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WORLD MARITIME UNIVERSITY
Malmö, Sweden

THE STCW MANILA AMENDMENTS

Its Challenges to the Far East

By

CHAE, CHONG JU
The 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)

2011

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.



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ABSTRACT

Title of Dissertation: **The STCW Manila Amendments: Its Challenges to the Far East**

Degree: **MSc**

The comprehensive review of the STCW 1978, as amended in 1995 and associated Code was carried out during the last 4 years from 2006 to 2010 with the 8 scopes approved by the Maritime Safety Committee. As a result, the diplomatic conference took place in Manila, the Philippines, from 21 to 25 June 2010 under the auspices of the IMO to adopt amendments to the STCW Convention. These amendments will have a certain degree of impact on Maritime Education and Training (MET) institutes in terms of education and training of seafarer worldwide. Particularly, the Far East region countries are effected more than other regions since they covered about 30% of officers and 37% ratings in 2010. In view of these facts this dissertation conceived to analyze the problems in the Far East main seafarer supply countries facing the implementation of “STCW Manila Amendments” To analyze these problems, this dissertation carried out questionnaire research to 7 targeted main MET institutes or universities of major Far East seafarer supply countries.

This dissertation also suggests the possible solutions to the problems identified through the questionnaires. In addition, this dissertation suggests further amendments, which should be included in “STCW Manila Amendments”. The conclusion and recommendations are provided to suggest possible solutions to Far East major seafarer supply countries, MET institutes and IMO to complete and fulfil the research endeavour together in order to ensure the attainment of the defined objectives of this study.

KEY WORDS: STCW Manila Amendments, Maritime Education and Training, MET, Implementation, Far East region, Further amendments, Possible solutions

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LIST OF ABBREVIATIONS

ALAM	Malaysian Maritime Academy
ASEAN	Association of Southeast Asian Nations
BAC	blood alcohol level
BIMCO	The Baltic and International Maritime Council
BPP	Beneficiary Pays Principle
BRM	Bridge Resources Management
CFR	Code of Federal Regulations
COC	Certificate of Competency
COP	Certificate of Proficiency
DMU	Dalian Maritime University
DNV	Det Norske Veritas
DP	Dynamic Positioning
ECDIS	Electronic Chart Display and Information System
ERM	Engine Room Management
ETO	Electro-Technical Officer
ETR	Electro-Technical Rating
FSC	Flag State Control
GT	Gross Tonnage
GOBTC	Global On-Board Training Centre
ICS	International Chamber of Shipping
ILO	International Labour Organization
IMDG Code	International Maritime Dangerous Good Code
IMO	International Maritime Organization
ISF	International Shipping Federation
ISPS Code	International Ship and Port Facility Security Code
ISWG	Inter-Session Working Group
ITCP	Integrated Technical Co-operation Programme

JAMES	Asia Maritime E-learning System
JOBTC	Joint On-Board Training Centre
KIMFT	Korea Institute of Maritime and Fisheries Technology
KMST	Korea Maritime Safety Tribunal
KMU	Korea Maritime University
KUP	Knowledge, Understanding and Proficiency
MDTFs	The Multi-Donor Trust Funds
MET	Maritime Education and Training
MLC 2006	Maritime Labour Convention, 2006
MLTM	Ministry of Land, Transport and Maritime Affairs
MMU	Mokpo Maritime University
MoU	Memorandum of Understanding
MPA	Maritime and Port Authority of Singapore
MSC	Maritime Safety Committee
NGO	Non Governmental Organization
NMP	National Maritime Polytechnic
ODA	Official Development Assistance
OSV	Offshore Supply Vessel
PSC	Port State Control
ROK	Republic of Korea
SMA	Singapore Maritime Academy
STCW 78, as amended in 1995	International Convention on Standards of Training, Certification and Watch-keeping for Seafarers, 1978, as amended in 1995
STCW Manila amendments	International Convention on Standard of Training Certification and Watch-keeping for Seafarers, 1978, as amended Including the Final Act of the 2010 Conference of Parties to the International Convention on Standards of Training, Certification and Watch-keeping for Seafarers, 1978, and resolutions 1 and 3 to 19 of the

	conference
STW	Sub-Committee on Standards of Training and Watch-keeping
TCC	Technical Co-operation Committee
UK	United Kingdom
UNCLOS	United Nations Convention on the Law of the Sea
VIMARU	Vietnam Maritime University
VTS	Vessel Traffic Service
WHO	World Health Organization
WMU	World Maritime University

CHAPTER 1

INTRODUCTION

1.1 Background

According to Rothblum the maritime system is a people system, and human errors figure prominently in casualty situations. So about 75 - 96% of marine casualties are caused, at least in part, by some form of human error (Rothblum, 2010).

The effect of the human element is gaining awareness in relationship to safety of ships. The competence of seafarers is one of the most critical factors in the human element to ensure safe and efficient ship operations. It is directly related with safety of life at sea and the protection of the marine environment as well. The STCW Convention constitutes a comprehensive set of regulations intended to maintain the highest standards of competence globally (ISF, 2011).

Hence, the International Convention on Standards of Training, Certification and Watch-keeping for Seafarers (STCW) is placed as an important international convention that will affect the human element part in the maritime industry.

1.1.1 Back ground of STCW 1978

It was noted at that time, there were different levels of seafarer training, period of training and conditions of certification. Therefore, it is recognized that an international platform is required to unify the standard for seafarer training some time in 1960 ~ 1970. Meanwhile, the *Torrey Canyon* accident led to international concern about standard seafarer training requirements (Stenman, 2005)¹. As a result, the International Convention on Standards of Training, Certification and Watch-keeping for Seafarers, 1978 (STCW 78) was adopted by the IMO diplomatic conference in London on 7 July, 1978, came into force on 28

¹ The Liberian tanker *Torrey Canyon* ran aground outside the Scilly Isles, UK, on March 18, 1967 with about 120,000 tonnes of crude oil.

April 1984. This was the first step taken to establish global minimum seafarer training standards. However, the STCW 78 does not specific standards and control mechanisms, and these led to different interpretations of standards; and many maritime authorities failed to administer and enforce the convention's requirements, resulting in either fraudulent or genuine but worthless certificates of competency. Due to the above stated reasons, the STCW 78 lost its credibility and as a consequence its intentions were not totally realized.

1.1.2 Background of STCW 1978, as amended 1995

Due to the shortcoming of STCW 78, a revision was decided at a Maritime Safety Committee meeting. The STW sub-committee was appointed to conduct a comprehensive review of the STCW 78 Convention in December 1992. The objective of the review was to transfer and allocate all technical requirements to and associate Code, and ensure verification and control mechanisms. (Maquera, 1998). The first draft of the revised convention was considered by the member states in May 1993, and the amendments were adopted in July 1995 at the international conference. The amendments came into force in February 1997.

1.1.3 STCW Comprehensive review of STCW 1978, as amended 1995

In May 2006, the Maritime Safety Committee (MSC) of the International Maritime Organisation (IMO) agreed to a comprehensive review of the STCW Convention and the Code. The review was to ensure that the Convention met the new challenges faced by the shipping industry, and to enhance competencies of crews, while adapting them to the particular prerequisites, but not limited to, rapid technological advances today and in the future. "This exercise is also timely and opportune, given that more than ten years elapsed since the major revision of the Convention in 1995, while several more limited amendments were introduced to it in between and others are likely to ensue" (European Commission, 2010).

The review was conducted in two steps: First, for the sub-committee on Standards of Training & Watch-keeping (STW) to establish the scope of review for MSC endorsements; Second, for the STW to undertake the revision. In January 2007, STW 38 proposed the scope of review and was subsequently approved by Maritime Safety Committee (MSC) in October the same year. The scope of the review covers the following principles:

1. Retain the structure and goals of the 1995 revision;
2. Do not down-scale existing standards;
3. Do not amend the articles of the Convention;
4. Address inconsistencies, interpretations, outdated provisions, MSC instructions, clarifications already issued and technological advances;
5. Address requirements for effective communication;
6. Provide for flexibility in terms of compliance and for required levels of training and certification and watch-keeping arrangements due to innovation in technology;
7. Address the special character and circumstances of short sea shipping and the offshore industry; and
8. Address security-related issues. (IMO, 2007)

In March 2008, STW 39 commenced the revision work. An Inter-Session Working Group (ISWG 1) was convened in September 2008 to review the STCW Convention, and the result was presented by ISWG 1. STW 40 continued with the revision work and a preliminary draft text of the revised STCW Convention was agreed. A further revised text was finalised in STW 41 in January 2010 after much deliberation. The proposed revised STCW Convention was endorsed in May at the Maritime Safety Committee (MSC) 87 session. The revised text submitted for adoption by a Diplomatic Conference of the contracting Parties, took place in Manila in June 2010.

1.1.4 Diplomatic conference

The Diplomatic Conference took place in Manila, the Philippines, from 21 to 25 June 2010 under the auspicious of the IMO. It has adopted major revisions to the STCW 1978, as amended the 1995 Convention, and its associated Code. More than 500 delegates from 85 IMO member states as well as observers from three associate members, the International Labour Organization (ILO), the European Commission (EC) and 1(one) other intergovernmental organization; and 17 non-governmental organizations attended the conference (IMO, 2010).

The principle for the revision was to ensure global standards for training and certification of seafarers to operate technologically advanced ships. The amendments, which are known as STCW Manila Amendments will come into force on 1 January 2012 under the tacit acceptance procedure. The objective of these amendments is to update the convention and code since it was last revised in 1995 and to address anticipated issues that are emerging.

1.2 Importance and purpose of the study

There are about 1.4 million seafarers who were trained under the STCW Convention in the world (BIMCO/ISF, 2010).² In addition, there are numerous MET institutions or universities located in these countries. Therefore, comprehensive revisions of STCW Manila Amendments will be a crucial factor to all seafarer supply countries to ensure that the highest standards of seafarer competence are maintained globally. The International Shipping Federation (ISF) and International Chamber of Shipping (ICS) stated that;

The competence of seafarers is the most critical factor in the safe and efficient operation of ships, and has a direct impact on the safety of life at sea and the protection of the marine environment. The STCW Convention constitutes a

² The BIMCO/ISF Manpower update report dates are from around 190 countries in the world.

comprehensive set of international regulations intended to maintain the highest standards of competence globally”. (ISF/ ICS 2011, p4)

As mentioned above the STCW Manila Amendments will entry into force on 1st January 2012 and have a 5 year grace period until 1st January 2017.

Most major seafarer supply countries are now amending or have already amended their regulations to comply with the new amendment requirements. However, the same as after the major revision of STCW 1978 in 1995, there will be difficulties or problems met by MET institutes in implementing the new requirements within the country (Maquera, 1998).

Alternative proposals or solutions should be available to resolve the difficulties or problems. Further amendments beyond the “STCW Manila amendments” may be required to enhance the aim of the STCW Convention. Therefore, this dissertation will propose further possible amendments of STCW Convention.

