to make the Code for implementation of mandatory IMO instruments and auditing mandatory, within the ten mandatory instruments currently covered by the Code and the Audit Scheme, and any possible revision of the Code, as a result; and report to MSC 88 to be held in December 2010 for further consideration by the MSC in connection with the timeframe and schedule of activities to institutionalize the IMO Member State Audit Scheme, annexed to resolution A.1018(26) (IMO, 2010d, para.24). The FSI, at its eighteenth session in July 2010, as instructed by MSC 87, considered making the Code mandatory and agreed to establish a correspondence group on the Code for the Implementation of Mandatory IMO Instruments and working/drafting group at FSI 19 to make the Code for implementation of IMO mandatory instruments and the auditing mandatory. (IMO, 2010e, para.17.9 & 17.10)

As a result, a revised resolution on the Framework and Procedures for the Scheme would be adopted by the IMO Assembly, at its twenty-eighth session in November 2013, while preparatory work for the commencement of an institutionalized audit scheme would be carried out by Council, Committees and Secretariat during 2014. **Table 2** shows the detailed time frame and schedule.
Table 2  Time Frame and Schedule of Activities to institutionalize the IMO Member State Audit Scheme

<table>
<thead>
<tr>
<th>Meeting</th>
<th>Timing</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSC and MEPC</td>
<td>First half of 2010</td>
<td>Consider how to make the Code for the implementation of mandatory IMO instruments mandatory, including provisions for auditing</td>
</tr>
<tr>
<td>MSC and MEPC</td>
<td>Second half of 2010</td>
<td>Identify mandatory IMO instruments through which the Code and auditing should be made mandatory</td>
</tr>
<tr>
<td>Council</td>
<td>End 2010</td>
<td>Establish Joint Working Group (JWG) of MSC, MEPC, FAL and TCC to review the Framework and Procedures for the Scheme</td>
</tr>
<tr>
<td>MSC and MEPC</td>
<td>2011 and 2012</td>
<td>Develop provisions to make the Code mandatory through the identified mandatory IMO instruments</td>
</tr>
<tr>
<td>Council</td>
<td>Second half of 2011</td>
<td>Approve a progress report for submission to A 27</td>
</tr>
<tr>
<td>Assembly 27</td>
<td>November 2011</td>
<td>Receive a progress report and decide as appropriate</td>
</tr>
<tr>
<td>JWG</td>
<td>2011 and 2012</td>
<td>Review the Framework and Procedures for the Scheme</td>
</tr>
<tr>
<td>JWG</td>
<td>2013</td>
<td>Finalize the Framework and Procedures, taking into account the finished product of the Code and the related amendments to mandatory IMO instruments</td>
</tr>
<tr>
<td>Council</td>
<td>First half of 2013</td>
<td>Approve the Framework and Procedures for the Scheme, for submission to A 28 for adoption</td>
</tr>
<tr>
<td>Committees</td>
<td>2013</td>
<td>Adopt amendments to the mandatory IMO instruments concerned for entry into force on 1 January 2015</td>
</tr>
<tr>
<td>Assembly 28</td>
<td>November 2013</td>
<td>Adopt resolution on the Framework and Procedures for the Scheme and amendments to those mandatory instruments under the purview of the Assembly</td>
</tr>
<tr>
<td>Council, Committees and Secretariat</td>
<td>2014</td>
<td>Preparatory work for the commencement of an institutionalized audit scheme</td>
</tr>
</tbody>
</table>

(Source: Annex of the IMO resolution A.1018(26), adopted on 25 November 2009)
2.3.2 Advantages and disadvantages of the Mandatory Audit Scheme

Barchue\textsuperscript{8} claimed that there are several \textbf{benefits} in moving from a Voluntary Scheme to the Mandatory Audit in an interview with \textit{Lloyd’s List}, dated 04 December 2009 (Mattews, 2009):

“It enables all States to benefit from the Audit Scheme. The diversity of State structures, ability and specific maritime interests can inform the regulatory framework for the future. The administrative and organisational aspects of the scheme do not rely exclusively on the decision of individual Member States, but become a collective pool of resources. The concept of a quality-management system is introduced globally in the implementation and enforcement of state obligations and responsibilities relating to maritime transport.”

It is true that there are \textbf{positive} functions because generic lessons learnt from audits could be provided to all the Member States so that the benefits could be widely shared. So far, all 36 Member States Audit results show findings\textsuperscript{9} to be improved in many ways and lessons to be learned and 5 leading Member States of the 36 States have submitted their experience regarding the IMO Member States Audits under the voluntary regime. For example, Chile (A 25/8/3, 26 September 2007), The Netherlands (C 102/6/2, 19 May 2009), Denmark (C 102/6/3, 28 May 2009), Argentina (C/ES.25/6/1, 23 September 2009) and Japan (A 26/9/2, 22 October 2009) have submitted their experience. The overall government strategy and Certification of ISO 9001:2008 Quality Management System, for instance, could be a good tip to audit preparing Member States. However, when it comes to the mandatory regime, sharing of the experience will become further broadened and beneficial to the remaining Member States.

\textsuperscript{8} L. R. Barche, Head of Member State Audit and Internal Oversight Section in the Office of the Secretary-General

\textsuperscript{9} Findings defined as an observation or a non-conformity in accordance para. 3.7 of the Procedure for the Voluntary IMO Member State Audit Scheme (para.3.7 of Part II of resolution A.974(24)).
Considering the purpose of the audit to enhance global maritime safety and protection of the marine environment, the overall implementation of the Member States Audit is very important. Since only 55 Member States representing 33 percent of the total membership of the Organization, as at 18 March 2010, had volunteered for the audit. This counts for about 80 to 90 percent of the world fleet. (Franson, 2009). However, this only counts for about one-third of the Member States and shows the limitation under this voluntary-based audit scheme. Bearing in mind that the audit is for the Member States and not for the world fleet, the mandatory application of the audit is the only solution to audit all the Member States and it will improve the system of less qualified Member States. Through the mandatory audit scheme, the Member States themselves would receive valuable technical assistance and feedback from the Organization.

On the contrary, the cost for the implementation of the audit could be a burden to the Member States or the Organization. Furthermore, the continuous training of qualified auditors could be a burden to the Organization. According to the IMO Council Document, C 104/6 dated 18 March 2010, the average cost per audit remains at around GBP 11,000 (IMO, 2010a, para.7). Possible solutions can be sought from voluntary donations from advanced Member States, for example, the United Kingdom has offered a donation of GBP 55,000 in 2006 for the Organization's Technical Co-operation activities, designed to help prepare developing countries for the Audit Scheme. This contribution was used to help support the regional training courses for auditors scheduled in 200610. However, this kind of donation is not continuous. Therefore, the author is of opinion that the audit expenditure is to be covered by the Member States themselves in case of a developed country and the IMO Technical Co-operation Programme should sponsor developing countries.

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2.4 Analysis of the IMO Member State Audit results

2.4.1 Review of the Consolidated Audit Summary Reports

Pursuant to paragraph 7.4.2 of the Procedures for the Voluntary IMO Member State Audit Scheme (Part II of resolution A.974(24)), the audit team leader should prepare an Audit Summary Report (ASR) containing at least four items; audit background, maritime activities in the Member State, summary of findings and comments based on the ASR, the Secretariat should prepare a Consolidated Audit Summary Report (CASR) periodically (IMO, 2005b).

Accordingly, IMO issued three CASRs having 26 audit results. The IMO issued the first CASR as an Assembly document, A 25/8/2, on 26 September 2007 which contained 8 ASRs conducted in 2006 and 2007. To be in line, the Organization issued the second and third CASR respectively as document C 101/6/2 containing 9 audit results conducted in 2007 and A 26/9/1 containing a further 9 audit results conducted in 2008 and 2009. Categories reflected in a CASR expanded to the areas of positive development and areas for further development from the second CASR and root causes included from the third CASR pursuant to paragraph 4.1.6 of the Annex 7 of FSI 1720, dated 24 April 2009 (IMO, 2009a). Table 3 shows each CASR issued by the IMO Secretariat.

Table 3 Consolidated Audit Summary Reports, as at 07 September 2009

<table>
<thead>
<tr>
<th>CASR</th>
<th>Document No. and Date</th>
<th>ASRs included</th>
<th>Reflected Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st CASR</td>
<td>A 25/8/2 (26/09/2007)</td>
<td>8</td>
<td>4 Categories; General, flag State activities, port State activities and coastal State activities</td>
</tr>
<tr>
<td>2nd CASR</td>
<td>C 101/6/2 (02/09/2008)</td>
<td>9</td>
<td>6 Categories; General, flag State activities, port State activities, coastal</td>
</tr>
</tbody>
</table>
2.4.2 Analysis of the number of findings according to the Code for the Implementation of Mandatory IMO Instruments from the perspective of Part 1 of the Code – Common Areas

The Sub-Committee on Flag State Implementation, at its seventeenth session in April 2009, developed the guidance for the Secretariat on a preliminary study on the ways to develop a consistent methodology for analysis of the findings, best practices and effectiveness of implementation, as set out in annex 7 to document FSI 17/20 (IMO, 2010b, para.5). The Secretariat issued a preliminary study on the three CASRs (FSI 18/INF.7) having 26 audit results, containing 187 findings composed of 61 non-conformities, 126 observations and 25 root causes (IMO, 2010c).

The review was based on the Code for the Implementation of Mandatory IMO Instruments\(^\text{11}\) and the Code is composed of four Parts; Part 1 – Common Areas, Part 2 – Flag States, Part 3 – Coastal States and Part 4 – Port States.

\(^{11}\) See Table 1 for the revision history of the Code.
Figure 1 shows an analysis of the audit results in paragraphs of each Part of the Code. Initial actions, referenced as paragraph 7 of Part 1 – Common Areas, was the one most commonly referenced among 4 Parts in 26 Audit Summary Reports and strategy, referenced as paragraph 3, was the second one ranked within Part 1. This is the reason why this dissertation focuses on Part 1 – Common Areas, and especially on the initial actions (legislation) and strategy.

However, the limitation is that the number of findings itself is ranked as flag States, common areas, coastal States and port States orders. In addition, what if somebody was to raise the problem whether only 26 audit results can represent the trend of the whole 169 Member States? In fact, 26 audits count for just 15.4 percent of the Member States. However, the author is of opinion that even if this is not 100 percent, the 26 among the 36 audits which have already been carried out are meaningful because this is still more than 70%.
Figure 2 Analysis of audit results under Part 1 of the Code (Source: Figure 7 of the IMO document, FSI 18/INF.7)

Figure 2 depicts a more detailed view on findings which includes non-conformities and observations under Part 1 of the Code – Common Areas. It shows that more than 44 percent of the audit findings are related to the initial actions (legislation) followed by the strategy of 24 percent and communication of information of 20 percent (IMO, 2010c, para.10).

One of the main difficulties in the initial actions (legislation) is related closely to the transposition of the newly adopted IMO documents and/or amendments to the existing IMO Instruments, such as SOLAS 74, into national legislation. Another common problem encountered with Member States is the late promulgation of the amendments which takes effect by tacit acceptance due to the apparent unavailability of qualified personnel, lengthy time to promulgate the new/amended IMO mandatory instruments and the publishing of the national law in official journals (IMO, 2010c, para.11).
A similar problem was also identified during the audit of the Republic of Korea, held from 9 to 16 April 2007. The audit revealed that some of the text of SOLAS 74 had not been transposed as a single entity into Korean legislation, but appeared to be scattered throughout many lower level legislation articles or directives. This has consequential problems with regard to the implementation, enforcement and promulgation of amendments to the SOLAS Convention. As a counter-measure, the Ministry of Land, Transport and Maritime Affairs (MLTM) of the ROK decided to carry out a complete revision or review of the Korean Ship Safety Act and its subsidiary legislation to fully transpose the authentic convention text into national legislation. To help this, MLTM developed a programme, called IMO instruments Implementation and management system (IIMS) which shows a direct linkage between international instruments and national legislation. I will come back to this again in Chapter 5 in the case study of the ROK.

Another commonly identified finding is related to the strategy. The main concern is related to developing a strategy generally evidenced by a lack of documentation setting out the strategy. Further, the audits reveal that several States have difficulties on the evaluation of general organizational capacity among ministries (IMO, 2010c, para.12). I will come back also to this again in Chapter 5 in the case study of the ROK.

In the field of communication of information, which is regulated in paragraph 9 under Part 1 of the Code, the main concerns are related to the communication of the texts of the majority of laws, decrees, orders and regulations and to providing IMO with all the reports as required by the various mandatory IMO instruments (IMO, 2010c, para.13).
2.5. Experience and lessons learnt from Member States

2.5.1 Denmark

Denmark tremendously contributed to develop the Code and was the first IMO Member State to volunteer the audit. The audit was conducted from 18 to 25 September 2006 and Danish experience relating to the Voluntary IMO Member State Audit Scheme was submitted as IMO document, C 102/6/3 on 28 May 2009.

According to the document, C 102/6/3, Denmark carried out an internal audit, composed of external consultants and auditors from the Danish Maritime Authority, across the responsible Danish entities one month earlier in August 2006. It was very helpful for Denmark to prepare the audit and several observations identified during the process, for instance in relation to strategies, implementation and the enforcement section. The audit revealed that, although Denmark, in general, fulfilled its responsibilities relating to relevant IMO regulations, there was a need for strengthening coordination between various Danish Government authorities (IMO, 2009b). The author is of opinion that carrying out an internal audit is a good approach to prepare the VIMSAS not only for the pre-audit but also for maintaining a contiguous quality system. In addition, consideration of merging government authorities having similar functions may be taken because scattered structural organization could raise inappropriate administrative work.

2.5.2 Japan

Japan is one of the strong advocates of the VIMSAS since the Ministerial Conference on Transport was held in Tokyo in January 2002. The audit was conducted from 19 to 26 February 2007 and Japan’s experience regarding the
Voluntary IMO Member State Audit Scheme was submitted as IMO document, A 26/9/2 on 22 October 2009.

According to the document, A 26/9/2, Japan established an internal project team to prepare the VIMSAS and they twice conducted internal audits prior to the audit in 2006. One of the lessons to be learnt from Japan is that they decided to introduce the **ISO 9001: Quality Management System (QMS)** with certification from an external organization as a part of the preparation for the IMO audit and actually the system contributed to enhance the implementation of the Code. The QMS covers the core activities of the central government “Maritime Bureau” and the local branches, namely ship inspection, tonnage measurement and registration, port State control, and the development of related standards and regulations. During the audit, an observation related to monitoring to the recognized organization was identified and as a corrective action, Japan established a broader monitoring arrangement over the RO activities. The author is of opinion that **ISO 9001: QMS certification** will improve the system of the Member States because it works within the cycle of “plan, do, check and act” and also requires internal auditing and continuous monitoring.
CHAPTER 3
ICAO UNIVERSAL SAFETY OVERSIGHT AUDIT PROGRAMME

3.1 Introduction

This Chapter aims to review the evolution of the ICAO safety oversight audit and to analyse the USOAP audit results by CEs and regions. The Evolution of the ICAO assessment programme can be categorized as below:

- Mandatory audit programme with Annex-by-Annex approach (1999-2004);
- Mandatory audit programme with Comprehensive Systems Approach emphasizing greater transparency public information (2005-2010);
- Transitional period from Comprehensive Systems Approach to Continuous Monitoring Approach (2011-2012); and
- Mandatory audit programme with Continuous Monitoring Approach (2013-).

3.2 Background and aims of the ICAO Universal Safety Oversight Audit Programme

Growth in air traffic has historically been greater than growth in the economy and the international civil aviation industry had experienced exceptional growth in the early 1990s caused by trade developments and tourism expansion (ICAO, 1999). However, as the air traffic grew dramatically, world aviation also experienced a number of serious accidents. Figure 3 depicts the high death tolls in the late 1980s
and early 1990s. These air accident fatalities triggered a high alert within the international civil aviation industry highlighting the fact that the international air regulatory standards were not being properly implemented and enforced by the Contracting States to the Convention on International Civil Aviation, which is also known as the Chicago Convention (ICAO, n.d.b).

![Figure 3 Air Accident Fatalities (1918-2009)](Source: Aircraft Crashes Record Office, 2010)

Article 37 of the Convention on International Civil Aviation stipulates that each Contracting State should undertake collaboration in securing the highest practicable degree of uniformity in regulations, standards, procedures and organization in relation to aircraft, personnel, airways and auxiliary services in all matters in which such uniformity facilitates and improves air navigation. Furthermore, article 38 of the Convention states that non-compliance with these obligations shall be notified to

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12 The original version was signed at Chicago on 07 December 1944 and the latest version of the Convention on International Civil Aviation (ICAO Doc 7300/9, 9th Ed in 2006.) is available from [http://www.icao.int/icaonet/dcs/7300_cons.pdf](http://www.icao.int/icaonet/dcs/7300_cons.pdf)
ICAO immediately (ICAO, 2006a). However, it was true that there was no means to tackle non-compliance with the requirements. As a counter measure, some of the major stakeholders such as the United States started to take unilateral steps, such as the enforcement of the International Aviation Safety Assessment Programme, in order to supervise and determine the safety performance of its foreign civil aviation partners. As a consequence, a black list was made for banning sub-standard airlines from entering US airspace and airports and that kind of actions provided grounds for ICAO’s Assembly, at its twenty-ninth session held in 1992, to establish a voluntary Safety Oversight Programme (SOP) to be launched in 1995 as document A29-13. This voluntary based ICAO Safety Oversight Programme subsequently became the mandatory ICAO Universal Safety Oversight Audit Programme (USOAP) in 1998 (IMO, 2003a).

The purpose of the ICAO USOAP is to promote global aviation safety through auditing Contracting States of the ICAO periodically to determine States’ capability for safety oversight by assessing the effective implementation of the eight Critical Elements (CEs) of a safety oversight system and the status of States’ implementation of safety-relevant ICAO Standards and Recommended Practices (SARPs), associated procedures, guidance material and safety-related practices. The CEs are essentially the safety defence tools of a State’s safety oversight system required for the effective implementation of safety-related international standards and associated procedures. Each ICAO Contracting State, in its effort to establish and implement an effective safety oversight system that reflects the shared responsibility of the State and the aviation community, should observe all eight CEs. The eight CEs encompass the whole spectrum of civil aviation activities, including personnel licensing, aircraft operations, airworthiness, air navigation services, aerodromes and aircraft accident and incident investigation. The level of effective implementation of the CEs is an indication of a State's capability for safety oversight. ICAO has defined the following eight CEs of a State’s safety oversight system in the ICAO Doc 9734, Part A (ICAO, 2006b, pp.3-1 & 3-2):
• CE-1. Primary aviation legislation;
• CE-2. Specific operating regulations;
• CE-3. Specific operating regulations;
• CE-4. Technical personnel qualifications and training;
• CE-5. Technical guidance, tools and provision of safety-critical information;
• CE-6. Licensing, certification, authorization and/or approval obligations;
• CE-7. Surveillance obligations; and

3.3 Annex-by-Annex Approach

3.3.1 Voluntary Assessment Programme

The first ICAO Safety Oversight Programme (SOP) was launched on a voluntary basis in 1995 just like the IMO launched its Member State Audit Scheme on a voluntary basis in 2005. The USOAP originated from resolution A29-13, named Improvement of Safety Oversight, which was adopted in 1992 by the ICAO Assembly twenty-ninth session. This resolution noted the concern that some of ICAO's Contracting States might experience difficulties in carrying out their safety oversight obligations, reaffirmed that individual State’s obligation for safety oversight is one of the tenets of the Convention on International Civil Aviation, and called on States to provide financial and technical resources to enable other States to carry out their responsibilities for the safety oversight of air carrier operations (ICAO, n.d.c). Under this voluntary Assessment Programme, 88 Contracting States requested SOP and 67 States were assessed and the scope of the Programme was initially limited to Annex 1 — Personnel Licensing, Annex 6 — Operation of Aircraft and Annex 8 — Airworthiness of Aircraft of the Chicago Convention (ICAO, n.d.b).
The Directors General of Civil Aviation (DGCA) Conference was firstly held in Montreal, Canada, from 10 to 12 November 1997. At this Conference, participants reaffirmed the need for safety oversight to examine the improvements which could be made to the ICAO Safety Oversight Programme and formulated a global strategy for safety oversight based on the practical implementation by each State in accordance with the ICAO regulations.

3.3.2 Mandatory Audit Programme

Pursuant to the Assembly resolution A32-11 in September 1998 to endorse an enhanced programme and provide necessary findings, the ICAO USOAP which comprised of regular, mandatory, systematic and harmonized safety audits was launched on 01 January 1999. The Programme superseded the voluntary safety oversight assessment programme established in 1995. It includes a systematic reporting and monitoring process with standard auditing procedures, for example Chapter 5 of the Safety Oversight Audit Manual (ICAO Doc 9735), on the implementation of safety related Standards and Recommended Practices (SARPs), associated procedures and practices. It called for the application of the Programme to all Contracting States together with the implementation of greater transparency and increased disclosure in the release of audit results (ICAO, 2006d, para.2.4.1). To be in line, ICAO posts information related to the public in the Flight Safety Information Exchange (FSIX) website.

The USOAP was managed and run by the Safety Oversight Audit (SOA) section in the Air Navigational Bureau (ANB). One interested item is that SOA section has been certified under ISO Standard 9001: Quality Management Systems since 16 October 2002. Under this mandatory audit programme, 181 Contracting States, 2 special administrative regions of China and 3 State territories have been audited.
under USOAP, with 162 audit follow-up missions\textsuperscript{13} completed as well. The Safety SOA section in ANB developed an Audit Findings and Differences Database (AFDD) to record actual findings and differences identified during the audits. The analysis conducted through the AFDD has enabled the identification of safety oversight related deficiencies and the prioritization of actions required to resolve safety concerns at a global, regional, State or a group of States level. Data gathered in the course of the follow-up missions was also entered in the AFDD, in order to keep track of the status of implementation of Contracting States’ corrective action plans, and to update the information on the level of implementation of the eight CEs of a State’s safety oversight system (ICAO, n.d.b). The information derived can also be used to assess possible impact on the safety of aircraft operations at various levels, thus enabling ICAO, groups of States and individual States, to prioritize actions directed at resolving identified and quantified safety concerns. Reports derived from the AFDD are used by the Air Navigation Bureau sections, panels and study groups for an analysis (ICAO, 2004, para.2.6.1).

From the context of the scope of the USOAP, it was expanded to cover Annex 11 – Air Traffic Services, Annex 13 – Aircraft Accident and Incident Investigation and Annex 14 – Aerodromes at the Assembly, at its thirty-third session, by the adoption of resolution A33-8 in 2001 (ICAO, 2006b). \textbf{Figure 4} depicts the transition of the audit system from voluntary to mandatory under the Annex-by-Annex Approach. In the case of the Republic of Korea, the Audit was carried out in June 2000.

\textsuperscript{13} Audit follow-up missions conducted between 2001 and 2004, allowed SOA to validate the implementation of the corrective action plans submitted by audited States, to identify any problems encountered by States in such implementation, and to determine the need for external assistance to resolve specific safety concerns.
3.4 Comprehensive Systems Approach

The ICAO Assembly, at its thirty-fifth session in 2005, adopted resolution A35-6: *Transition to a comprehensive systems approach for audits in the ICAO USOAP* to include the safety-related provisions contained in all Annexes to the Convention on International Civil Aviation into the USOAP system except Annex 9 – Facilitation and Annex 17 – Security. Thus, it was transited to Comprehensive Systems Approach (CSA) from an Annex-by-Annex Approach from on 01 January 2005. Under this CSA, all ICAO Contracting States are to be visited at least once in any six-year period with follow-up visits conducted on a needs basis. This six-year cycle is scheduled to end in 2010 (ICAO, 2004, para.3.1.4).