Following are broad questions that will be answer through the research done for this dissertation,

- What was amended in the STCW Manila Amendments ? ;
- What is necessary to meet its requirements for MET institutes or universities ? ;
- What kind of unexpected difficulties or problems will be in the Far East region countries ;
- What kinds of possible solutions can there be to meet its requirements and solving its unexpected difficulties or problems ? ; and
- What kind of further amendments should be required beyond the STCW Manila Amendments ?

1.3 Methodology and scope

This study will conduct a detailed review of the STCW Manila Amendments and some materials such as the STW Sub-committee papers, related books, publications,

some report dealing with the STCW Manila Amendments, dissertations which done by former World Maritime University students, NGO's (Non Governmental Organization) reports and comments and BIMCO/ISF manpower update report, will be used as the basic source of this dissertation research.

A questionnaire survey will be carried out to identify the opinions and status of MET institutes or universities in implementing the STCW Manila Amendments locally. This dissertation will focus on Far East countries, which are the biggest seafarer supply region among five geographical areas³ on the BIMCO/ISF 2010 manpower update report. The Far East region covering 30 percents officer and 37 percents rating seafarer supplies and consists of 27 countries. (BIMCO/ISF, 2010) The 7 biggest seafarer supply countries among 27 Far East countries are the Philippines, and followed by China, Indonesia, Vietnam, the Republic of Korea, Singapore and Malaysia in terms of the number of officer supply. Additional research will be carried out from the author's country such as status of training ship and accident rate of certain type of ships. In addition, the author will carry out a case study to understand hours of rest status in certain type of ships.

This study consists of six chapters. **Chapter one** is the introduction. This chapter discussed the background of the study, importance and purpose of the study and methodology and scope.

Chapter two is a detailed review of the STCW Manila Amendments, covering the main amendments of each chapter of the STCW Manila Amendments, except chapter IV and VII since the amendments are relatively minor.

Chapter three will provide analysis of the difficulties, problems and challenges faced in complying with the STCW Manila Amendments by the Far East region countries. A survey had been carried out through questionnaires to 7 main MET institutes or universities located in the Philippines, China, Indonesia, Vietnam, the Republic of Korea, Singapore and Malaysia.

³ OECD countries, Eastern Europe, Africa/Latin America, Indian Sub-continent and Far East.

Chapter four will propose the possible solutions for the problems raised by the main 7 countries' MET institutes or universities in the Far East region. This chapter will look into possible systems or programs with reasonable research.

Chapter five will cover the necessity for further amendments to the STCW Manila Amendments. The training requirement for tug-barge operators and the IMDG Code training for seafarers will be discussed in this chapter.

Chapter six is the conclusion of this dissertation. It will highlight the amendments done during comprehensive review of the STCW Convention 78, as amended 95. It also identifies the difficulties or problems faced in the Far East region's main MET institutes or universities with brief proposals. Lastly, this chapter will provide suggestions to the Far East major seafarer supply countries or MET institutes and IMO to solve their difficulties and problems faced with effective implementation of the STCW Manila Amendments.

CHAPTER 2

DETAILED REVIEWS OF THE STCW MANILA AMENDMENTS

2.1 Introduction

The comprehensive review of the STCW 78, as amended 95 had made major revisions from Chapter I to VIII. This resulted in the creation of the STCW Manila Amendments. This chapter will give detailed reviews of the STCW Manila Amendments from Chapter I to VIII with the exceptions of Chapter IV and VII as the amendments are minor.

2.2 Chapter I - Regulation I, Section A/I and B/I

2.2.1 Regulation I/1 “Definitions and clarifications”

The definitions of several important terms have been revised. Table 1 summarises the definitions that have been revised and the new definitions in Regulation I/1.

The previous term “appropriate certificate”, which was left for interpretation by administrations, has now been defined specifically in the “STCW Manila Amendments” as Certificate of Competency (CoC), Certificate of Proficiency (CoP) and documentary evidence as appropriate to discourage the fraudulent practices for CoC and CoP.

New definitions have also been developed to specify the qualification required for Electro-Technical Officers (ETO) and Electro-Technical Ratings (ETR), which was previously not defined in STCW 78, as amended 95. Under STCW 95, there are no requirements on proof of competency for deck and engine ratings. However, in the STCW Manila Amendments, the ratings which are serving on seagoing

ships of 500 G/T or more will have to obtain certification showing their competency in areas such as navigation, cargo handling and stowage, controlling the operation of the ship and care for persons, maintenance and repair, at the support level.⁴

New definitions for the ISPS Code, Ship Security Officer (SSO) and Security duties has been added to reflect the latest development arising from the implementation of the ISPS Code.

Therefore, it is of utmost importance for administrations, which are parties to the STCW Convention to understand these new definitions correctly to ensure that certificates are issued in a proper way.

⁴ Regulation II/5, Section A-II/5, Table A-II/5

Table 1 Comparison table for existing and new definition

Terms	Existing Definition	New Definition
Engineer officer (Reg. I/1.7)	- Officer qualified in accordance with the provisions of chapter III of the Convention	- Officer qualified in accordance with the provisions of regulation III/1, III/2 or III/3 of the Convention
GMDSS radio operator (Reg. I/1.12)	- Person holding an appropriate certificate issued or recognized by the administration under the provisions of the Radio Regulations	- Person who is qualified in accordance with the provision of chapter IV of the Convention
Ro-ro passenger ship (Reg. I/1.21)	- Passenger ship with ro-ro cargo or special category spaces as defined in the SOLAS.	- Passenger ship with ro-ro spaces or special category spaces as defined in the SOLAS.
Passenger ship (Reg. I/1.20)	N.A.	- Ship as defined in the SOLAS
ISPS Code (Reg. I/1.27)	N.A.	- ISPS Code adopted on 12 December 2002 by resolution 2 of the Conference of Contracting Governments to the SOLAS by the organization
Ship Security Officer (Reg. I/1.27)	N.A.	- The person on board the ship, accountable to the master, designated by the company as responsible for the security of the ship including implementation and maintenance of the ship security plan and liaison with the company security officer and port facility security officers;
Security duties (Reg. I/1.29)	N.A.	- Include all security tasks and duties on board ships as defined by chapter XI-2 of the SOLAS and the ISPS Code
Certificate of Competency (Reg. I/1.30)	N.A.	- Certificate issues and endorsed for masters and officers and GMDSS radio operators in accordance with the provisions of chapters II, III, IV and VII.
Certificate of Proficiency (Reg. I/1.31)	N.A.	- Certificate, other than a certificate of competency issued to a seafarer, stating that the relevant requirements of training, competencies or seagoing service in the Convention have been met
Documentary evidence (Reg. I/1.32)	N.A.	- Documentation, other than a CoC or CoP, used to establish that the relevant requirements of the Convention have been met;
Electro-technical officer (Reg. I/1.33)	N.A.	- Officer qualified in accordance with the provisions of regulation III/6 of the Convention
Able seafarer deck (Reg. I/1.34)	N.A.	- Rating qualified in accordance with the provisions of regulation II/5 of the Convention
Able seafarer engine (Reg. I/1.35)	N.A.	- Rating qualified in accordance with the provisions of regulation III/5 of the Convention
Electro-technical rating (Reg. I/1.36)	N.A.	- Rating qualified in accordance with the provisions of regulation III/5 of the Convention

Source: STCW Manila amendments Chapter I, regulation I/1

2.2.2 Regulation I/2 “Certificates and endorsements”

The increasing fraudulent practices associated with CoC and endorsements have led to the addition of regulation I/2. According to the study carried out by the Seafarers International Research Centre on “fraudulent practices associated with certificates of competency and endorsements”⁵, 9 percent of the surveyed seafarers possess fake certifications. Based on deriving methodology, the study concluded that there are approximately 40,500 seafarers likely to hold fraudulent certificate. (Seafarers International Research Centre (SIRC), 2001)

To reduce fraudulent practices associated with CoC, the STCW Manila Amendments established “who”⁶ can issue a CoC and “when”⁷ a CoC or an endorsement attesting recognition can be issued in Chapter I regulation I/2. In addition, several new paragraphs highlighted the requirement on checking for authentication on the certificates prior to recognising such certificates from other countries had been included.⁸ Enforcement rights have also been added in regulation I/5 for parties to the Convention to act against unlawful practices involving certification and endorsements.⁹

According to Article II (c) of the STCW Manila Amendments, ‘Certificate’¹⁰ may be issued “*by the Administration or under the authorisation of the Administration or recognized by the Administration*”. However, more stringent requirements have been imposed for issuance of CoC and certificates relating to

⁵ The study was carried out via surveys on 1,105 seafarers of all ranks from six countries. These six countries’ have a total of 450,190 seafarers, which covers 25% of officers and 42 % of rating in the world.

⁶ Regulation I/2, paragraph 1 Certificates of competency shall be issued only by the administration, following verification of the authenticity and validity of any necessary documentary evidence.

⁷ Regulation I/2, paragraph 7: An administration which recognized under regulation I/10 shall endorse such certificate to attest its recognition only after ensuring the authenticity and validity of the certificate.

⁸ Regulations V/1-1 and V/1-2 : Tanker provisions

⁹ Chapter I, Regulation I/5, paragraph 2

¹⁰ Certificate means a valid document, by whatever name it may be known, issued by or under the authority of the Administration or recognized by the Administration authorizing the holder to serve as stated in this document or as authorized by national regulations.

tanker operations.¹¹ It has been specifically stated that these certificates should only be issued by an Administration.

The following Table 2 is an extract from the STCW Code, as amended: Part B, Chapter I – General provisions, Table B-I/2. It summarises the requirements on the types of certifications, endorsement attesting recognition of a certificate, registration, and revalidations required under the Convention in accordance to the rank of the person on board ships.

Table 2 List of certificates or documentary evidence required

Regulations	Type of certificate and brief description	Endorsement attesting recognition of a certificate	Registration required	Revalidation of certificate
II/1, II/2, II/3, III/1, III/2, III/3, III/6, IV/2, VII/2	CoC-for masters, officers and GMDSS radio operators	Yes	Yes	Yes
II/4, III/4, VII/2	CoP-For ratings duly certified to be a part of a navigational or engine-room watch	No	Yes	No
II/5, III/5, III/7, VII/2	CoP-For ratings duly certified as able seafarer deck, able seafarer engine or elector-technical rating	No	Yes	No
V/1-1, V/1-2	CoP or endorsement to a CoC-For masters and officers on oil, chemical or liquefied gas tankers	Yes	Yes	Yes
V/1-1, V/1-2	CoP-For ratings on oil, chemical or liquefied gas tankers	No	Yes	No
V/2	Documentary evidence- Training for masters, officers, ratings and other personnel serving on passenger ships	No	No	No
VI/1	CoP-Basic training	No	Yes	Yes
VI/2	CoP-Survival craft, rescue boats and fast rescue boats	No	Yes	Yes
VI/3	CoP-Advanced fire fighting	No	Yes	Yes
VI/4	CoP-Medical first aid and medical care	No	Yes	No
VI/5	CoP-Ship security officer	No	Yes	No
VI/6	CoP-Security awareness training or security training for seafarers with designated security duties	No	Yes	No

Source: STCW Manila Amendments Section B table B-I/2

¹¹ Regulations V/1-1 and V/1-2

2.2.3 Regulation I/3 “Principles governing near-coastal voyages”

The STCW Manila Amendments have made the adoption of the *near-coastal voyages limits* easier. Previously, parties are required to have an “*agreement*”, which is binding to both countries prior to the adoption of the *near-coastal voyage limits*. Under the new amendments, parties will only be required to have an “*arrangement*”, which can be in the format of a Memorandum of Undertaking (MoU) ¹². Nevertheless, the parties will still be required to keep the Secretary-General informed of such bilateral or multilateral arrangements¹³, so that the information could be circulated to all parties.

2.2.4 Regulation I/6 “Training and assessment”

Due to the development of technology and demand for more convenient training programs, distance learning and E-learning are gaining popularity. To ensure the quality and methodology of such programs, guidance on distance learning and E-learning have been added in Section B-I/6. It sets the requirements for parties to ensure the quality and method for providing distance learning and E-learning, it also states the requirement for companies to provide sufficient time for trainees to study.¹⁴ Section B-I/6 also states the assessing procedures on the trainee’s progress and achievements under the distance learning and E-learning program.

Currently, many MET institutes or universities in the world are already running the distance learning and E-learning system. However, some MET institutes are facing challenges to cope with these programs especially those in Far East countries where the internet and computer technology is not at an advance stage. Further details on the problems faced by the Far East MET institutes or universities will be discussed in Chapter 3 of this study.

¹² STCW Chapter I regulation I/3, paragraph 2

¹³ STCW Chapter I Regulation I/3, paragraph 6.2

¹⁴ Section B-I/6, paragraph 8

2.2.5 Regulation I/7 “Communication of information”

In the STCW Manila Amendments, the “communication of information” has now been divided into 4 parts, namely, Part 1 that covers the initial communication of information of general information such as contact details, clear statement of the education, training, examination, certification policies and concise outline of procedures and summary of procedures; Part 2 that covers the subsequent reports required to be carried out by the party within six months under various scenarios. This part covers the information on the qualifications and experience of those who conducted the evaluation and results of the independent evaluation; Part 3 covers the requirement to maintain a panel of competent persons who may be called upon to evaluate the reports submitted and to assist in the preparation of the report required by regulation I/7, paragraph 2. It also require parties to establish procedures for communication of information to IMO and at the same time indicating the competent person for this task; and Part 4 covers the reporting task of the Secretary-General to the Maritime Safety Committee and the guiding principle of such report. In the STCW amendments, the communication of information procedures is clearer and more organized.

2.2.6 Regulation I/9 “Medical standards”

The medical standards only act as guidance (Section B-I/9) in STCW 95. However, it has become mandatory in STCW Manila Amendments with this new medical standards, seafarers will not be require to carry out additional medical examination when working in different countries. The validity of the medical certificate has also been standardized to 2 years validity, except for seafarers who are under 18 years old, in this case the validity is reduced to 1 year. The medical certificate maybe extended by 3 months after the term of validity.

As it currently stands, only the standards of physical and medical fitness with specification on minimum eyesight standards has been made mandatory as described in Section A-I/9. The standards on minimum entry level and in-

service physical abilities for seafarers are still standing as guidance in Section B-I/9. Consideration should be made to include the minimum entry level and in-service physical abilities mandatory in order to be in-line with the criteria stated in Section A-I/9, paragraph 2.

Other than specifying the physical and medical fitness for seafarers, Section A-I/9 also states the requirement for the medical fitness examinations of seafarers are to be carried out by qualified medical practitioners recognised by the parties. The list of these medical practitioners should be made available to other parties, companies and seafarers when required.

Although improvements have been made in the new Convention to standardize some of the medical standard requirements, but the standards on medical fitness examinations of seafarers still depend on the standards of the parties to the Convention. Hence, the International Labour Organization (ILO) initiated a joint working-group among ILO, IMO and the World Health Organization (WHO) in developing the medical standards. However, WHO did not respond to the request. (ILO, IMO, 2010) A joint working-group was formed between ILO-IMO on 4th October 2010 held in Geneva after the STCW diplomatic conference. The medical standards have been targeted to be completed by the end of 2011, and the guidelines will be submitted to the IMO MSC and ILO Governing Body in 2012. If the guidelines are accepted in IMO, MSC, they might be adopted as standard guidelines for medical standards for all parties to the Convention.

2.2.7 Regulation I/11 “Revalidation of certificates”

Regulation I/11, paragraph 3 and Section A-I/11, paragraph 3 are new requirements for ship masters and officers working on board tankers to establish continued professional competence for tankers. Continued professional competences were defined as an approved seagoing service under the appropriate function as required under the certificate for a period of at least:

- a) Twelve months in total during the preceding five years; or
- b) Three months in total during the preceding six months immediately prior to revalidating; or
- c) Having performed in the capacity considered to be equivalent to the seagoing service required; or
- d) Passing an approved test; or
- e) Completing an approved training course(s); or
- f) Having performed in capacity as required by the certificate for a period of not less than three months as a supernumerary.¹⁵

It is important to ensure the professional competence of officers working on board tankers. As tankers are involved in carriage of bulk liquid, which is opined, to be of higher risk and may cause substantial pollution to the environment. Hence, it is essential to ascertain the quality of ship masters and officers to ensure safety of navigation.

The functional differences between tankers and general ships are;

- Tankers : performing duties appropriate to the tanker certificate or endorsement held
- General ships (container, bulk carrier etc.): performing functions appropriate to the certificate held.

Therefore, the party, shipping company and seafarer have to make sure these requirements are met to revalidate the certificates. In addition, if application for revalidation is made within six months before expiry the certificate may be revalidated until the fifth anniversary of the date of validity.¹⁶

¹⁵ STCW Manila Amendments Section A-I/11, paragraph 1

¹⁶ STCW Manila Amendments Section B-I/11, paragraph 4

2.2.8 Regulation I/12 Use of simulators

This regulation is the evidence of new and innovative training methodology developments. For instance, it was agreed that simulator systems could be used for VTS training, during comprehensive review of the STCW Convention in STW sub-committee 41 sessions on January 2010 (IMO, 2010). Requirements for training and assessment in the operational use of Electronic Chart Display and Information Systems (ECDIS) have also been included in Section B-I/12. A total of 84 new competence areas were added, such as methods for demonstrating competence in approved simulator training, where appropriate (DNV, 2010). These new regulations show the rise of importance of simulation training for seafarers, thence, it will be essential factor influencing the operation of MET institutes or universities.

2.2.9 Regulation I/14 Responsibilities of companies

Two new provisions have been inserted under the companies' responsibilities in this regulation. These include the requirements to provide refresher and updating training, and ensuring effective oral communication on board.¹⁷

As mentioned in Chapter I, the human element is a very important factor to keep ship's safety. Seafarers' competence through education and training is one of the most important parts to ensure that the human element is maintained in a proper way. The importance of MET training is discussed as follows;

After any incident needing the involvement of authorities, the first thing an inspector of Marine Investigation Branch does on boarding the vessel is to check the competence and training of the seafarers on board. (Surugiu and Nistor, 2010, p 62)

¹⁷ Regulation I/14, paragraph 1 .3 and .7

A well-trained seafarer will be valuable asset to the ship owner. Having well-trained seafarers directly demonstrate the company's responsibility towards safety and at the same time be seen by the public as having quality and competitive operation. (Surugiu and Nistor, 2010, p 62)

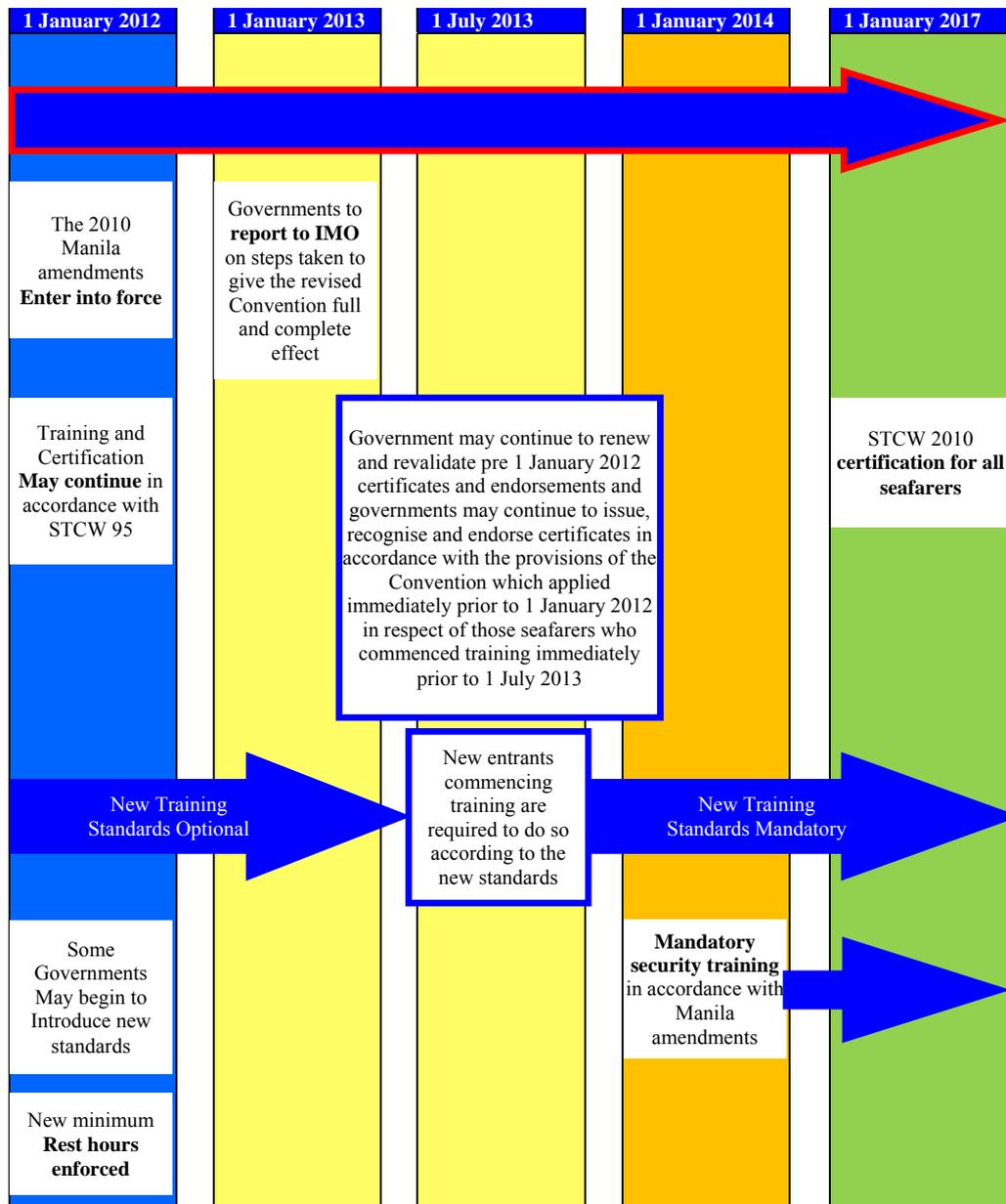
Likewise, effective communications on board is an essential ingredient to safe and efficient ship operations. “And when in an operational situation such as berthing a ship or fighting a fire, it is vitally important that those involved can communicate effectively.” (Istanbul Technical University, 2002)

These are the reasons that lead to amendment of Regulation I/14.