The new approach concept of CSA consists of three steps (ICAO, 2006d):
- **Pre-audit phase** – During this phase, the information provided by the State in the State Aviation Activity Questionnaire (SAAQ)\(^{14}\) and Compliance Checklists (CCs) are reviewed by the Safety Oversight Audit (SOA) section to analyze the type of organization for safety oversight established by the State, the implementation of Annexes provisions and the differences from SARPs identified by the States. This allows ICAO to tailor the audit in accordance with the level and complexity of aviation activities in the State and determine the duration of the audit and the size and required composition of the audit team.

- **On-site audit phase** - During this phase, the State is visited by an ICAO audit team to validate the information provided by the State and conduct an on-site audit of the State’s system and overall capability for safety oversight. This includes an audit of the organization, processes, procedures and programmes established and maintained by the State to help it fulfill its safety oversight obligations.

- **Post-audit phase** – This phase encompasses all the activities following the on-site audit, including the preparation of the audit interim report, the development by the State of its corrective action plan and the completion of the final audit report. In accordance with Assembly resolution **A35-6**, the final audit reports are made available to Contracting States in their entirety through a secure website, along with information derived from the AFDD.

In view of the benefits gained from conducting Safety Oversight Audits under the Comprehensive Systems Approach, The author is of opinion that there are several advantages, for instance, it enlarges the implementation of the safety related

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\(^{14}\) Designed to enable ICAO to collect useful information on the organization and system established by a State to meet its safety oversight-related obligations as a signatory to the Convention on International Civil Aviation and it is used in the planning and customization of an audit.

Retrieved from the slide page on 22 July 15, 2010 from

activities of the Contracting States because CSA expanded the scope of the audits to all the annexes except 9 and 17 by accommodating all safety-related annexes focusing on the State’s overall safety oversight capability and safety critical areas. In addition, it also offers the opportunity of cost savings in the long run because State Aviation Activity Questionnaire (SAAQ) and Compliance Checklists (CCs) are to be provided by the Contracting States using ICAO web site at least 3 months prior to the audit. Thus, SAAQ and CCs are reviewed by SOA in advance and the audit team can manage the size and composition of the audit team.

**Transparency and sharing of information with the public** were emphasized during the Directors General of Civil Aviation Conference on Global Strategy for Aviation Safety (DGCA/06) which was held from 20 to 22 March 2006. To improve aviation safety, DGCA/06 discussed the *Transparency and Sharing of safety Information (Topic 2.1)* and agreed to post the ICAO’s USAOP results on the ICAO public web site (ICAO, 2006e, page 3-3).

### 3.5 Continuous Monitoring Approach

Upon the completion of the current six-year audit cycle in 2010, the ICAO Council directed the Secretariat to examine the future of the USOAP beyond 2010, pursuant to the Assembly resolution A36-4. Thus, the ICAO Assembly, at its thirty-sixth session in September 2007, adopted resolution A36-4, Application of a Continuous Monitoring Approach (CMA) for the ICAO Universal Safety Oversight Audit Programme (USOAP) beyond 2010. (ICAO, 2007c, page I-96). In July 2008, a Safety and Security Audits Branch Continuous Monitoring Approach Study Group (SCMA-SG) was established to examine several options for the continuation of the USOAP beyond 2010. Beyond 2010, the objective of USOAP is to promote global aviation safety, by enhancing Contracting States’ safety oversight capabilities, through the continuous monitoring of States’ safety performances in order to identify...
safety deficiencies, assess associated safety risks, implement strategies for their mitigation and re-evaluate States’ safety oversight capabilities achieved (ICAO, n.d.c).

According to ICAO document A37-WP/37, the CMA will commence from 01 January 2013 and it is expected that the relevant resolution will be adopted in the ICAO Assembly, at its thirty-seventh session, to be held from 28 September to 08 October 2010. A two-year transition period (2011-2012) to the Continuous Monitoring Approach from the Comprehensive Systems Approach is allotted. The CMA concept involves the establishment of a system to monitor the safety oversight capability of Contracting States on an ongoing basis. In applying this monitoring system, ICAO will adopt a harmonized and consistent approach to assess the safety level of aviation activities and evaluate safety management capabilities. In order to facilitate States’ participation in the CMA, ICAO has already begun developing an interactive online framework, as well as a centralized database to properly manage data gathered by the USOAP on an ongoing basis. This database will also include validated information received from ICAO Regional Offices, regional and international organizations, as well as directly from States (ICAO, 2010b, para.2).

ICAO has already constructed most of the information necessary to launch the CMA and the information comes from the results of the CSA audits of each Contracting State. The first step is to sign a new Memorandum of Understanding (MoU) with ICAO and nominate one or more National Continuous Monitoring Coordinator(s) (NCMC), as applicable. NCMC will receive Computer-Based Training (CBT), which will provide them with complete information on a State’s responsibilities and obligations under the CMA (ICAO, 2010b). The author is of opinion that CBT is efficient for a distant training at the same time.

Through NCMC, Contracting States need to provide ICAO with several information needed by ICAO prior to the launch of the CMA in 2013. The information will
include updates on progress made in implementing the Corrective Action Plans (CAPs) which were originally submitted to address the ICAO findings and recommendations identified during each State’s CSA audit. NCMCs should provide ICAO with regular updates on the level of aviation activity regarding their States through the updated State Aviation Activity Questionnaire (SAAQs). The information submitted will be shared using an online interactive system for all ICAO Contracting States. In order to maintain the usefulness of the information collected during this cycle, only approximately 10% of the audit protocols will be updated. Under the CMA, States will no longer be required to complete Compliance Checklists (CCs). Instead, they will be responsible for filing any differences using the online mechanism currently being developed. ICAO will also be able to carry out safety audits at the request of Contracting States, on the condition that the results of these audits are made available to all member States. Safety audits will be conducted on a cost-recovery basis, with their scope defined by the requesting State (ICAO, 2010b, para.3).

The author is of opinion that one of the strengths of the CMA is that it ensures the long-term cost-effectiveness of the audit programme and the efficient use of available resources which were limited by providing flexible implementation strategies, including the conduct of full-scale, targeted or limited CSA audits and the identification of specific areas in which assistance is most urgently required. On the contrary, accuracy and completeness of the safety data provided to the centralized database of the ICAO must be proved by both States and the SOA. In addition, maintaining up-to-date CMA related data periodically could be a burden to the Contracting States. Figure 5 depicts the transition of the audit system from the Comprehensive Systems Approach to the Continuous Monitoring Approach. In the case of the Republic of Korea, the Audit under CSA was carried out from 13 to 22 May 2008.
3.6 Analysis of the ICAO Universal Safety Oversight Audit Programme results

3.6.1 Audit protocol

The audit protocol, which is attached as Appendix F to the Safety Oversight Audit Manual (ICAO Doc 9735), is a comprehensive checklist including approximately ten thousand questions, covering all elements of a State’s safety oversight programme and the ICAO conducts audits using the audit protocol questions under the CSA (ICAO, 2006c, para.5.11).

The purpose of the audit protocol is to standardize the conduct of audits under the ICAO USOAP. The protocol is based on the Convention on International Civil Aviation and its Annexes (SARPs) and relevant ICAO guidance. The audit protocol is the main tool used during an audit of the assessment of a State’s safety oversight capability and is divided into modules specific to the audit areas.
covered. Every audit’s findings must be based on at least one “not satisfactory” protocol question (ICAO, 2009c, page 12). Figure 6 depicts the distribution of audit protocol questions by each CE. The number indicated in the parenthesis means the number of Protocol Questions as of December 2008.

![Audit Protocol Questions grouped by Critical Elements](image)

**Figure 6** Distribution of Audit Protocol by CEs, as of December 2008 (Source: ICAO, 2009c, page 13, Numbers of PQs in parenthesis are added by Author)

### 3.6.2 Audit results by Critical Elements

The ICAO released the second edition of the *USOAP – Comprehensive Systems Approach (CSA) – Analysis of Audit Results* document, covering the period April 2005 to December 2008 on 5 November 2009. The analysis is based on the results
of the first 113 ICAO Contracting States audited under the Comprehensive Systems Approach (CSA) (ICAO, 2009c).

**Figure 7** Lack of effective implementation to eight Critical Elements of a safety oversight system
(Source: ICAO, 2009c, page 13)

**Figure 7** above provides the average percentage lack of effective implementation for each of the eight CEs of a safety oversight system for the 113 Contracting States audited from April 2005 to December 2008. The global average lack of effective implementation of eight CEs is 42%. The percentage lack of effective implementation depicted in the graph above means the ratio of “not satisfactory” protocol questions over the total number of applicable questions. The CE with the highest lack of effective implementation was CE-4, Qualification and Training of Technical Personnel, meaning that the 113 States audited had an average lack of effective implementation of 59% for CE-4. The lowest one was CE-1, Primary Aviation Legislation of 26%. One of the reasons why CE-4 was identified as the worst is that 65% of the audited States had not established formal training plans.
and programmes for their staffs involved in personnel licensing process, administration, examinations and medical exams (ICAO, 2009c, page 24).

Primary aviation legislation is the key to an effective safety oversight by the State. The establishment of a civil aviation authority, the extent of its authority and empowerment must be based on the solid foundation of a legal document legislated at the highest possible level of rule-making in the State. Figure 8 depicts the percentage of protocol questions found to be not satisfactory in CE-1.

![Figure 8 Lack of effective implementation to Critical Element 1 – Primary Aviation Legislation](Source: ICAO, 2009c, page 17)

### 3.6.3 Audit results by ICAO region and accident rates
The ICAO has seven regional offices\textsuperscript{15} having the primary responsibility for monitoring implementation of each State’s corrective action plans following a safety oversight audit and for providing advice and support to Contracting States whenever necessary (ICAO, 2006d, para.3.10). \textbf{Figure 9} shows the regional audit findings with accident rates during the period 1994 to 2008. According to ICAO (2009c), there is no exact correlation between audit findings and accident rates. However, the correlation is stronger between accident rates and CEs, for example between CE-6 and CE-7, there is a very strong correlation with accident rates.

The author is of opinion that this kind of analysis is very beneficial to Contracting States because it alerts the lower graded regions or States to the need to improve their implementation of the safety level. On the same line, it would also give advantages to the IMO Member States if the Secretariat includes the information of correlation between regions or Parts of the Code and accident rates in the future.

\textbf{Figure 9} \textit{Audit results by ICAO region and accident rates}  
(Source: ICAO, 2009c, page 89)

\textsuperscript{15} APAC (Asia/Pacific), ESAF (East/South Africa), EUR/NAT (European/North Atlantic), MID (Middle East), NACC (North American/Central/Caribbean), SAM (South America) and WACAF (Western/Central Africa)
CHAPTER 4
A COMPARISON THE ICAO UNIVERSAL SAFETY OVERSIGHT AUDIT PROGRAMME AND THE VOLUNTARY IMO MEMBER STATE AUDIT SCHEME

4.1 Introduction

Sasamura (2003, page 6) identified major differences between ICAO and IMO. He claimed that most of the accidents in civil aviation are caused by operational errors, whilst many maritime accidents are caused by structural failures. However, the author is of opinion that this could not be true since many accidents in the maritime field have also occurred due to operational errors rooted in human errors; for example, HERALD OF FREE ENTERPRISE and EXXON VALDEZ accidents. In addition, he also identified a difference in that the compliance of aircraft is under the control of a civil aviation authority. On the contrary, in the maritime field, the survey and certification of ships are normally delegated by the maritime authority to recognized organizations. I found that there are several differences between the two Organizations through my research for this dissertation work. In ICAO, technical matters are reviewed by the Air Navigation Commission, composed of only nineteen members appointed by the Council from among persons nominated by contracting States (ICAO, 2006a, Article 56). Whereas, this is reviewed in the Sub-Committees and Committees in the IMO by most of the Member States and relevant non-governmental organizations. From the context of conventions, it can be said that IMO has more complicated systems because it has ten mandatory instruments and
various mandatory or recommendatory codes. However, ICAO has one convention, which is the Convention on International Civil Aviation, and its eighteen Annexes.