2.2.10 Regulation I/15 Transitional provisions

Figure 1 shows transitional provisions briefly. The implementation dates of the STCW Manila Amendments are as follows;

- 1 January 2012: the STCW Manila Amendments will enter into force
- 1 January 2013: the governments need to report to IMO to give the STCW Manila Amendments complete and full effect.
- 1 July 2013: Seafarers who start training after this date have to follow training requirements of the STCW Manila Amendments.
- 1 January 2014: Seafarers who commenced service before 1 January 2012 have to meet the requirements of security training.
- 1 January 2017: Governments may continue to renew and revalidate existing certificate and endorsements in accordance with the STCW provisions which applied immediately prior to 1 January 2012.



Source: (ISF, ICS, 2011, p. 16)

Figure 1 Transitional provisions

2.3 Chapter II - Regulation II, Section A/II and B/II

The amendments to this chapter covers demonstration of additional competence by the officers at operational level and senior officers at management level in Sections

A/II and B/II. Areas that have been identified for such competence requirements are functions involving navigation and controlling the operation of the ship and care for persons on board.

The operational level is applicable for officers in charge of a navigational watch on ships of 500 G/T or more¹⁸. They will have to demonstrate competence in using advanced technology, such as ECDIS, use of effective communication, and ability to transmit and receive visual signalling such as, the Morse code signalling in the area for navigation safety. Although it was agreed in the STW sub-committee that the usage of the Morse code has been gradually reduced, it is vital to maintain such training as an aid to navigation such as buoys and lighthouses are still using the Morse signalling. Under the function for controlling the operation of the ship, the officers will have to demonstrate their competence in ensuring compliance with pollution prevention requirements, and application of leadership and team working skills such as Bridge Resources Management (BRM).

The management level is applicable for masters and chief mates on ships of 500 G/T or more. The Vessel Traffic Service (VTS) areas has been identified as an additional area where additional competence has to be shown when planning a voyage and conducting navigation. The competence in using of Decca and Loran has also been replaced with the competence in using of terrestrial electronic position-fixing systems. Additional competence requirements have also been included in areas such as management of operational procedures, system files and data to assist in command decision-making during navigation. They will also be required to demonstrate additional functional competence in the use of leadership and managerial skill.

The STCW Manila Amendments state that irreducible minimum approved seagoing services require a minimum of 12 months including 6 months supervised bridge

¹⁸ STCW Section A-II/1 “Specification of minimum standard of competence for officers in charge of a navigational watch on ships of 500 gross tonnage or more”

watch-keeping period as part of an approved training program for every candidate, as the old STCW Convention stated. The different thing is that the trainees must follow a programme of ‘structured in-service training’ approved by the administration issuing their certificate. *“Structured in-service training means a program approved by a government to ensure that trainees actually practise and demonstrate their competence to perform the particular tasks and duties that will be required of them when they are qualified”*. (ISF, 2011, p 36) These requirements are not new, however some MET institutes or universities continually suffering when training to meet the requirements of seagoing service period. Therefore, the author will discuss this issue in Chapter 3 with questionnaire paper responses from 7 MET institutes or universities among 7 Far East countries.

One of the main amendments in this chapter is the inclusion of minimum certification requirements of ratings as able seafarer deck¹⁹. This new requirement leads to standardization of the competence level of the able seafarers specially in the knowledge and skills in handling of deck and mooring equipment.

“The STCW qualification of Able Seafarer Deck is intended to reflect the wide range of tasks undertaken by more experienced deck ratings and should serve as an incentive for training and career progression”. (ISF, 2011, p 60) According to the new competences for able seafarer deck, they should contribute to safe navigational watch, handling of cargo and stores, operation of deck equipment and machinery, prevention of pollution, operate survival craft and rescue boats and shipboard maintenance and repair (BIMCO, 2010).

The STCW Manila Amendments have catered for continuous renewal and revalidation for existing able seafarer deck certificates issued in accordance with ILO No 74, until 1st January 2017. However, some administrations may require new candidates to be certified in accordance with the STCW Manila Amendments competence standards for able seafarer deck as from 1st January 2012.

¹⁹ STCW Chapter II - Regulation II/5

2.4 Chapter III - Regulation III, Section A/III and B/III

The STCW Manila Amendment Chapter III prescribes the standards for seafarers working in the engine department. It describes the minimum requirements for certifications of officers and ratings of different functional levels working in the engine room. Major amendments are presented in this chapter.

The on board training requirements for officers in charge of an engineering watch or designated duty engineer on seagoing ship powered by main propulsion machinery of 750 kW propulsion power or more has been increased from 6 months, to not less than 12 months as part of an approved training program including on board training with a documented training record book. Alternatively, the candidate could chose to complete a combined workshop skills training and an approved seagoing service of not less than 36 months of which not less than 30 months must be seagoing service in the engine department²⁰. With this amendment, the on board training period of junior engineers is synchronized with junior deck officers.

Similar to the new minimum certification requirements for able seafarers deck in Regulation II/5, the able seafarers engine are required to be duly certified. There are two certification categories for the able seafarers engine, namely, those Forming Part of an Engineering Watch (RFPEW), and those acting as able seafarers in the engine-room. According to BIMCO manpower 2010 update, there are approximately 747,000 ratings engaged in the maritime industry as of 2010. (BIMCO/ISF, 2010) Therefore, this new amendments will have significant impact on the industry particularly to countries such as China, Indonesia, Malaysia and the Philippines which are the major ratings supply countries (BIMCO/ISF, 2010).

Another main amendment in this chapter is the introduction of a new minimum certification category for Electro-Technical Officers and Ratings²¹. The purpose of this category is to address the increasing demand for such expertise on board the

²⁰ STCW Manila Amendments Chapter III -Regulation III/1, paragraph 2.2

²¹ STCW Manila Amendments Chapter III- Regulation III/6 and III/7

vessels due to the electronic control system of the ship is main propulsion and equipments.

In addition, some special competences were added in Section A-III in connection with Chapter III - Regulation III/1 ~ III/7 for all levels of engineers and ratings.

The Engine-Room resource Management (ERM) and team-work and leadership training are now mandatory at both the operational and management levels.

Due to the numerous changes in Knowledge, Understanding and Proficiency (KUP), all the MET institutes or universities have to consider changing their education and training curriculum to comply with the STCW Manila Amendments within in its implementation time lines.

Table 3 Amended competence for engineers

Capacity affected	Section	New KUP ²² required
Officers in charge of an engineering watch	Section A-III Table A-III/1	<ul style="list-style-type: none"> • Use of internal communication • Operate main and auxiliary machinery and associated control systems • Operate electrical, electronic and control systems • Maintenance and repair of electrical and electronic equipment • Application of leadership and teamwork skills
Chief engineer and second engineer officers on ships powered by main propulsion machinery of 3,000 kW propulsion or more	Section A-III Table A-III/2	<ul style="list-style-type: none"> • Manage the operation of propulsion plant machinery • Plan and schedule operations • Operation, surveillance, performance assessment and maintaining safety of propulsion plant and auxiliary machinery • Manage operation of electrical and electronic control equipment • Use leadership and managerial skills
Ratings as able seafarer engine	Section A-III/5 table A-III/5	<p>Contribute to:</p> <ul style="list-style-type: none"> • a safe engineering watch • the monitoring and controlling of an engine-room watch • fuelling and oil transfer operations • bilge and ballast operations • operation of equipment and machinery • safe use of electrical equipment • shipboard maintenance and repair • handling of stores <p>Apply precautions on and contribute to:</p> <ul style="list-style-type: none"> • prevention and pollution of the marine environment • occupational health and safety procedures
Electro-technical officers	Section A-III/5 table A-III/5	<ul style="list-style-type: none"> • monitor the operation of electrical, electronic and control systems • monitor operation of automatic control systems of propulsion and auxiliary machinery • operate generators and distribution systems • operate and maintain power systems in excess of 1,000 volts • operate computers and computer networks on ships • use internal communication systems • maintenance and repair of: <ul style="list-style-type: none"> - electrical and electronic equipment - automation and control systems of main propulsion and auxiliary machinery - electrical, electronic and control systems of deck machinery and cargo-handling equipment • ensure compliance with pollution-prevention requirements • prevent, control and fight fire on board • operate life-saving appliances • apply medical first aid on board • application of leadership and team-working skills • contribute to the safety of personnel and ship
Electro-technical ratings	Section A-III/7 and table A-III/7	<ul style="list-style-type: none"> • Safe use of electrical equipment • Contribute to monitoring the operation of electrical systems and machinery • Use hand tools, electrical and electronic measurement equipment for fault finding, maintenance and repair operations • Contribute to shipboard maintenance and repair • Contribute to maintenance and repair of electrical systems and machinery on board • Contribute to the handling of stores • Apply precautions and contribute to the prevention of pollution of the marine environment • Apply occupational health and safety procedures

Source: STCW Manila amendments Section A-III/1 ~ III/7

²² Knowledge, Understanding and Proficiency (KUP)

2.5 Chapter V- Regulation V, Section A/V and B/V

STCW Chapter V is standards regarding special training requirements for personnel on certain types of ships. This includes tankers (oil, chemical and liquefied gas tankers) and passenger ships.

The mandatory requirements for the training and qualifications of masters, officers, and ratings on tankers have been split into two parts as follows;

- Oil and Chemical tankers; and
- Liquefied Gas tankers

There are two levels, i.e. basic and advanced training, of certifications requirements for both the oil and chemical tankers, and liquefied gas tankers.