There are generic differences between the two Organizations. Thus, they have different audit set-ups for each Organization, i.e. ICAO USOAP and IMO VIMSAS. As we have seen in Chapters 2 and 3, nevertheless, it can be said that ICAO is the forerunner in the similar safety audit scheme. To achieve the effective implementation of the mandatory IMO Member State Audit Scheme, this Chapter aims to compare the ICAO Universal Safety Oversight Audit Scheme with the Voluntary IMO Member State Audit Scheme from the context of benchmarking advanced systems or lessons from the ICAO USOAP.

4.2 Audit Principles

The USOAP principles, which were endorsed by the ICAO Council at its 170th session as **C/DEC 170/13** in 2003, were developed to guide USOAP activities (ICAO, 2006d). There are eight principles for the USOAP activities, which are:

- Sovereignty;
- Universality;
- Transparency and disclosure;
- Timeliness;
- All-inclusiveness;
- In a systematic manner with consistency and objectivity;
- Fairness; and
- Quality.

Whilst there are five principles for the VIMSAS activities, which are:

- Sovereignty and universality;
- Consistency, fairness, objectivity, and timeliness;
- Transparency and disclosure;
- Co-operation; and
- Continual improvement.

It looks almost the same between the two Organizations’ principles. However, there is a big difference in the meaning of transparency and disclosure. The ICAO posts information related to the public in the Flight Safety Information Exchange (FSIX) website16, pursuant to the ICAO Assembly resolution A32-11 in September. In the website, the public can access Safety Oversight Information on the USOAP, for instance, each State’s USOAP Status Chart which is named Level of implementation of the Critical Elements of Safety Oversight Systems, Executive Summary, Audit Summary Report (Initial and Follow-up) and Final Reports on the USOAP. This information has been uploaded upon the consent between the ICAO and Contracting States. The number of audited States giving consent for the Initial Cycle of audits (1999-2004) was 161 (89% of audited States) and for the Current Cycle of audits (2005-2010) is 158 (99% of audited States). Thus, the total number of audited States with at least one form of consent is 186 (100% of audited States) as at 6 July 2010 (ICAO, 2010a).

On the contrary, the interim and final audit reports under the Voluntary IMO Member State Audit Scheme (VIMSAS) should be confidential and available only to the audited Member State, the audit team and the Secretary-General under Part I of the Framework and Procedure for the VIMSAS (resolution A.974(24)). An Audit Summary Report (ASR) should be given to the IMO in a standardized format17 and, after consultation with the audited Member State, circulated for information to all Member States on a periodic basis. In addition, the Consolidated Audit Summary Reports (CASR) should be issued by the Secretariat periodically. Of course, an audited Member State may be made available to other parties details of the findings.

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16 Visit the site [http://www.icao.int/FSIX/safety.cfm](http://www.icao.int/FSIX/safety.cfm)
and of its own subsequent actions (IMO, 2005b, para.6.3). For practical purposes, several States, namely Australia, Bulgaria, Canada, Denmark, Liberia, The Netherlands, Norway, Sweden and U.K, have released their interim and/or final reports, but not the majority of the Member States. The author is of opinion that the Freedom of Information Act (FOIA) could be one of the driving force factors to disclose the State’s audit final report. FOIA is rules that guarantee access to data held by the state. Over 85 countries around the world have implemented some form of such legislation. Some States within the IMO including Sweden, have legislated the oldest Freedom of the Press Act in 1766, having their FOIA under its law legislation system (Staples, 2007, page 240). See Table 4 for access to the detailed reports.

Table 4 The VIMSAS Audit Reports available to other parties, as of August 2010

<table>
<thead>
<tr>
<th>Member States</th>
<th>Audit Period</th>
<th>Web source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norway</td>
<td>22 to 29 October 2007</td>
<td><a href="http://www.sjofartsdir.no/upload/23632/voluntary_imo_member_state_audit_scheme.pdf">http://www.sjofartsdir.no/upload/23632/voluntary_imo_member_state_audit_scheme.pdf</a></td>
</tr>
</tbody>
</table>

(Source: Author, sorted by alphabetical order)
Compared to the ICAO’s full disclosure of final audit reports to Contracting States, the author is of opinion that the IMO shall consider revising this transparency and disclosure principle for Member States to disclose their final audit reports under the mandatory IMO Member State Audit Scheme to be institutionalized from 01 January 2015. This is because not only for the audited Member States to provide sufficient information and lessons to other States but also to enhance capability building of the audited Member States themselves. Furthermore, in the long-run, transparency of the audit results will contribute to improving maritime safety and environmental protection placing a greater awareness on States of their obligations to implement mandatory IMO instruments.

4.3 Audit Scope

There are 18 Annexes to the Convention on International Civil Aviation. The scope of the ICAO USOAP was initially limited to three Annexes, which are Annex 1, 18

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18 Annex 1 - Personnel Licensing
Annex 2 - Rules of the Air
Annex 3 - Meteorological Service for International Air Navigation
Annex 4 - Aeronautical Charts
Annex 5 - Units of Measurement to be Used in Air and Ground Operations
Annex 6 - Operation of Aircraft
   Part I – International Commercial Air Transport – Aeroplanes
   Part II – International General Aviation – Aeroplanes
   Part III – International Operations - Helicopters
Annex 7 - Aircraft Nationality and Registration Marks
Annex 8 - Airworthiness of Aircraft
Annex 9 - Facilitation
Annex 10 - Aeronautical Telecommunications
   Volume I – Radio Navigation Aids
   Volume II – Communication Procedures including those with PANS status
Annex 11 - Air Traffic Services
Annex 12 - Search and Rescue
Annex 13 - Aircraft Accident and Incident Investigation
Annex 14 - Aerodromes
   Volume I – Aerodrome Design and Operations
   Volume II - Helicopters
Annex 15 - Aeronautical Information Services
Annex 16 - Environmental Protection
   Volume I – Aircraft Noise
   Volume II – Aircraft Engine Emissions
Annex 6 and Annex 8. The programme was expanded to cover Annexes 11, 13 and 14 by the determination of the ICAO Council at its 171st session in March 2004. In recognition of the success of the programme, the ICAO Assembly, at its 35th session, adopted resolution A-35/6 to extend its coverage to all safety-related Annexes (except Annex 9 - Facilitation and Annex 17 - Security) and also provide transition to a Comprehensive Systems Approach (CSA) for the conduct of safety oversight audits (ICAO, 2007c).

In the case of the IMO, the scope for the VIMSAS is limited to the ten mandatory conventions and protocols to be covered by audits for the purpose of determining how the relevant obligations and responsibilities relating to maritime safety and protection of the environment are carried out by Member States, and with a view to further enhancing their performance. The ten mandatory instruments adopted by resolution A.974(24) in December 2005 are SOLAS 1974, SOLAS PROT 1978, SOLAS PROT 1988, MARPOL 73/78, MARPOL PROT 1997, STCW 1978, LL 66, LL PROT 1988, Tonnage 1969 and COLREG 1972.

There is no point in comparing directly the audit scope between the two Organizations because the ICAO has the Chicago Convention with 18 technical Annexes. Most of the Annexes are incorporated within the audit scope. On the contrary, the IMO has several different conventions having its own characteristics. Under the voluntary regime, there was no need to consider including maritime related ILO conventions, for example ILO C92 - Accommodation of Crews Convention (Revised), 1949, ILO C133 - Accommodation of Crews (Supplementary Provisions) Convention, 1970, and ILO C147- Merchant Shipping (Minimum Standards) Convention, 1976, since the audit scope was limited to the IMO instruments.

Annex 17 - Security: Safeguarding International Civil Aviation Against Acts of Unlawful Interference
Annex 18 - The Safe Transport of Dangerous Goods by Air
Source retrieved July 24, 2010 from http://www.icao.int/eshop/annexes_list.htm
However, under the mandatory regime from 1 January 2015, the author is of opinion that the IMO shall include the **Maritime Labour Convention, 2006 (MLC 2006)** into the audit scope because MLC 2006 incorporates most of the existing maritime related ILO conventions. The MLC 2006 provides comprehensive rights and protection at work for the world's more than 1.2 million seafarers. It consolidates and updates more than 65 international labour standards related to seafarers adopted over the last 80 years (ILO, 2010). A Maritime Labour Certificate (MLC) and a Declaration of Maritime Labour Compliance (DMLC) will be required to ensure compliance with the MLC 2006 for all ships above 500 tons in international trade. Furthermore, it is expected that the MLC 2006 will enter into force in December 2011 based on EU’s planned ratifications before 31 December 2010 (DNV, 2010).

4.4 Audit tools - checklist

4.4.1 ICAO – SAAQ, CCs and PQs

For the successful implementation of the USOAP under the Comprehensive System Approach (2005-2010), the ICAO developed a series of audit tools designed to assist both Contracting States and the ICAO in the preparation for, and conduct of safety oversight audits. These tools include the **State Aviation Activity Questionnaire (SAAQ)**, **Compliance Checklists (CCs)** for each Annex to the Convention on International Civil Aviation and **Audit Protocol Questionnaires (PQs)** for each area of audit.

The **SAAQ** is designed to enable ICAO to collect information on the organization(s) and the system established by a Contracting State to meet its

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19 The MLC 2006 will enter into force one year after 30 countries with a minimum of 33% of the world tonnage have ratified it. Ten States ratified the MLC 2006 as at June 15, 2010. Retrieved August 18, 2010 from http://www.ilo.org/ilolex/cgi-lex/ratifce.pl?C186
safety oversight obligations. It is composed of seven Parts and used in the planning and customization of an audit. All States have to complete it and submit it to ICAO. All States have to update the information contained in their respective SAAQ whenever there is a change in their civil aviation system. An updated SAAQ must be submitted at least 90 days prior to the conduct of the on-site phase of the audit using ICAO online system. SAAQ submitted by States allows ICAO to maintain an up-to-date database of States’ aviation activities and assists ICAO in the scheduling of audits and in determining the duration of the audits and the expertise required (ICAO, 2005, para.5.1). Figure 10 depicts the sample picture for SAAQ input in the ICAO web site.

Figure 10 Input of the State Aviation Activity Questionnaire (SAAQ)
(Source: ICAO EUR/NAT Regional Office, 2008b, slide page 24)

20 Part I—General administrative information
Part II—Legislation
Part III—Organization
Part IV—Operational activities
Part V—Air navigation services
Part VI—Aerodromes
Part VII—Aircraft accident and incident investigation
The 16 Compliance Checklists (CCs) composed of about 10,000 checking items for each Annex concerned (except Annexes 9 and 17) have been prepared to assist the ICAO Contracting States in ascertaining the status of implementation of SARPs and in identifying any differences that may exist between national regulations and the corresponding ICAO Annex provisions. The Compliance Checklist submitted by States enables ICAO to maintain an up-to-date database on the level of compliance by States with ICAO SARPs and facilitate the preparation for, and conduct of standardized audits of all Contracting States. It shall be updated by a State at least 90 days prior to the scheduled audit (ICAO, 2005, para.5.2). Figure 11 provides a sample picture showing SARPs Compliance Checklists and the status of implementation.