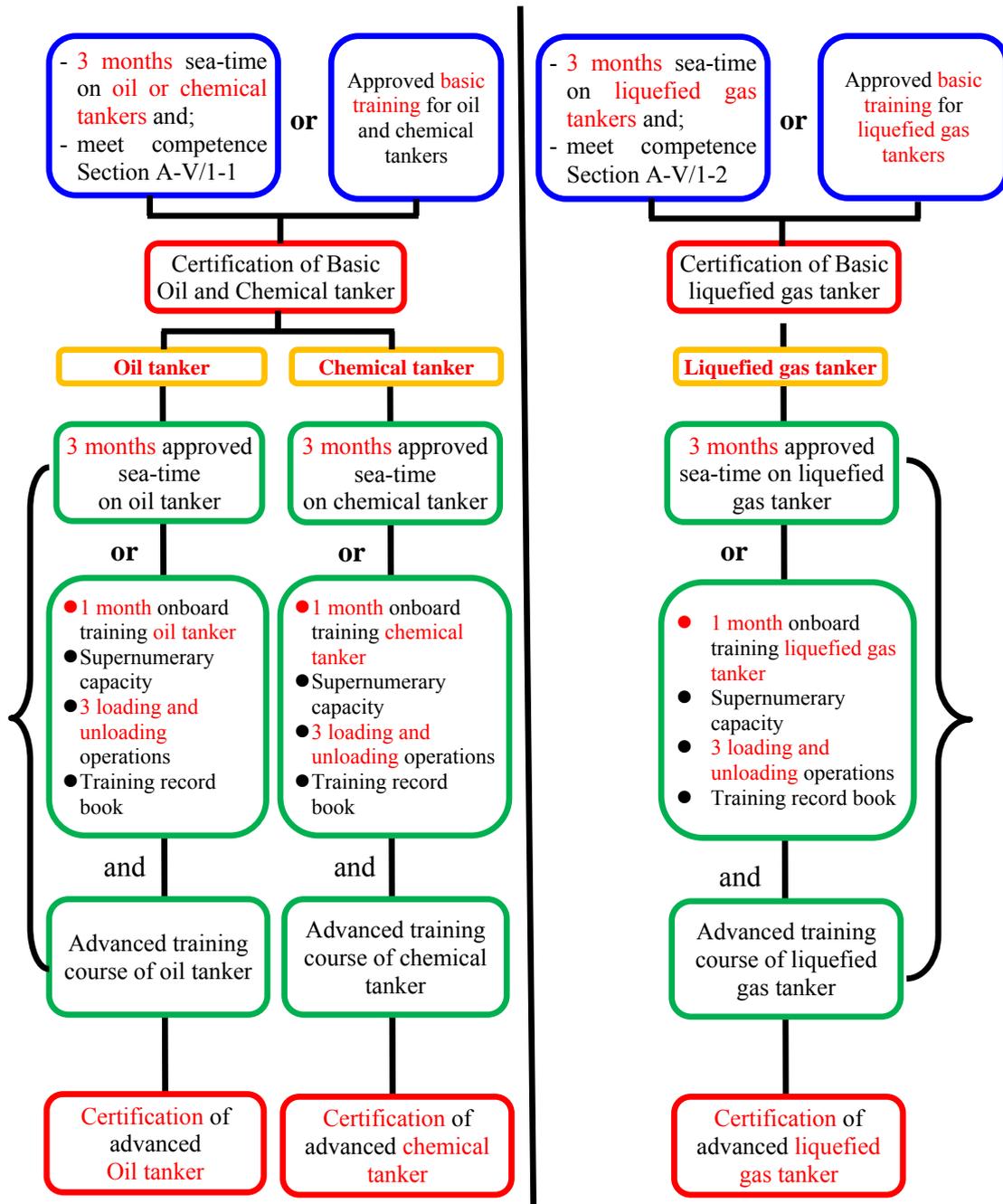
For officers and engineers with “immediate responsibility”²³ for loading, discharging, care in transit, handling of cargo, tank cleaning or other cargo-related operations on oil tankers will be required to obtain a certificate in advanced training for oil tanker cargo operations.”²⁴

The previous requirements on standards of competence have been removed and replaced with a new category standard of competence in Section A/V.

The requirement for certification in basic training and advanced training for oil, chemical and liquefied gas tanker is summarised in Figure 2 as follows :

²³ The term “person with immediate responsibility” means a person in a decision-making capacity with respect to loading, discharging, care in transit, handling of cargo, tank cleaning or other cargo-related operations. (STCW Manila Amendments Chapter V, Section B-V/1, paragraph 1)

²⁴ STCW Manila Amendments Chapter V, Regulation V/1-1, paragraphs 3.



Source: author

Figure 2 Certification procedures of tankers (Oil, Chemical and Liquefied gas tanker)

New tables, A-V/1-1-1, table A-V/1-1-2 and table A-V/1-1-3 have been inserted for description of the standards of competence in basic training for oil and chemical tankers, advanced training for oil tankers and advanced training for chemical tankers. Table A-V/1-2-1 and Table A-V/1-2-2 on the standards of competence in basic training for liquefied gas tankers and advanced training for liquefied gas tankers have also been created.

In addition to the basic fire-fighting course, new competence requirements in carrying out fire-fighting operations on all types of tankers have been included. Other new KUPs were added in standards of competence in advanced training for all types of tankers, such as vapour recovery system, ship-to-ship transfers, precautions for hot and cold work, cargo operations emergency shutdown and enclosed space rescue.

The training and qualifications requirements for officers and personnel on board Ro-Ro passenger ships have been unified with passenger ships in regulations V/2. It means only one category of passenger ships will be applicable after the STCW Manila Amendments. A new section on passenger safety, cargo safety and hull integrity training is created in Section A-V/2. Recommendatory guidance for officers and personnel on board offshore supply vessels²⁵ (OSV) and ships operating in polar waters²⁶ has been included in Section B-V. It generally covers training and qualification required and specific training items such as operating dynamic positioning (DP) systems which have been prescribed in detail.

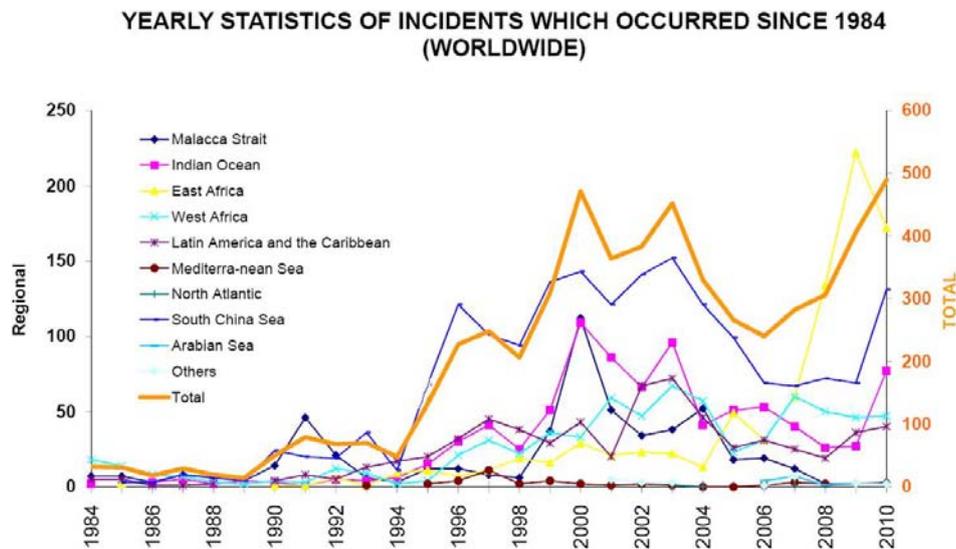
2.6 Chapter VI - Regulation VI, Section A/VI and B/VI

The STCW Manila amendments chapter VI incorporates proficiency in emergency, occupational safety, medical care and survival functions. The term “Certificate of Proficiency” has replaced the phrase special certificate or documentary evidence, as appropriate to ensure consistency of interpretation among administrations.

²⁵ Section B-V/e

²⁶ Section B-V/g

Regulation VI/6 “Mandatory minimum requirements for security-related training and instruction for all seafarers” was also added, in view of the increasing piracy and armed robbery accidents at sea. Figure 3 shows piracy incidents that have occurred since 1984. As can be seen, the total number of piracy and armed robbery incidents are on the rise until 2000. It then fluctuated between 2000 and 2004, and started to rise again from year 2006.



Source: (International Maritime Organization, 2011)

Figure 3 Yearly statistics of piracy incidents occurred since 1984

The types of new security training as stated in the amendments are as follows :

- Security-related familiarization training; (all crew members)²⁷
- Security-awareness training or instruction; and (ISPS Code, all crew members)²⁸
- Training for seafarers with designated security duties (person with security duties)²⁹
- Requirements for issue of CoP for Ship Security Officers (ISPS Code)³⁰

²⁷ Section A-VI/6, paragraph 1

²⁸ Section A-VI/6, paragraph 4

²⁹ Section A-VI/6, paragraph 6 to 9

Marine environmental awareness issues, effective communications on board ship, effective human relationships on board ship and control of fatigue have been included in Chapter VI Section A Table A-VI/1-4³¹ as part of basic safety training. These new requirements may lead to additional educational days. For example, the duration for a basic safety training course is normally 5 days. In order to meet the additional requirements, it may be required lengthening the duration of the course to 5.5 or 6 days.

The refresher training requirements were vague in Chapter VI, Section A. The requirement of “*within five years*” for basic safety training and other proficiency training was left for parties to interpret loosely before. (Belokas, 2011). The new Section A-VI/1, 2 and 3 has been included to ensure that competence for such training is being maintained. The refresher training may be carried out in the form of E-learning, shipboard drills and training or shore based training. “*On board training and experience may also be accepted as a form of maintaining the required standard of competence*”³². However, additional shore based training, such as, actions to be taken when in the water, fire fighting and free fall life boat drill may be required. Therefore, new shore based training items may have to be established as discussed in each specification of minimum standards of competence tables.

2.7 Chapter VIII - Regulation VIII, Section A/VIII and B/VIII

The most significant changes in Chapter VIII were hours of rest regulations. The amendments are highlighted as follows :

- “A minimum 10 hours of rest in any 24 hour period; and
- 77 hours in any 7-day period”³³

³⁰ Section A-VI/5, paragraph 1 to 4

³¹ Table A-VI/1-4 Specification of minimum standard of competence in personal safety and social responsibilities

³² Section A-VI/I paragraph 3, A-VI/2, paragraph 5 and 11, A-VI/3, paragraph 5.

³³ Section A-VIII/1, paragraph 2

“The hours of rest divided into no more than two periods, one of which shall be at least 6 hours in length, and the intervals between consecutive periods of rest shall not exceed 14 hours.”³⁴

Exception clause has also been included:

“parties may to allow exceptions from the required hours of rest provided that the rest period is not less than 70 hours in any 7 day period” and on certain conditions, namely”³⁵

- Exceptions from the weekly rest period shall not be allowed for more than two consecutive weeks;
- The intervals between two periods of exceptions on board shall not be less than twice the duration of the exception;
- The hours of rest may be divided into no more than three periods
- One at least 6 hours in length; and
- Neither of the other two periods less than one hour in length
- The intervals between consecutive periods of rest shall not exceed 14 hours; and
- Exceptions shall not extend beyond two 24-hour periods in any 7-day period.
- Exceptions shall, as far as possible, take into account the guidance regarding prevention of fatigue in section B-VIII/1.

The Section A-VIII/1 of the STCW Manila Amendments has been harmonized with the Maritime Labour Convention, 2006 (MLC 2006) Standard A2.

The objective for amending these regulations is to reduce fatigue. However, the consideration should be taken prior to inception of the exception clause in the STCW Manila Amendments, Section A/VIII, paragraph 9. Further details on this issue will be discussed in Chapter 3 of this study.

³⁴ Section A-VIII/1, paragraph 4

³⁵ Section A-VIII/1, paragraph 9

In addition, new mandatory regulations in preventing alcohol abuse is added as follows;

- Not greater than 0.05% blood alcohol level (BAC), or
- 0.25 mg/ℓ alcohol in the breath, or
- A quantity of alcohol leading to such alcohol concentration for masters, officers and other seafarers while performing designated safety, security and marine environmental duties

Administrations will need to check or put in place a monitoring system to comply with these alcohol abuse regulations.

The new watch-keeping arrangements and principle requirements are added in this Section A/VIII. For example, similar mandatory requirements for the use of BRM and ERM principles, and use of ECDIS are added in Section A/II and A/III.³⁶

2.8 Summary

To summarize this chapter, the following regulations have been included, or amended in the STCW Manila Amendments :

- Chapter I
 - Definitions of the ISPS Code, Ship security officer, Security duties, CoC, CoP, Documentary evidence, Electro-technical officer, Able seafarer deck, Able seafarer engine, Electro-technical rating (Reg. I/1)
 - CoC issuing rules for administration, regulation on the issuing of certificates to masters and officers for tanker training, rules for administrations recognising certificates prior to endorsement, endorsing or issuing certification must make information available to other administrations and companies and a list of certificates or documentary evidence required (Reg. I/2)

³⁶ Section A/VIII/2, paragraph 8 and 47

- Rules for certificates for seafarers operating in near-coastal voyages (Reg. I/3)
- Guidance for use of distance learning and e-learning (Section B-I/6.6 – 6.10)
- Requirements for the IMO MSC with respect to the communication of information by governments to IMO (Reg. I/7)
- Medical certification and medical fitness standards requirements (Reg. I/8 and I/9)
- The requirement for tanker training certificate holders to maintain competence every 5 years (Reg. I/11)
- Use of simulators for seafarer training (Section B-I/12)
- Responsibilities for companies (Reg. I/14)
- Transitional provisions (Reg. I/15)
- Chapter II
 - New required competence such as ECDIS, BRM, use of leadership and managerial skills added (Section A-II/1)
 - Certification requirements for officers and masters on ships not engaged and ships engaged on near-coastal voyages altered (Reg. II/3)
 - Certification of ratings as able seafarer deck introduced (Reg. II/5)
- Chapter III
 - Amended on board training requirements (Section A-III/1.2)
 - New required competence such as ERM, use internal communication systems, operate electrical, electronic and control systems, safe use of electrical equipment. were added for officers in charge of an engineering watch. (Section A, table A-III/1)
 - Manage the operation of propulsion plant machinery added for marine engineering at the management level(Section A table A-III/2)
 - Certification of ratings as able seafarer engine and introduced (Reg. III/5, A-III/5, B-III/5))

- Certification for electro-technical officers introduced (Reg. III/6, A-III/6, B-III/6)
- Certification for electro-technical ratings introduced (Reg. III/7, A-III/7)
- Chapter V
 - Amended and expanded regulation for seafarers on board oil and chemical tankers and requirements for basic and advanced training (Reg. V/1-1)
 - Regulation for seafarers on board liquefied gas tankers introduced (Reg. V/1-2)
 - Amended to provide guidance for seafarers on board passenger ships including Ro-ro passenger ships (Reg. V/2)
- Chapter VI
 - Requirement of the CoP introduced (Reg. VI/1.2)
 - New refresher training requirements introduced (Section A-VI/2)
 - CoP for ship security officers regulation introduced (Reg. VI/5)
 - Regulation for security related training and instruction for all seafarers added (Reg. VI/6)
- Chapter VIII
 - Application of the requirements for the prevention of fatigue amended (Reg. VIII/1.1)
 - Minimum hours of rest and fitness for duty amended (Section A-VIII/1)
 - Regulation for the prevention of drug and alcohol abuse added (Reg. VIII/1.2)
 - Additional factors to be considered for watch-keeping arrangements added (Reg. VIII/2.2)
 - New watch-keeping principles introduced (Section A-VIII/2.8)
 - Watch arrangements altered to include ECDIS (Section A-VIII/2.18)

CHAPTER 3

CHALLENGES IN COMPLYING WITH THE STCW MANILA AMENDMENTS

3.1 Introduction

According to BIMCO/ISF 2010 manpower Updates, the Far East region supplies 29.5 % of officers and 36.7 % ratings to the world wide shipping industry. Table 4 shows the trend of seafarer supply proportion by regions. (BIMCO/ISF, 2010)

Table 4 Recent trends of seafarer supply

Area	Current supply			
	Officers	%	Ratings	%
OECD Countries	184,000	29.4	143,000	19.2
Eastern Europe	127,000	20.3	109,000	14.6
Africa/Latin America	50,000	8.0	112,000	15.0
Far East	184,000	29.5	275,000	36.7
Indian Sub-Continent	80,000	12.8	108,000	14.5
All National Groups	624,000	100.0	747,000	100.0

Source: (BIMCO/ISF, 2010)

Table 5 Number of officer supply in Far East ranks 7 countries

Countries (Far East Rank No. 7) In terms of number of officers supply		Active supply		
		Officers	Ratings	Total
1	Philippines	57,688	23,492	81,180
2	China	51,511	90,296	141,807
3	Indonesia	15,906	61,821	106,202
4	Vietnam	10,738	11,438	22,176
5	Republic of Korea	9,890	2,888	12,778
6	Singapore	7,523	1,150	8,673
7	Malaysia	6,313	28,687	35,000
Sub-Total		159,569	219,772	379,341
Far East Total		183,814	274,510	458,324
%		86.8	80.0	82.7

Source: (BIMCO/ISF, 2010)

Table 5 ranks the 7 Far East region countries in the sequence of the number of officers supplied. These countries cover 86.8% of officers and 80.0% of ratings supplies in the Far East region. Therefore, these countries have been selected for detailed research on the challenges faced in the implementation of the STCW Manila Amendments, for the purpose of this dissertation. Questionnaires were sent to the seven (7) MET institutes or universities that are in charge of seafarers training under STCW Convention in their countries, in these 7 countries respectively.

As it will be an uphill task to conduct questionnaire surveys for all MET institutes or universities located in the 7 countries, only one main MET institute has been chosen in each country for the purpose of this research. The list of questionnaire replies received is listed as follows. It is noted that Indonesia did not reply to the questionnaire. Hence, in order to understand the challenges faced by Indonesia, the report submitted by the Indonesia to the Association of Southeast Asian Nations (ASEAN) related to STCW Convention has been referred to instead.

1. The Philippines : National Maritime Polytechnic (NMP)
2. China : Dalian Maritime University (DMU)
3. Indonesia : Report to ASEAN by Indonesian government (Association of Southeast Asian Nations)
4. Vietnam : Vietnam Maritime University (VIMARU)
5. Republic of Korea (ROK) : Korea Institute of Maritime and Fisheries Technology (KIMFT)
6. Singapore : Maritime and Port Authority of Singapore (MPA) with Singapore Maritime Academy (SMA)
7. Malaysia : Malaysian Maritime Academy (ALAM)

The questionnaire covers areas related in additional expenditure incurred in order to comply with the STCW Manila Amendments ; requirements of training ships to cope with the seagoing service requirements; training course fees; distance learning and E-learning systems; additional training courses except onboard training and experience

which were accepted by parties for maintaining the required standards of competence; opinion on the amendments for hours of rest framework; opinions on the pros and cons of the STCW Manila Amendments; and difficulties faced in complying with the STCW Manila Amendment and in their opinion if further amendments are required.

3.2 Analysis of questionnaire

Although one main MET institute or university had been selected for the distribution of the questionnaire for each country in the Far East region, the answers obtained from these institutes or universities should not be regarded as the countries' opinions or comments. Nevertheless, the selected institutes or university are the main MET training providers, so the replies could be regarded as representative in the challenges faced in implementing the STCW Manila Amendments by the MET institutes or universities. This chapter will analyse the replies received from the questionnaire, and highlight the challenges faced and important opinions provided with regards to implementation of the STCW Manila Amendments.

3.2.1 Training ships for onboard training

The requirements for sea service are not new in the STCW Convention. However, the new amendments have increased the sea service requirements for marine engineers to synchronise with the deck officers. This means that more on board training ship placements will be required as the turnover rate for the cadets will be longer.

Table 6 provides an overview of the sea service period required under each CoC, and sea service period required in order to qualify for tanker endorsements.

Table 6 Required on-boarding training period to get CoC and tanker Certificates

Certificate of Competency (CoC)			Tanker certificates		
Deck		Engine	Oil, Chemical and Liquefied gas tanker		
Officers 500G/T or more (Reg. II/1)	Officers Less than 500 G/T (Reg. II/3)	Officers in charge of an engineering watch (Reg. III/1)	Masters, officers and ratings (Reg. V/1-1)		
Required on board training period					
<ul style="list-style-type: none"> ● 12 months approved training ; or ● 36 months approved seagoing service 	<ul style="list-style-type: none"> ● Appropriate seagoing service(as required by the administration); or ● 36 months approved seagoing service 	<ul style="list-style-type: none"> ● 12 months whokshop skills training and approved seagoing service; or ● 36 months of seagoing service of which not less than 30 months shall be seagoing service ● Not less than 6 months engine-room watchkeeping during the seagoing service 	<ul style="list-style-type: none"> ● 3 months approved seagoing service on tanker; or ● approved basic training (basic) 		
			Basis tanker certificate		
			<ul style="list-style-type: none"> ● Meet basic training requirements ; and ● 3 months approved seagoing service on tanker ; or ● 1 month approved onboard training in tanker (advanced) 		
			Advanced tanker certificate		

Source: STCW Manila Amendments Regulation II, III and V

Generally, there are two ways which a cadet could complete his or her sea service. One is serving onboard merchant vessels, and the other is serving onboard a training ship provided by the institute.

Table 7 Types of on board training placement available in the surveyed institutes

	NMP	DMU	Indonesia	VIMARU	KIMFT	SMA	ALAM
Training Ship(No.)	No	Yes(1)	N/A	Yes(1)	Yes(2)	No	No
Capacity	-	196 cadets	N/A	60 cadets	318 cadets	-	-
Shipping companies on-board training	Required	Required	N/A	Required	Not required	Required	Required

Source: Questionnaire reply

Based on the survey, there is an even distribution in the sea service method deployed in their countries. However, the generally comments received from those institutes or universities that do not own training ship facilities is that the available onboard ships placement is heavily reliant on the shipping companies' support.

According to questionnaire replies from the NMP (Philippines), a minority of institutes only owns training ships, so the majority of the institutes in the country still send their cadets on merchant ships. In order to ensure that all the register cadets will be able to complete their sea service period, the institute is planning to establish an agreement with shipping companies to secure their on board training placement through an apprentice officer program.

The DMU and VIMARU are facing a similar situation, as the capacity available in their training ships are insufficient to serve all the registered cadets. Hence, in these countries the training ships are only used for on board familiarisation. The cadets will have to look for shipping companies to complete their remaining sea service period. Hence, the dependency on shipping companies to provide on board training placements is relatively high.