![COMPLIANCE CHECKLIST, WEB–BASED VERSION](image)

Figure 11  SARPs Compliance Checklists and status of implementation  
(Source: ICAO EUR/NAT Regional Office, 2008b, slide page 30)

Audit Protocol Questionnaires (PQs) composing 976 questions are a comprehensive checklist, covering all eight CEs of the State’s safety oversight programme subject to audit (Skybrary, 2010). The ICAO on-site safety oversight
audits are conducted on the basis of the PQs which is attached as Appendix F to the Safety Oversight Audit Manual (ICAO Doc.9735, AN/960) (ICAO, 2006d, para.5.11). It was developed with the cooperation of the relevant sections of the ANB. PQs constitute the primary tools for the conduct of on-site safety oversight audits. It can be used by Contracting States both in preparation for an ICAO audit and also in the conduct of internal audits (ICAO, 2005, para.5.3).

According to the in-depth analysis led by ICAO, there is a strong correlation between the Lack of Effective Implementation (LEI) percentage and the accident rate. The questions are identified as a Representative sub-set of 114 Protocol Questions (RPQs)\(^{21}\) out of 976 total questions. These important findings can be used by States to better focus their resources and safety improvement efforts and realize the desired reduction of accident rates in a timely and more efficient manner (Skybrary, 2010). Figure 12 shows a sample page of the Audit Protocol Questionnaires.

![Figure 12 Audit Protocol Questionnaires](Source: ICAO EUR/NAT Regional Office, 2008b, slide page 34)

\(^{21}\) Visit the site [http://www.skybrary.aero/index.php/ICAO_Representative_Protocol_Questions\(\) (PQs)]
4.4.2 IMO – pre-audit questionnaire

Compared to ICAO’s various checklists, IMO has only a pre-audit questionnaire. It shall be submitted by the Member State to be audited as soon as possible, and not later than 2 months prior to the audit. It is similar to the ICAO’s SAAQ because this pre-audit questionnaire contains general information on the Member States, information on international instruments and training status, etc.

4.4.3 Advantages and disadvantages of an audit checklist

An audit checklist could have advantages and disadvantages. In looking at auditing standards, clause 6.4.3 “Preparing work documents” of ISO 19011:

“The audit team members should review the information relevant to their audit assignments and prepare work documents as necessary for reference and for recording audit proceedings. Such work documents may include

- **checklists** and audit sampling plans, and

- forms for recording information, such as supporting evidence, audit findings and records of meetings.

The use of checklists and forms should not restrict the extent of audit activities, which can change as a result of information collected during the audit.” (ISO, 2002).

We need to keep in mind that checklists could be one of the audit tools and it is not mandatory to use during an audit. Nevertheless, ISO and IAF (2004) have identified that checklists could have the following **advantages**.

- To promote audit planning;
- To ensure a consistent audit approach;
- To act as a sampling plan and time manager;
- To serve as memory aid;
- To conduct systematic and comprehensive manner audit;
- To obtain objective evidence;
To provide a record that the QMS was examined;

In addition to the above, in reviewing the ICAO Audit Protocol Questions, it could be a useful self-assessment tool to the auditee States when preparing an on-site audit. Furthermore, it could be useful for inexperienced auditors.

On the contrary, checklists could have disadvantages. For example, generic checklists which do not reflect the specific organizational system may not add any value and may interfere with the audit. In addition, the focus of the checklists may be too narrow in scope to identify specific problem areas. Thus, it could minimize a unique assessment approach (ISO & IAF, 2004). In my experience in developing survey checklists, periodical and imminent up-dating of the checking items is a really important issue rather than developing the checklist itself. In addition, the criteria to evaluate checklists are also important factors, for example, the applicability to give a full range of intended uses, clarity, comprehensiveness, concreteness, ease of use, fairness and pertinent to the content area (Stufflebeam, 2000). Considering that the various IMO instruments have been updated frequently, the maintaining of checklists could be time consuming and difficult work.

There are no agreed generic checklists to each convention and protocol and a useful tool for audit team members in IMO yet such as ICAO’s CCs and PQs. Instead, audit team members may use their own checklists or aids-memories upon each audit, not developed by the IMO (IMO, 2005b, para.5.4 & 5.10). This could affect the quality of an audit because each audit team member has a different background experience and knowledge. Especially when it comes to standardized transparency under the mandatory regime, audit standards must be objective using an effective tool. Furthermore, the author is of opinion that IMO shall incorporate a standardized questionnaire into the IMO web-based system to maintain a
database for effective access by the Member States and the Organization, for instance, the Global Integrated Shipping Information System (GISIS)\textsuperscript{22}.

### 4.5 Certification of ISO 9001: Quality Management System

The ICAO USOAP has been managed and run by the Safety Oversight Audit (SOA) section under the Air Navigational Bureau (ANB). The SOA Section and Audit Coordination and Reporting (ACR) Section of the ICAO have been certified under \textit{ISO 9001:2000 Quality Management Systems} since 16 October 2002\textsuperscript{23}. The scope of the ISO certification covers ICAO's conduct of safety oversight audits, auditor training and delivery of seminars, as well as other key tasks performed by the two sections and related manuals, such as the \textit{SOA Quality Manual (SOA/QM 9001:2002A), Safety Oversight Audit Quality Management Systems Procedures (QMSP), Programme Management and Implementation Provisions (QMSP-007), Safety Oversight Audit Quality Management Systems Procedures (QMSP) – Training (QMSP-016) and SOA Administration and Organization Procedures (ICAO, 2006d)}.

On the contrary, there is no record that the IMO has been certified under ISO 9001: QMS. In the case of IMO, the Member State Audit and Internal Oversight Section (MSA & IOS) governs VIMSAS. Considering that IMO recommends the States to obtain ISO 9001: QMS certification, the author is of opinion that IMO itself needs to be certified by ISO 9001: QMS to operate the coming mandatory IMO audit scheme with the systematic approach cycle, plan-do-check-act. We need to take note that some States including ROK and Japan have already been ISO 9001: QMS certified.

### 4.6 Audit appeal procedure

\textsuperscript{22}Visit the site \url{http://gisis.imo.org/Public/}
\textsuperscript{23}The ICAO Safety and Security Audit Branch, including SOA Section, was certified ISO 9001:2008 in June 2010. Source from ICAO document, A37-WP/36, TE/10, 27 July 2010.
According to my research, the audit appeal procedure is not clear under both ICAO USOAP and IMO VIMSAS. Under the current regime, the auditee State and IMO shall sign its Memorandum of Co-operation in the preparation stage. Section 7 of the Memorandum speculates that any disputes are to be settled by the negotiation of each party of an audit (IMO, 2005b, Appendix 1). However, under the mandatory regime, the Memorandum could have no meaning because an audit will be conducted not by a voluntary Member State’s request but by a mandatory audit schedule of the IMO. Therefore, in case of any dispute on findings, we need to include any arbitration and appeal procedure into the framework and procedures for mandatory IMO Member State Audit Scheme. Benchmarking the IACS Independent Appeal Board (IAB) and Quality Committee could be one of the solutions (IACS, 2009).

4.7 Evolution of audits and future developments

The ICAO started its Safety Oversight Audit Programme on a Voluntary Assessment Programme in 1995. In 1999, ICAO launched the ICAO USOAP, which is the Mandatory Audit Programme, pursuant to the Assembly resolution A32-11. The concept of the Comprehensive Systems Approach (CSA) was introduced in 2005 and ICAO Contracting States have been audited under this CSA system for six years (2005-2010). Under this CSA, safety related provisions in all Annexes, except Annexes 9 and 17, to the Convention on International Civil Aviation were incorporated in the scope of the audit by emphasizing transparency to the public information access. As the ICAO Assembly adopted resolution A36-4 in 2007, now ICAO USOAP will be transited to the Continuous Monitoring Approach (CMA) from Comprehensive Systems Approach (CSA) from 2013 after two years of the transition period (2011-2012) (ICAO, 2010b, para.2.4).

The IMO launched the Member State Audit Scheme on a voluntary basis in 2005, ten years later than the ICAO, and the Organization adopted resolution A.946(23), VIMSAS in November 2003. According to the plan adopted by resolution
A.1018(26) in November 2009, the IMO Member State Audit Scheme will be phased in as an institutionalised, mandatory scheme from 01 January 2015 (IMO, 2009c).

The ICAO CMA will incorporate the establishment of a system to monitor the overall safety oversight capability of the Contracting States on an ongoing basis and with a harmonized approach toward assessing the safety level of aviation activities and evaluating the safety capability of the States. The CMA requires the centralized database and online reporting system to manage information received from various sources (ICAO, 2007c). Under the USOAP CMA, the ICAO will provide enhanced flexibility by implementing full-scale, targeted or limited CSA audits (ICAO, 2009b). The ICAO Assembly, at its thirty-seventh session to be held from 28 September to 08 October 2010, will discuss more on the transitioning to the CMA and relevant CMA activities. Figure 13 depicts the timeline of the ICAO Safety Oversight Audit Programme and the IMO Member State Audit Scheme.

Figure 13  Timeline of the ICAO Safety Oversight Audit Programme and the IMO Member State Audit Scheme (Source: Author)
The IMO Sub-Committee on Flag State Implementation, at its eighteenth session in July 2010, discussed whether IMO could take a similar approach to ICAO’s CMA and identified that this is not the stage to consider that kind of study due to the different audit set-up of IMO and ICAO (IMO, 2010e, para.14.19 & 14.20). Bearing in mind that IMO is just now preparing the mandatory audit scheme, it could be an early stage. However, we need to consider that the average cost per audit remains around GBP 11,000 (IMO, 2010a, para.7). When we calculate the total cost for all 169 Member States’ audit, this amounts to GBP 1,859,000. Considering that an audit would be conducted at least once every seven years, an annual audit cost for 25 States will be GBP 275,000. GBP 11,000 could be a heavy burden for some of the Member States, especially those States less developed, even though the ITCP would help such States. In the case of ICAO, the Organization supports audit funding with its own budget. For example, in 2010, CAD 4,451,000 is allotted for the conduct of comprehensive safety oversight audits (ICAO, 2007c, table 1). Considering that the USOAP is carried out at least once every six years, the average cost per audit for 32 States, among all 190 Contracting States, is CAD 13,909.