The KIMFT has 2 training ships with sufficient on-board training capacity to provide seagoing services to cadets. To understand the status of on-board training capacity of ROK, the author has also researched on the availability of training ships capacity in other MET universities in ROK.

The ROK has a total of 6 training ships, on which the cadets will be able to fully complete their sea service period onboard these training ships. Yet, due to job security reasons, half of the cadets' preferred option is to serve their on-board training on merchant ships. So annually, shipping companies will provide approximately 50% of the on board training placements to these institutes to support the training programme. Tables 17 and 18 of Chapter 4, 4.2.3 provide

the detailed particulars of the 6 training ships and the breakdown of the on board training placements in accordance to institutes in 2011.

In ALAM and SMA, the only option for cadets to serve their sea service is on-board merchant ships. The disadvantage of this option is that the on board training placement is totally dependent on the shipping companies. In addition, over the years the institutes are facing growing difficulty in securing sufficient onboard training placements.

Recognising this problem, the STCW Manila Amendments adopted Resolution 13 as follows,

...the lack of adequate accommodation for trainees on board ships constitutes a significant impediment to properly training them and subsequently retaining them at sea, thus adding to the aforementioned shortage, urges ship-owners, ship managers and shipping companies to provide suitable accommodation for trainees on board their ships both existing and new.³⁷

This resolution is to encourage shipping companies to provide suitable accommodation for trainees on existing ships and also to take into account such requirements on their new ships.

Based on the survey, it could be seen that most of the MET institutes or universities are facing difficulties in providing sufficient onboard training opportunities to their cadets except the ROK. Although the ROK has sufficient capacity on its training ships, it is not fully made use of. This vacancy could be put into better use if it is offered to other countries. The detailed proposal will be discussed in Chapter 4 of this dissertation.

³⁷ STCW Manila Amendments, Resolution 13, "Accommodation for trainees"

3.2.2 Distance learning and E-learning

The fast pace developments in technology has led to the changes in the STCW Manila Amendments to officially recommends the use of technology to assist in training³⁸.

The distance learning and E-learning has different concepts. Distance learning and E-learning are defined as follows;

Distance learning is defined as an educational system consisting of the methodologies and technologies that support learning when the learner resources are separated by time and/or space (IDE, 1998, p.5).

E-learning is the delivery and administration of learning opportunities and support via computer, network and web-based technology to help individual performance and development". E-learning enhances learning by extending and supplementing face-to-face learning rather than replacing it (Pollard and Hillage, 2001).

Generally, E-learning could be used as one of the methods for providing distance learning. There are many advantages in these learning methods. For instance, through E-learning, learning materials can be provided to the participant anytime. Hence, the participants can have the flexibility to have courses at their own pace without time restrictions as compared with traditional learning methods. Also, the accessibility of E-learning from anywhere in the world is one of the good advantages. The participant will not need to be restricted at any location in order to do the training courses.

According to the survey carried out, most of the MET institutes or universities have not set up distance learning and E-learning systems yet. Table 8 shows the status of distance learning or E-learning possessions.

³⁸ Section B-I/6, paragraph 7 and 11

Table 8 Status of distance learning or E-learning possessions

	NMP	DMU	Indonesia	VIMARU	KIMFT	SMA	ALAM
Distance learning or E-learning	No	No	No	No	Yes	Yes	No

Source: Questionnaire reply

The reasons provided from the institutes or universities for not providing distance learning and E-learning facilities are mainly due to lack of infrastructure, such as internet availability, lack of funds to set up suitable systems to provide such programmes, lack of trainers, and lack recognition and support from the government. Some also opined that the seafarers training consists of practical components that could not be delivered through distance learning and E-learning.

Out of the 7 MET institutes or universities surveyed, only MET institutes from the ROK and Singapore are providing options for distance learning and E-learning programmes. However, the contents for their programmes differ. KIMFT of ROK provides E-learning programs for short training courses, such as a basic tanker course and standards of competence for masters and chief mates on ships of 500 G/T or more. While in SMA of Singapore, the distance learning and E-learning programs are incorporated as part of the CoC programs for the deck officers and marine engineers at operational level. The E-learning programs are provided with the objective to facilitate learning from home or at work at the learners' own pace.

Although there are benefits in introducing distance learning and E-learning, KIMFT has met with some challenges in the up keeping of such programs. For instance, they had commented that these programs are creating additional workload for the professors as they are required to monitor, assess and mentor the candidates who are outside their classes.

3.2.3 Hours of rest regulations

3.2.3.1 Background

Hours of rest for seafarers has been a controversial topic, as on the one hand the regulations are to ensure that the seafarers are given adequate hours of rest to enhance the safety of the ships together with reducing fatigue. On the other hand, if the regulations are too harsh, it will be difficult to operationalize the requirements onboard. The revised hours of rest adopted in the STCW diplomatic conference in Manila was to synchronize the hours of rest requirements with ILO's MLC 2006.

3.2.3.2 Hours of rest and work regulations under the ILO Conventions and STCW Manila Amendments

Table 9 Hours of rest and works regulation under
MLC 2006 and STCW Convention

	Regulation of Hours of rest/works
MLC, 2006 Standard A 2.3	Hours of work and hours of rest, maximum hours of work shall not exceed (i) 14 hours in any 24-hour period; and (ii) 72 hour in any seven-day period; Minimum hours of rest shall not be less than (i) Ten hours in any 24-hour period; and (ii) 77 hours in any seven-day period.”
STCW Manila Amendments Section A-VIII/1	Provide rest period of not less than: 2.1 a minimum of 10 hours of rest in any 24-hour period; and 2.2 77 hours in any 7-day period. 9 Parties may allow an exception from the required hours of rest is not less than 70 hours in any 7 day period ³⁹

Source: (MLC, 2006) (IMO, 2011)

As can be seen above in Table 9 the regulation of hours of rest in MLC 2006 and STCW Manila Amendments roughly harmonized between each other.

³⁹ STCW/CONF. 2/DC/2, Section A-VIII/1, paragraph, 9

3.2.3.3 Opinions collated on hours of rest regulations

All the surveyed MET institutes or universities agreed that the regulations should be applied to all personnel involved in duties covering safety, prevention of pollution and security matters; and duty officers and ratings involved in watch-keeping. Table 10 lists the opinions from each of the MET institute on hour of rest regulations in terms of reasonability.

Table 10 Opinion of hour of rest regulations

	Opinion of hour of rest regulations
NMP	Reasonable
DMU	Reasonable
Indonesia	N.A.
VIMARU	Reasonable
KIMFT	Reasonable, however there are considering item to ensure hour of rest regulations such as manning level, work-load and ship inspection in the port.
SMA	Reasonable, however the regulation by itself will not solve the issue of fatigue unless concerted efforts are made by all parties responsible for shipping industry
ALAM	Reasonable, however the hours of rest regulations are nor considered paper-work

Source: Questionnaire reply

The general opinions on the subject are that the hours of rest requirements are reasonable. However, KIMFT and ALAM opined personally that the scope for hours of rest should not comply with regulations when the seafarer is conducting a lot of ship inspections and doing paperwork as a lot times this work is conducted during rest hours. The importance of hours of rest is stated as follows.

Rest breaks during work, particularly aboard ship should be sufficient and strictly complied by seafarers and management of the vessel due to the importance of this element which can impair the performance and alertness of seafarers. Some of the factors within human element which can potentially cause fatigue are workload aboard ship and in ports. The tasks

such as paperwork requirement, schedule shifts and overtime can have big impact on seafarer's fatigue onboard leading to errors being made. (Ermal Xhelilaj, 2010, p. 26, 27)

Also, SMA commented that the regulation itself would not solve the issue of fatigue unless concerted efforts are made by all parties responsible for the shipping industry. For instance, charter parties should have provisions for compliance with rest periods of crew. If crew are given very short periods to clean tanks, load and discharge cargo in voyages of very short duration, then provisions should be made to allow such ships to proceed to anchorage to catch up with the minimum period of rest. In such cases, to ensure that the ship is safe at anchor or laid up at berth alternate arrangements for watch-keeping should be provided.

3.2.3.4 Case study on hours of rest depending on manning levels

In order to demonstrate the sufficiency of the hours of rest regulations, the following scenarios were created to analyse the suitability of the mandatory hours of rests requirements. The scenarios are based on two VLCC with different manning levels and hours of rests. The case study is as follows;

There are preconditions in the case study as follows :

- Same size two VLCC with different flag states
- 5-days of works to discharge 2,000,000 bbls of crude oil to 4 sister ships in the Gulf of Mexico.
- VLCC "A" has 22 crews. (Master + 4 deck officers)
- VLCC "B" has 18 crews. (Master + 3 deck officers)

Table 11 working hours for deck officers of VLCC “A”⁴⁰ (See in detail Appendix 4)

Rank Day	Capt.	C/O	1/O	2/O	3/O	Kind of Works
Day 1	8 H	12 H	12 H	12 H	12 H	1 st STS
Day 2	8 H	12 H	10 H	12 H	12 H	2 nd STS
Day 3	8 H	12 H	10 H	12 H	12 H	3 rd STS
Day 4	8 H	12 H	10 H	12 H	12 H	4 th STS
Day 5	8 H	12 H	12 H	12 H	12 H	4 th STS
Day 6	0 H	0 H	8 H	8 H	8 H	1 day rest except duty officer
Day 7	4 H	8 H	8 H	4 H	4 H	Normal navigation
Duty		Cargo	Cargo	Bridge	Bridge	
TTL	44 H	68 H	70	72 H	72 H	

Sources: working hour record of Panama flag state VLCC⁴¹

According to Table 11, VLCC “A” can comply with MLC 2006 and STCW Manila Amendments⁴² Work/rest cycles are assigned 6 hours on and 6 hours off in the cargo control room and bridge during the STS operations (See Table 11).

Table 12 working hours for deck officers of VLCC “B”⁴³ (See in detail Appendix 4)

Rank Day	Capt.	C/O	2/O	3/O	Kind of works
Day 1	12 H	14 H	12 H	12 H	1 st Ship To Ship (STS)
Day 2	12 H	14 H	12 H	12 H	2 nd STS
Day 3	12 H	14 H	12 H	12 H	3 rd STS
Day 4	12 H	14 H	12 H	12 H	4 th STS
Day 5	12 H	14 H	12 H	12 H	4 th STS
Day 6	8 H	0 H	8 H	8 H	1 day rest except duty officers
Day 7	4 H	8 H	8 H	8 H	Normal navigation
duty	Bridge	Cargo	Cargo	Bridge	
TTL	72 H	78 H	76 H	76 H	

Source: Working hour record of Singapore flag state VLCC⁴⁴

⁴⁰ VLCC “A” which one WMU student boarded as C/O and has discharged crude oil by Ship To Ship (STS) operation in Gulf of Mexico.

⁴¹ Chae, Chong Ju who boarded VLCC of Hyundai Merchant Marine as a C/O from 1999 to 2006

⁴² See table 14

⁴³ VLCC “B” which the other WMU student boarded as C/O and has discharged crude oil by STS operation in Gulf of Mexico.