One of the strengths of the CMA is that it ensures the long-term cost-effectiveness of the audit programme by utilizing a centralized database system, such as the AFDD, to record the actual findings and differences identified during an audit and online reporting system such as SAAQ and CCs. CMA also provides flexible implementation strategies, including the conduct of full-scale, targeted or limited CSA audits and the identification of specific areas in which assistance is most urgently required (ICAO, 2009b). It could be a clear ground why IMO should benchmark the ICAO USOAP CMA in the future, if not at this stage, to achieve the effective implementation of the mandatory IMO Member State Audit Scheme with the limited resources of the IMO. Table 5 compares the two Organizations’ audit systems.
Table 5: Comparison between ICAO USOAP and IMO VIMSAS

<table>
<thead>
<tr>
<th>Item</th>
<th>ICAO USOAP</th>
<th>IMO VIMSAS</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope</td>
<td>All Annexes to the Chicago Convention (except Annex 9 &amp; 17)</td>
<td>Ten IMO mandatory instruments listed in the Code</td>
<td>ICAO A35-6, Doc 7300, IMO Res.A.974(24), as amended by</td>
</tr>
<tr>
<td>Audit department</td>
<td>Safety Oversight Audit Section (SOA)</td>
<td>Member State Audit and Internal Oversight Section (MSA &amp; IOS)</td>
<td></td>
</tr>
<tr>
<td>ISO 9001:QMS Certification</td>
<td>Yes, SOA has been certified since 16 October 2002</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Auditee</td>
<td>190 Contracting States</td>
<td>169 Member States</td>
<td>As at 18 August 2010</td>
</tr>
<tr>
<td>Audit interval</td>
<td>At least once every six years</td>
<td>(At least once every seven years)</td>
<td></td>
</tr>
<tr>
<td>Follow-up audit</td>
<td>To be conducted between one and two years following an audit</td>
<td>To be conducted between one and two years following an audit</td>
<td>ICAO Doc. 9735, ISO 19011:2002, clause 6.8, Res.A.974(24), Part II, para.9.2</td>
</tr>
<tr>
<td>Auditors</td>
<td>SOA auditors</td>
<td>Auditors nominated by States</td>
<td>ICAO Doc.9735, Res.A.974(24), para.4</td>
</tr>
<tr>
<td>Number of auditors</td>
<td>78 auditors including 8 auditors of SOA</td>
<td>273 individuals from 136 countries</td>
<td>ICAO A37-WP/36, 27 July 2010, IMO TC 60/6/Rev.1, 24 March 2010</td>
</tr>
<tr>
<td>Audit tools</td>
<td>SAAQ, CCs (ab. 10,000 check items) and PQs (976 questions used by auditors)</td>
<td>Pre-audit questionnaire, Checklist or aide-memoire, if any</td>
<td>ICAO Doc. 9735, Res.A.974(24), Part II, para.5</td>
</tr>
<tr>
<td>Audit findings</td>
<td>AFFD, developed to record actual findings and differences identified during an audit</td>
<td>Secretariat</td>
<td></td>
</tr>
<tr>
<td>Centralized database web system</td>
<td>Yes – web-based SAAQ, CCs and AFFD</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Audit funding</td>
<td>Own budget</td>
<td>Member States pay for its own or sponsored by ITCP</td>
<td></td>
</tr>
<tr>
<td>Audit cost per an audit</td>
<td>Ab. CAD 14,000</td>
<td>GBP 11,000</td>
<td>ICAO Doc 9895, IMO C 104/6</td>
</tr>
<tr>
<td>Audit results disclosure</td>
<td>Yes – Flight Safety Information Exchange website</td>
<td>No – Secretariat issues CASR periodically without names of the States</td>
<td></td>
</tr>
</tbody>
</table>

(Source: Author)
CHAPTER 5
EFFECTIVE IMPLEMENTATION OF THE IMO MEMBER
STATE AUDIT SCHEME: A CASE STUDY OF THE REPUBLIC
OF KOREA – ICAO USOAP AND IMO VIMSAS

5.1 Introduction

This chapter examines the case of the Republic of Korea which has already carried out ICAO USOAP in 2008 and IMO VIMSAS in 2007. It also identifies lessons learnt from the ROK. From the perspective of jurisdiction, ROK is a Contracting State to the Convention on International Civil Aviation in ICAO and also a Contracting Government, flag State, port State and coastal State to the mandatory IMO Instruments. Thus, the audit scope to the ROK was full-scale.

5.2 ICAO USOAP

5.2.1 Progress of the Republic of Korea

The ICAO conducted a safety oversight audit of the Republic of Korea in 2000. In the first audit of ROK under the mandatory audit programme (USOAP), ROK was ranked 53rd among 162 Contracting States with a low level of safety standard compliance rating at 79.79 percent (ASN, 2008). In the following year 2001, ROK was ranked as a Category 2 country by the United States Federal Aviation Administration (FAA). Category 2 means that a country does not comply with ICAO standards. FAA's International Aviation Safety Assessment (IASA) Program focuses on a country's ability to adhere to international standards and recommended practices for aircraft operations and maintenance established by
ICAO (FAA, 2009). As a result, ROK’s expansion or changes in air services to the United States were not permitted. After nationwide efforts, ROK managed to recover its status to Category 1 through the US FAA (AOPAK, 2008).

According to the report from the Ministry of Land, Transport and Maritime Affairs (MLTM) of the Republic of Korea, the safety oversight audit of the ROK was carried out from 13 to 22 May 2008 in accordance with the standard auditing procedures provided in *ICAO Doc 9735 – Safety Oversight Audit Manual*. The audit was carried out with the objective of reviewing a State’s compliance with ICAO SARPs set out in all safety-related Annexes to the Convention on International Civil Aviation and their associated guidance material, as well as by the related Procedures for Air Navigation Services (PANS). The audit was successfully finished resulting in a safety standard compliance rating of **98.89** percent. ROK tops the list of 108 countries that have so far undergone the audit (MLTM, 2009). **Figure 14** shows that Lack of Effective Implementation (LEI) of ROK is just 1.11 percent compared to the global average of 40.86 percent.

![Figure 14 Lack of Effective Implementation (LEI) of the Critical Elements, ROK (Source: ICAO, 2009a, Appendix 2)](image-url)
From the context of the score obtained, ROK has experienced remarkable improvement and it is a really remarkable record in seven years. This remarkable progress has been the results of the continuous efforts of the MLTM with the close nationwide co-operation of relevant agencies, for instance, Civil Aviation Safety Authority (CASA), Aviation and Railway Bureau (ARB), Aviation and Railway Accident Investigation Board (ARAIB), National Emergency Management Agency (NEMA), Korea Coast Guard (KCG), Korea Aviation Meteorological Agency (KAMA), Korea Airports Corporation (KAC) and Incheon International Airport Corporation (IIAC) etc. (ICAO, 2009a). It has been the result of useful audit preparation and continuous monitoring programmes such as SARPs (Standard and Recommended Practices) Management & Implementation System (SMIS) and National Aviation Resources Management Information (NARMI), developed by the Republic of Korea (MLTM, 2008b).

5.2.2 Preparation of the Republic of Korea for the USOAP

In August 2002, ROK established CASA to effectively implement international aviation standards. The International Aviation Safety Task Force Team (IASTFT) under CASA, consisting of representatives from many divisions responsible for the preparation of ICAO USOAP, was established in March 2004 (MLTM, 2008b).

One of the most difficult and time-consuming tasks of IASTFT was to compare international provisions with national legislation. The Constitution of ROK provides for three branches of the State: the National Assembly (legislative branch), the President (executive branch) and the Supreme Court and its subordinate courts (judicial branch). Thus, close co-operation with the Ministry of Government Legislation (MOLEG) was a pre-requisite. It took two years to identify differences and align national legislation with Annexes to a Convention on International Civil Aviation and to translate into English with appropriate
aviation terminologies. Many relevant Ministries, including the MLTM, Ministry of Foreign and Trade (MOFAT), Ministry of National Defense (MND), Ministry of Public Administration and Security (MOPAS), Ministry of Environment (ME), have met periodically for the preparation of the audit (MLTM, 2008b).

In 2006, CASA developed SMIS and NARMI for the purpose of an effective audit preparation. In addition, internal audits were carried out two times by an audit team consisting of air external English speaking consultants and it was really helpful to a number of “last minute” observations and remarks. For a better systematic approach, CASA and KAMA certified ISO 9001:QMS within the scope of Aeronautical Information Services (Annex 15 to the Chicago Convention) on 20 December 2007 (ICAO, 2009a). Figure 15 shows that ROK is fully implementing its safety activities.

![Figure 15 USOAP Status Chart, ROK](Source: ICAO, 2008a)
5.2.3 SARPs Management and Implementation System (SMIS) and National Aviation Resources Management Information (NARMI)

As identified in the results of the USOAP, many ICAO Contracting States have experienced failure to implement ICAO SARPs systematically, and a lack of sustainable systems for overseeing safety standards of national regulations and its implementation. ROK also experienced failure in the safety oversight audit in 2001. *Standards and Recommended Practices (SARPs) Management and Implementation System (SMIS)*\(^{24}\) is a web-based program developed by CASA of ROK in 2006 to effectively manage the ICAO SARPs corresponding to national regulations, State Aviation Activity Questionnaire (SAAQ) and Audit Protocol Questionnaires (PQs), and to process the ICAO state letters.

Approximately 10,000 SARPs used to be manually managed in hard copy but the switch over to the database and on-line management made it possible to monitor all working processes in real time, leading to quick and accurate decision making, also reducing the workload of responsible personnel. The SMIS has facilitated the sharing of aviation safety information and made the process for all the amendments of regulations transparent. In the past, only the persons concerned were aware of their safety related tasks, but SMIS made anyone interested refer to the status of compliance with the SARPs in all the safety related fields, not just limited to the scope of their own work. The SMIS also has increased the reliability and accountability of aviation standard work in the civil aviation authority. Persons in charge, who are clearly named, are assigned to each SARP and its related tasks with a due date. All safety related measures that are undertaken are recorded in the database, facilitating the verification and use of past materials/records. Moreover, the monitoring function of the SMIS has ensured that new or amended SARPs are timely reflected in the national regulations, thus

leading to the timely implementation of the international standards. Such
erespnsiveness is very important in keeping up with the rapid changes in the
aviation industry and the application of new technologies (ICAO, 2007a, para.4).

Figure 16 depicts the main web page of SMIS showing real-time based SARPs
and Protocol implementation Status. Users can print out USOAP implementation
status by CE and department. There are 9,888 SARPs and 976 PQs as at 20
August 2010. One of the powerful functions to prepare ICAO USOAP provided in
SMIS is the National Regulation Update under USOAP folder showing the
national legislation status corresponding to ICAO provisions. The SMIS is not
an off-the-shelf program by the courtesy of ROK. According to MLTM (2008), 23
States are using this programe for the effective implementation of civil aviation
safety.

Figure 16  Main web page of SMIS
(Source: Captured by Author from SMIS, as at 18 August 2010)
Another useful tool developed by CASA of ROK is the **National Aviation Resources Management Information (NARMI)**. It is the integrated civil aviation safety information system. The main purpose of it is to systematically manage aviation safety, human resources and to inspect airplanes and aviation systems (MLTM, 2008b). The **Total Oversight Management System (TOMS)** is the international version of NARMI. It makes it possible to ensure continuous surveillance of the certified operators, airports and air traffic service providers and so on. It is based on the procedure of ICAO Doc 9734 - Safety inspection Manual and ICAO Doc 8335 - Manual of Procedures for Operations Inspection, Certification and Continued Surveillance. TOMS can monitor the whole process for inspection plans, its implementation, results, issued corrective actions and its feedback (MLTM, 2008b). **Figure 17** depicts the main web page of TOMS showing the inspection calendar.

![Figure 17 Main web page of TOMS](Source: Captured by Author from TOMS, as at 18 August 2010)

25 Visit the site [http://152.99.81.5/TOMS/Main.php](http://152.99.81.5/TOMS/Main.php)
Nobody can deny that SMIS and NARMI (TOMS) played an important role to effectively prepare the safety oversight audit of ROK in 2008.

5.3 IMO VIMSAS

5.3.1 Contribution of the Republic of Korea

The Republic of Korea has been an IMO Council Category A Member State\(^{26}\) since 07 November 2002 with the entry into force of the 1993 amendments to the IMO Convention which expanded the size of the Council from 32 to 40 States. As a Council Category A Member State, ROK had been actively involved in the development of the Code and Framework and Procedure for the VIMSAS from an early stage and supported the Organization in various ways, for example, by funding the **regional training course for VIMSAS auditors**\(^ {27}\). The audit of the ROK was carried out from 9 to 16 April 2007 (MOMAF, 2007). During the audit period, it was clear that ROK prepared the VIMSAS very seriously with considerable time, effort and resources.

5.3.2 Preparation of the Republic of Korea for VIMSAS

For the preparatory work, ROK actively organized a Task Force Team which named, the IMO Audit Preparation Team under the Maritime Safety Bureau (MSB) of the Ministry of Maritime Affairs and Fisheries (MOMAF) in 2005. The Republic of Korea also reviewed its maritime safety management system including the implementation status of the ten IMO mandatory instruments, analysis of the national legislation system, FSC, PSC and also overall diagnosis of


\(^{27}\) See IMO Doc. TC 60/6 dated 08 February 2010. It was held from 30 October to 03 November 2006 in Busan, ROK
the organization for safety management. The review results showed that there are a number of areas to be improved before the audit (Kim, 2006). These were:

- To enact or amend the national legislation articles which have not incorporated the relevant IMO instruments;
- To translate major national laws and the subordinate enforcements relating to maritime safety and environmental protection into English;
- To certify an ISO 9001:2000 (now, ISO 9001:2008), Quality Management System for the systematic approach with continual improvement; and
- To enact or revise national legislation relating to recruitment, qualification and training for surveyors and other staffs engaged in flag and port State duties.

For a better systematic approach, MOMAF certified ISO 9001:2000 Quality Management System within the scope of maritime safety and environmental protection in 2006 and established process-based safety management systems. It also carried out an internal audit and gave several workshops for the preparation of VIMSAS (KKP, 2006).

5.4 Effective implementation of the IMO Member State Audit Scheme

5.4.1 Developing a national strategy for the effective flag State implementation

The article 94 “Duties of the flag States” of the UN Convention on the Law of the Sea (UNCLOS, 1982) explicitly specifies that a flag State is required to conform to generally accepted international regulations, procedures and practices namely international instruments. To carry out the duties of the flag State efficiently and effectively, each State should develop a national strategy for the flag State implementation.
As opposed to the traditional model of administration, which focuses on the inward and short-term perspectives, the New Public Management (NPM) which has emerged since the 1980s, emphasizes the long-term strategy, which aims to establish clear goals and objectives considering its external environment, especially in the public sector (Hughes, 1998, pp.149 & 153-159). What is the strategy and how many years is meant by a long-term? A strategy means “a general plan or set of plans intended to achieve something, especially over a long period” (Collins Cobuild, 2003). Dixon (2003) argued that a long-term strategic plan should accommodate five to ten years of planning. According to Dixon (2003, pp.27-46), when developing the long-term strategy of an organization, the goal of the organization needs to be clarified as a whole to be in line with the ultimate goals of the organization. Consequently, developing a well-organized long-term national strategy for flag State implementation is a very important issue.

In February 2008, with the launching of the new government, MLTM of ROK, which was merged with the existing Ministry of Maritime Affairs and Fisheries (MOMAF) and Ministry of Construction and Transportation (MCT), was organized to accomplish the following objects:

“a) To establish small but competitive government; and
b) To raise the value and utilization of the territory by combining the control of land and ocean resources and the supportive functions of infrastructures.”

To be in line with IMO’s ultimate goal, Safe, Secure and Efficient Shipping on Clean Oceans, a strategic plan of the Organization, and paragraph 3 of Part I of resolution A.974(24), the Republic of Korea made high level of objectives and strategy having five-year intervals renewal with regard to its maritime policy (MLTM, 2008a):

- To become a leading maritime nation in the field of maritime safety;
- To systematically implement international maritime standards; and
- To establish an advanced maritime strategy management system.
To maintain sustainable improvement and to be in line with paragraph 9 “Communication and information” of the Code, there is an annual review of the strategy together with all concerned parties including Korean ship builders, owners/operators, manufacturers and ROs. High level strategies may be revised accordingly. As another example of marine strategy, the EU has released the Marine Strategy Directive 2008/56. According to the Articles 1 and 17 of the Directive 2008/25, Member States of the EU shall take the necessary measures to achieve or maintain good environmental status in the marine environment by the year 2020 at the latest. Furthermore, to keep marine strategies up-to-date, Member States shall review their marine strategies every six years after initial establishment (Jenisch, 2009). The U.K’s strategy, called Charting a New Course, and DMA’s Core Processes, could be good examples of well developed strategies (Schröder-Hinrichs, 2009, pp.3).

5.4.2 Implementation and enforcement of relevant international mandatory instruments and adherence to international recommendations

5.4.2.1 Initial actions (legislation)

The mandatory IMO instruments specified in the Code are SOLAS 74 and its Protocol 78 & 88, MARPOL 73/78 and its Protocol 97, STCW 78, LL 66 and its Protocol 88, TONNAGE 69, and COLREG 72. ROK accessed most of the conventions and protocols including the aforementioned instruments.

In accordance with paragraph 7 of the Code, when new or amended IMO mandatory instruments enter into force for a flag State, the State must implement and enforce the instruments through an appropriate national legislation process. Accordingly, the Republic of Korea accommodates mandatory IMO instruments of the Code into the national legislation such as Ship Safety Act, Marine Environment Protection and Management Act,

However, the problem is that there was no integrated management system to accommodate the amendments to the international conventions, frequently amended. For instance, the Ship Safety Act is the most important national legislation for maritime safety. This kind of high level Act should be submitted to the Parliament where legislation subject to the legislative calendar of the Parliament and may induce some delays. As an alternative, MLTM has subsidiary enforcement decrees, but it was difficult to find exactly where the SOLAS convention in its entirety was transposed into national legislation.

Figure 18 Main web page of IIMS
(Source: Captured by Author from IIMS in 2007)

As a counter-measure, MLTM decided to carry out a complete revision or review of the Act and the subsidiary legislation to fully transpose the authentic
convention text into national legislation. To help this, MLTM developed a programme, called the *IMO Instruments Implementation and Management System (IIMS)* which shows a direct linkage between international instruments and national legislation. Figure 18 depicts the main web page of the IIMS. I was involved in this as a key-in member of the SOLAS convention. From my experience, this system would also make future amendments to national legislation much easier to follow than ever.

### 5.4.2.2 Adherence to international recommendations

As stated in MSC/Circ.710-MEPC/Circ.307 and MSC/Circ.1010–MEPC/Circ.382, the Administration should provide a sufficient number of the relevant regulations and instructions to RO. The author is of opinion that this is not only limited to RO. Flag States should provide useful information regarding not only mandatory IMO instruments but also recommendations to the relevant parties including ship owners, operators under their flag with easily accessible ways such as through the Internet. Many advanced flag States are providing that service. For example, AMSA provides *Marine Orders*, MPA Singapore provides *Shipping Circulars* and *Notices*, and MARDEP in Hong Kong provides *Shipping Information Notes* for their own registered ships.

### 5.4.3 Delegation of authority

Paragraph 18.2 of the Code requires a formal written agreement between the Administration and RO and there are many practical resolutions and circulars:

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28 MSC/Circ.710–MEPC/Circ.307 on Model agreement for the authorization of recognized organizations acting on behalf of the Administration and MSC/Circ.1010–MEPC/Circ.382 on Communication of information on the authorization of recognized organizations (ROs).

29 Res.A.739(18), Guidelines for the authorization of organizations acting on behalf of the administration, Res.MSC.208(81), Adoption of amendments to the guidelines for the authorization of organizations acting on behalf of the Administration(Resolution A.739(18)), Res.A.789(19), Specifications on the survey and certification functions of recognized organizations acting on behalf
mentioning delegation of authority. However, the formal written agreement had not been prepared by MLTM before 2007. This was because the delegation of authority to the Korean Register of Shipping (KR) and Korea Society of Ship Inspection & Technology (KST) was enshrined in the existing *Ship Safety Act*. In the case of ROK, KR and KST are the ROs for MLTM and the formal written agreement was signed on 05 April 2007.

The following Table 6 provides the average detention rate with all ROs related deficiencies in the Paris MOU in the last decade was 17.1%, a quite high figure. This means that there is still a strong need to improve ROs’ activities in relation to survey and certification. In the case of ROK, MLTM operates an oversight programme to the ROs with a direct and indirect way of auditing at least once a year.

**Table 6** Detentions with RO related deficiencies, Paris MoU (Unit: number of ships)

<table>
<thead>
<tr>
<th>Year</th>
<th>Inspections</th>
<th>Detentions</th>
<th>Detentions with RO related Deficiencies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Number</td>
<td>Percentage</td>
</tr>
<tr>
<td>1999</td>
<td>18,399</td>
<td>1,684</td>
<td>9.2</td>
</tr>
<tr>
<td>2000</td>
<td>18,559</td>
<td>1,764</td>
<td>9.5</td>
</tr>
<tr>
<td>2001</td>
<td>18,681</td>
<td>1,699</td>
<td>9.1</td>
</tr>
<tr>
<td>2002</td>
<td>19,766</td>
<td>1,577</td>
<td>8.0</td>
</tr>
<tr>
<td>2003</td>
<td>20,309</td>
<td>1,428</td>
<td>7.0</td>
</tr>
<tr>
<td>2004</td>
<td>20,316</td>
<td>1,187</td>
<td>5.8</td>
</tr>
<tr>
<td>2005</td>
<td>21,302</td>
<td>994</td>
<td>4.7</td>
</tr>
<tr>
<td>2006</td>
<td>21,566</td>
<td>1,174</td>
<td>5.4</td>
</tr>
<tr>
<td>2007</td>
<td>22,888</td>
<td>1,250</td>
<td>5.5</td>
</tr>
<tr>
<td>2008</td>
<td>24,647</td>
<td>1,220</td>
<td>4.9</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>1,220</td>
<td>Average</td>
</tr>
</tbody>
</table>

(Source: Compiled by the Author from the Annual Reports of the Paris MoU, from 1999 to 2008)
5.4.4 Human resources

In the case of ROK, four departments: Safety Policy Division, Maritime Technology Division, Seafarers and Labour Policy Division, and Port Management Division are the players handling its responsibilities and obligations as a flag State.

The following Table 7 shows the number of personnel handling flag State implementation and enforcement in ROK is only 1/3 or 1/4 in comparison with other countries. A review of an appropriate number of qualified personnel should be undertaken in accordance with paragraph 23.2 of the Code for better implementation of the State’s role.

Table 7 Human Resources in the Headquarters of flag States (Comparison of selected States)

<table>
<thead>
<tr>
<th></th>
<th>ROK</th>
<th>China</th>
<th>Japan</th>
<th>USA</th>
<th>U.K</th>
</tr>
</thead>
<tbody>
<tr>
<td>National own flag (unit: 1,000 GT)</td>
<td>8,443</td>
<td>23,178</td>
<td>12,756</td>
<td>11,999</td>
<td>8,711</td>
</tr>
<tr>
<td>Number of departments</td>
<td>4</td>
<td>11</td>
<td>6</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Number of personnel</td>
<td>32</td>
<td>88</td>
<td>99</td>
<td>138</td>
<td>133</td>
</tr>
</tbody>
</table>

(Source: Report for the preparation of IMO VIMSAS, MOMAF, ROK. As of May 2006)

5.4.5 Continuous review and verification of the effectiveness and the achievement, maintenance and improvement of organizational performance

The MLTM had been certified ISO 9001:2008 Quality Management System (ex. ISO 9001:2000) in the maritime sector since 24 November 2006. It was symbolic because it was the first case where a government agency obtained an ISO 9001: QMS certification in ROK. The author is of opinion that if flag States maintain
ISO 9001: QMS, it will be helpful for them to be in line with paragraphs 3.3 and 3.4 of Part I of the Code especially from the practical point of view. For example, paragraph 8.5.1 “Continual improvement” of ISO 9001:2008 requests for the organization to continually improve the effectiveness of the QMS through the use of the policy, objectives, and so on. PSC detention rates could be one of the parameters to measure the effectiveness of the flag State in accordance with paragraph 43 of the Code. According to the Paris MOU Annual Report, 2008, the detention percentage of ROK flagged ships in the Paris MOU region in 2008 was about 5 percent (Paris MoU, 2008, pp.38). Considering that the record was 8 percent in 2007, it is a remarkable figure since 62.5% had improved after certification of ISO 9001: QMS since 2006.

5.5 Lessons to be learnt from the case study of the Republic of Korea

The following lessons had been learnt through the case study of the Republic of Korea for the ICAO USOAP and IMO VIMSAS. It can be said as advantages:

- The use of audit preparation and continuous monitoring programmes such as SMIS and NARMI (TOMS) in the aviation field and IIMS in the maritime field;
- The certification of ISO 9001:2008 Quality Management System;
- The organization of a task force team to prepare audits; and
- The close co-operation with relevant Ministries.

On the contrary, considering that SMIS and NARMI provide the integrated function for ICAO USOAP, IIMS for IMO VIMSAS only shows a direct linkage between the IMO instruments and national legislation. It is only for initial actions (legislation) of the Code. Therefore, the author is of opinion that the IIMS should be further upgraded to provide more functions for better implementation of the State’s role, for example, communication of information with IMO, monitoring of ROs, management of qualified surveyors, flag State, port State, and/or coastal State control results etc.
CHAPTER 6
CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

This dissertation attempts to address the effective implementation of the mandatory IMO Member State Audit Scheme through a comparative study between the ICAO Universal Safety Oversight Audit Programme and the Voluntary IMO Member State Audit Scheme. The research is supported by the case study of the Republic of Korea.

At the outset, IMO VIMSAS was rooted in ICAO USOAP. There are many advantages that have been identified through the VIMSAS from the context of encouraging flag State, port State and coastal State performance. For example, it has inspired IMO Member States to monitor ROs more closely and improve its accountability. It has also inspired better communication between the Organization and its Member States. However, 55 States among the 169 Member States of the Organization had volunteered for the Audit as at 18 March 2010 (IMO, 2010a, para.6&7). The number of States volunteering for audits represents only 33 percent of the IMO Member States. Even though IMO urges the remaining Member States to volunteer for the audit, the audit application has not increased rapidly. The root cause can be identified in that the audit was set up on a voluntary basis and some of the States could feel the financial burden to support any expenditure on an audit. However, considering the purpose of the audit to enhance global maritime safety and protect the marine environment, the overall implementation of the Member States Audit is very important. Thus, the IMO Member State Audit Scheme will be phased
in as an institutionalised, mandatory scheme from 01 January 2015 by the adoption of resolution A.1018(26).

The author has examined the advantages and disadvantages of the mandatory IMO Audit Scheme. The sharing of the audit experience will become further broadened and beneficial to the remaining Member States. However, the cost for the implementation of the audit could be a burden on the Member States and also on the Organization. Furthermore, the continuous training of qualified auditors could also be a burden on the Organization.

The author has analysed the three CASRs (FSI 18/INF.7) having 26 audit results, containing 187 findings composed of 61 non-conformities, 126 observations and 25 root causes (IMO, 2010c). According to the analysis of the audit results, Initial actions, referenced as paragraph 7 of Part 1 – Common Areas, was the one most commonly referenced among 4 Parts in the Code and strategy, referenced as paragraph 3, was the second one ranked within Part 1. Considering that some of the States could be only flag States and not a port or coastal State, for example Austria, this dissertation has focused on Part 1 – Common Areas of the Code, and in particular on the initial actions (legislation) and strategy. The author has also analysed the experience from Denmark and Japan. The result shows that the certification of ISO 9001: QMS and its periodical internal audit is most helpful for the States in preparing the IMO audit and also in improving the performance of the States. Some of the publicly opened final audit reports show that many States have failed to transpose IMO instruments into their own national legislation. The Republic of Korea has experienced the same problem. This problem has triggered the author to review and benchmark the ICAO USOAP.

The first ICAO Safety Oversight Programme was launched on a voluntary basis in 1995. In 2005, the existing Annex-by-Annex Approach was transited to CSA. Under this CSA, all ICAO Contracting States were to be visited at least once in any six-year
period with follow-up visits. This six-year cycle is scheduled to end in 2010 (ICAO, 2004, para.3.1.4). The USOAP CMA will be launched from 2013, after having two years of transitional period.

The author has analysed the ICAO USOAP audit results. These are based on the results of the first 113 ICAO Contracting States audited under the CSA during the period from April 2005 to December 2008 using the ICAO document. Compared to the IMO audit reports, ICAO’s is the more comprehensively made. It includes analysis by CEs and identifies commonly identified Protocol Questions. It also provides Compliance Checklists results, accident rates and lack of implementation rates by ICAO regional areas. In particular, analysis by regions is very impressive because it arouses the regional States’ attention.

The next step in the research was to compare the ICAO USOAP and the IMO VIMSAS. The author considers that although there are generic differences between the two Organizations, it is important to compare the ICAO USOAP and IMO VIMSAS to achieve the effective implementation of the mandatory IMO Member State Audit Scheme, from the context of benchmarking advanced systems of the forerunner or any lessons from the ICAO USOAP. In ICAO, technical matters are reviewed by the ANB, composed of only nineteen members appointed by the Council from among persons nominated by contracting States (ICAO, 2006a, Article 56). Whereas, at IMO such matters are reviewed by Sub-Committees and Committees with most of the Member States and relevant non-governmental organizations present. From the context of conventions, it can be said that IMO has a more complicated system because it has ten mandatory instruments and its various mandatory or recommendatory codes. However, ICAO has only one convention, which is the Convention on International Civil Aviation, along with its eighteen Annexes.
A critical comparative analysis was undertaken by the author. It was found that there are various improvements to prepare the mandatory IMO Member State Audit Scheme, since the current framework and procedure were made basically on a voluntary basis audit. Compared to the IMO, ICAO provides its audit results with greater transparency and openness. The final audit reports and/or USOAP status charts are fully open to the Contracting States and it may also be publicly open upon the discretion of the Contracting States using the Flight Safety Information Exchange web site. Under the mandatory IMO audit scheme, the scope is to be enhanced including MLC 2006. It was found that ICAO has a variety of audit tools including checklists and questionnaires for effective audits. For instance, SAAQ, CCs, PQs and AFDD. SAAQ and CCs composed of approximately 10,000 questions in number must be completed prior to the on-site audit. It can be accessed using the ICAO USOAP web site. PQs composed of 976 questions are a standardized audit tool on the scene. This is impressive because it can be used at the time of the real audit and can also be used at the time of the simulated audit by the State itself. After finishing an audit, audit findings are managed in the centralized database system of the ICAO. On the contrary, it is not possible in the IMO web system at least at this stage. IMO has a similar web-based integrated information system, called GISIS. However, it does not provide any audit records database. Rather, it provides auxiliary information on ROs and marine casualties and incidents etc.

The author has critically analysed the advantages and disadvantages of audit checklists and set forth his views on how the periodical and imminent up-dating of the checking items is so important. Checklists promote well-organized audit planning, systematic and comprehensive manner audit, obtaining objective evidence as a record, whereas, generic checklists which do not reflect the specific organizational system, may not add any value and may interfere with the audit. In addition, the focus of the checklists may be too narrow in scope to identify specific problem areas.
During the course of investigation, it was observed that ICAO’s SOA section under the ANB has been certified ISO 9001: QMS since 16 October 2002. In each audit, auditors are nominated by ICAO not by a Contracting State. However, IMO auditors are nominated by a Member State. This could raise a severe problem from the perspective of the application of the unified audit quality and standards especially under the mandatory IMO audit scheme. To handle any dispute between the Organization and a State, an arbitration and appeal procedure should be established as soon as possible. Comparing that the IMO spends an average cost per audit of around GBP 11,000, ICAO spends about CAD 14,000, a bit less than the IMO’s expenditure. We need to notice that, nevertheless, ICAO USOAP is transiting to the CMA from CSA for better cost-effectiveness. One of the strengths of the CMA is that it ensures the long-term cost-effectiveness of the audit programme by utilizing the centralized database system such as AFDD to record actual findings and differences identified during an audit and online reporting system such as SAAQ and CCs. CMA also provides flexible implementation strategies, for example the full-scale, targeted or limited CSA audits and the identification of specific areas in which assistance is most urgently required (ICAO, 2009b). Due to time constraints, the author could not conduct a cost analysis for the long-term cost-effectiveness in detail. This limitation should be overcome by another Master dissertation. However, this could be a clear ground on why IMO should benchmark the ICAO USOAP CMA in the future.

The case study of the Republic of Korea gives lessons to be learnt for better implementation of the IMO Member State Audit Scheme. In ICAO USOAP, ROK showed an excellent record high score of 98.89 percent in 2008. Considering that the implementation percentage was just 79.79 in 2001, the score and number one rank is a remarkable outcome. This development was realized by useful programmes such as SMIS and NARMI (TOMS). It shows the national legislation status, SARPs implementation status, aircraft inspection and qualification status on a real-time basis. The Republic of Korea finished its voluntary IMO audit in 2007. The ROK also
experienced difficulties from the context of initial actions (national legislation) because of the complicated law enforcement and promulgation systems in the country. To make easier check of the national legislation, ROK developed IIMS showing a direct linkage between the IMO instrument and national legislation articles. The author has the opinion that the IIMS is to be further developed to accommodate more functions for better implementation of the State’s role, for example, communication of information with IMO, monitoring of ROs, management of qualified surveyors, flag State, port State, and/or coastal State control results. The author has also emphasized a well-organized long-term strategy, effective legislation, delegation of authority, human resources and continuous improvement based on ISO 9001: QMS for the effective implementation of the IMO Member State Audit Scheme.

6.2 Recommendations

Based on the outcome of the research, the author develops the following recommendations to the IMO and its Member States as suggestions for the effective implementation of the mandatory IMO Member State Audit Scheme:

(a) There is a need for IMO to fully disclose the final audit reports to the Member States under the mandatory IMO Member State Audit Scheme. This is because not only for the audited Member States to provide sufficient information and lessons to other States but also to enhance the capability building of the audited Member States themselves. Furthermore, in the long-run, transparency of the audit results will contribute to improving maritime safety and environmental protection placing a greater awareness on States of their obligations to implement mandatory IMO instruments.

(b) It is recommended to explore feasibility to enhance the audit scope including the Maritime Labour Convention, 2006 since MCL 2006 incorporates most
of the existing maritime-related ILO conventions. Furthermore, it is expected that MLC 2006 will enter into force in December 2011.

(c) A special initiative needs to be considered by the IMO to construct a **web-based centralized database system for integrated audit management** into GISIS or a new system. From the effectiveness point of view, it is very important for both the IMO and its Member States to apply the audit in the web system and control the audit findings.

(d) It is recommended to positively explore the feasibility to develop **audit tools** for the mandatory IMO Member State Audit Scheme. Checklists promote well-organized audit planning, systematic and comprehensive manner audit, obtaining objective evidence as a record. In addition, checklists provide pre-audit function to auditee States using the checklists to check their own implementation status.

(e) A special initiative needs to be considered by the IMO Member State Audit and Internal Oversight Section (MSA & IOS) governing the IMO Member State Audit to be certified under **ISO 9001: QMS** to operate the coming mandatory IMO audit scheme with the systematic approach cycle. Furthermore, we need to take note that some of the Member States, including ROK and Japan have already been ISO 9001: QMS certified. Considering that it gives many benefits to the State, it is also recommended for the States to be certified under ISO 9001: QMS.

(f) There is a need to develop **audit appeal or arbitration procedures** in the framework and procedure document. Audit findings under the mandatory IMO Member State Audit Scheme could have the function of sanctions, appeal or arbitration procedures to settle any dispute needs to be included in the procedure.

(g) It is recommended to hire **exclusive auditors** in the MSA & IOS section of the IMO to audit Member States. Comparing that auditors are nominated by ICAO SOA section not by a Contracting State, IMO auditors are nominated by a Member State. This could raise a severe problem from the perspective
of the application of the unified audit quality and standards especially under
the mandatory IMO audit scheme.

(h) A special initiative needs to be considered by the IMO to organize study
group to benchmark the ICAO USOAP especially Continuous
Monitoring Approach. Even before the year 2015, its inclusion should be
considered in the IMO six-year strategic plan. Further research is
recommended for evaluating the exact cost-effectiveness of the CMA.

(i) It is recommended to benchmark SMIS, NARMI (TOMS) and IIMS
developed by the Republic of Korea for the effective initial actions
(legislation) and integrated audit preparation process.
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