⁴⁴ Jolyn Tay Ling Ling who boarded VLCC of Maersk Line Ltd as a C/O from 2000 to 2005

According to Table 12, the total working hours of Captain, C/O, 2/O and 3/O are 72 H, 78 H, 76 H and 76 H.⁴⁵ It means that all the deck officers cannot comply with MLC 2006, even though they can comply with hours of rest of the STCW Manila Amendments.

Therefore, due to the disparity of manning standards, there are different work/rest cycles which are applied in the same type of ships.

3.2.3.5 Paper workload of seafarers

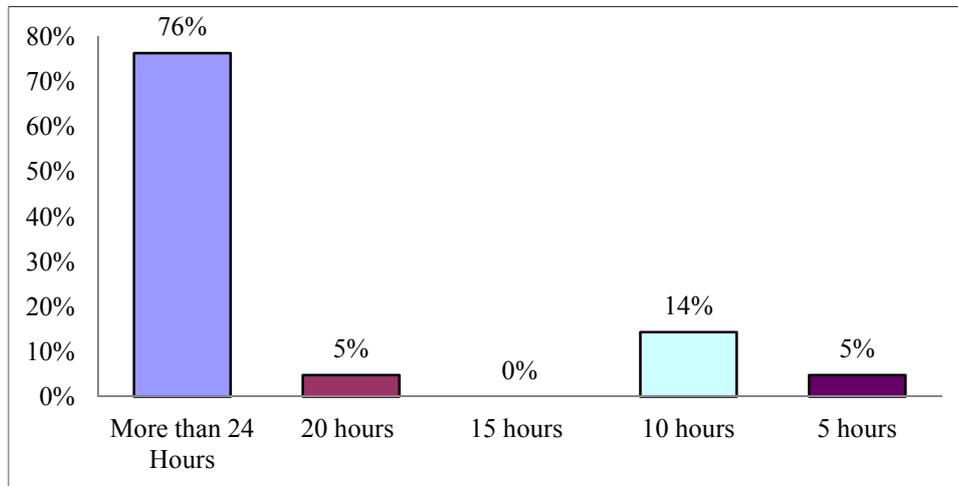
Although technology enhancement onboard ship has improved the paperwork burden for seafarers, the introduction of new conventions and regulations is accumulating the paperwork load onboard the ships. This causes the seafarer to be overwhelmed with information and obligated to complete the task to ensure that the ship will not meet with any non-compliance when it calls at the next port. (Hermansson, 2004)

3.2.3.6 Ship inspection burden

Numerous ship inspections such as port state control inspection, flag state inspection, class survey and oil major inspections⁴⁶ for tanker ships contribute to the reduction on the hours of rest for seafarers. Based on the author's research on "Suggestion of Improving Measures with the Status Analysis for Ship Inspection by Major Oil Companies", the seafarers answered "required time to preparation for major inspection" and "difficulties about major inspection on tanker ships as can be seen in Figures 4 and 5. (Chae, 2009)

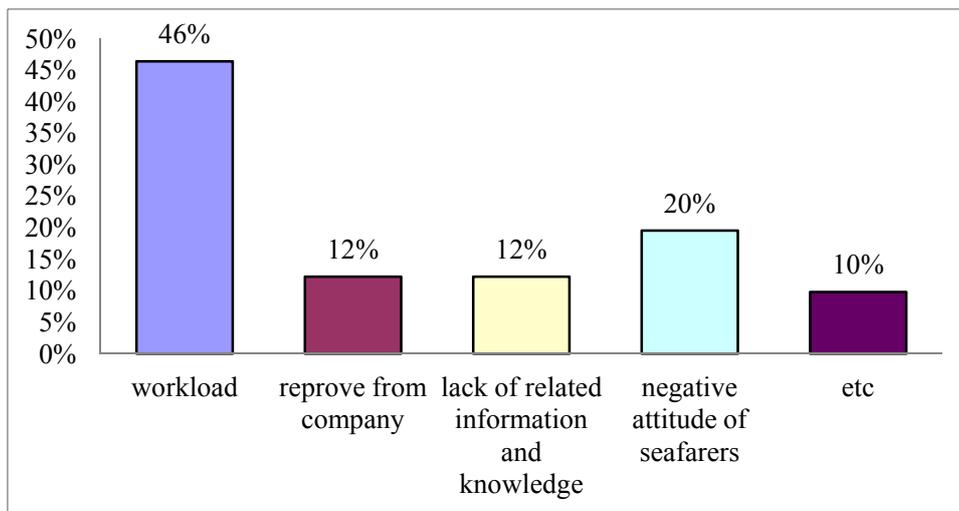
⁴⁵ See table 14

⁴⁶ Tanker inspections carry out by Major oil company such as BP, Shell etc.



Source: (Chae, 2009)

Figure 4 required hours to preparation for Major inspection on tanker ships (Chae, 2009)



Source: (Chae, 2009)

Figure 5 Difficulties about Major inspection on tanker ships (Chae, 2009)

Figure 4 draws the required time to preparation of major inspection. 76 % of the seafarers said that more than 24 hours was required. Figure 5 draws out the types of activities that lead to reduction of hours of rest onboard the ships. About 50% of the seafarers on tanker ships felt that the workload for “major

inspection” is the main cause for the reduction in hours of rest. The inspection work during berthing in port has also been considered as extra workload to seafarers.

Therefore, it is important for shipping companies, administrations and flag states to carefully consider when they determine manning levels on certain types of ships to take into consideration the extra activities onboard the type of vessels that may lead to reduction of hour of rest period of seafarers.

3.2.4 Additional costs required for implementation of the STCW Manila Amendments

More than half of the MET institutes or universities have indicated that there are additional costs for the implementation of the new training or education programs to comply with STCW Manila Amendments. For instance, full mission simulation for deck and engine, and advanced ECDIS simulator will require substantial financial investments.

The guiding principle of the STCW Manila Amendments is to have flexibility in terms of implementing the requirements stipulated in relation to training, and certification. The STCW Manila Amendments have added “*84 new competence areas where methods for demonstrating competence is approved simulator training, where appropriate*” (Nordholm, 2011).

As mentioned in Chapter 2, more emphasis has been placed on simulator based assessment for core competence required. Indirectly, this requirement has become a financial burden to the MET institutes or universities, which are required to establish new training programs linked to simulation systems.

Table 13 Listed the costs of some of simulation systems installed in MET institutes of ROK in 2009 and 2010

	FMSHS*	FMERS**	ECDIS***	VTS****
Prices of simulator	2.2 million US\$	1.3million US\$	1.1million US\$	1.2 million US\$
Date of Installed	2009 July	2009 September	2010 March	2010 March
* : Full Mission Ship Handling Simulator ** : Full Mission Engine Room Simulator *** : Electronic Chart Display and Information System **** : Vessel Traffic Service Simulator				

Source: *Transas Korea branch (Transas, 2010)*

With reference to Table 13, installation of simulation systems requires high capital costs. Private MET institutes that do not have budgetary support from the government may face financial difficulties for such large amounts of investment. On the occasion when such investment has been made by private MET institutes, the recovery costs for the simulator are passed on to the seafarers in the form of course fees. Hence, indirectly the seafarers' training costs may be increased under such circumstances. Table 14 shows course fees of certain courses.

Table 14 Listed the course fees for ECDIS, BRM and ERM in 7 main MET institutes

Unit: US \$

Institutes Courses	NMP	DMU	Indonesia*	VIMARU	KIMFT	SMA**	ALAM	
ECDIS	60	400	N/A	73	160	790	500	
BRM	180	400	N/A	20	480	780	1400	450
ERM	160	400	N/A	20	350	780	1400	450
* : Indonesia is not replied about course fees ** : 780 is for operational level. 1400 is for management level.								

Source: (MAAP, 2011), (DMU, 2008) (*VIMARU, 2011*) (KIMFT, 2008), (SMA, 2009)

It can not be concluded that all existing seafarers will be affected by the implementation of mandatory courses in the STCW Manila Amendments. However, new seafarers and some existing seafarers may be affected by the mandatory course requirements.

Table 15 Status of requirement of simulation system

No	Name of MET institutes	Simulation system for BRM and ERM	ECDIS
1	NMP (Philippines)*	Existing facilities are able to cope with the new amendments requirements.(2009 newly installed)	
2	DMU(China)	Required	Required
3	Indonesia	Required	Required
4	VIMARU (Vietnam)	Required	Required
5	KIMFT(ROK)**	Existing facilities are able to cope with the new amendments requirements.(2010 newly installed)	
6	SMA (Singapore)	Existing facilities are able to cope with the new amendments requirements.	
7	ALAM (Malaysia)	Additional cost for training trainers are required	
* 2009 newly installed full mission Bridge and Engine room simulator supported by Japan			
** 2011 newly installed full mission Bridge and Engine room simulator supported by government of ROK			

Source: questionnaire reply

Out of 7 MET institutes surveyed, 3 (ie. DMU, Indonesia and VIMARU) expressed that their MET institutes or universities would require some form of financial support in order to install or upgrade the existing simulation system and equipment to meet the STCW Manila Amendments requirements. Especially for those that require brand new installations, the institutes or universities are facing difficulties in securing sufficient funds to proceed further. Another challenge faced, is the financial support to upgrade the knowledge and skills of the trainers in order to deliver the course, which is a problem for ALAM.

As for the remaining countries, they informed that the existing facilities are sufficiently equipped to cope with the new amendments requirements. This is because they have a certain form of financial support from their government. For example, KIMFT installed the Full Mission Ship Handling Simulation Systems on March 2011. The total cost was approximately USD 2.2 million, which is funded by the ROK government (KIMFT, 2011).

Based on the survey conducted, almost half of the MET institutes or university will need to install or upgrade simulation systems and trainers training due to the new requirements of the amendments. However, most of them are facing challenges in securing funds.

3.2.5 Other issues related with the STCW Manila Amendments

3.2.5.1 The possibility of misinterpretation of KUPs

In the KUPs column of the standards of competence tables, the column mainly focuses on the scope of the training for each competency required. However, the delivery of training, and the objectives of the training refer to the training syllabi of general learning objectives and the specific learning objectives. The interpretation of the KUPs column on learning objectives is critical as any misinterpretation may result in the wrong training outcomes. Previously, the IMO model courses were used as the guiding instruments. However, for the implementation of the STCW Manila Amendments, the new/revised IMO model courses may not be in place on timely revision of the learning objectives and most likely that the reliance on the old model courses would still be needed.

3.2.5.2 Definition of qualified person was not defined

In paragraph 2 regulation I/6 “Training and Assessment”, it is stated that those responsible for the training and assessment of competence of seafarers, as required under the Convention, are appropriately qualified. The term qualified generally refers to as being suitable, appropriate or acceptable. In chapter I regulation I/1 “Definition and clarifications”, the definition of qualified person for the context of training and assessment was not in place thus in the absence of a proper definition would be left to individual interpretation. If studying the training and assessment, the scope of training is covered in the KUP column whereas the assessment columns are covered in column 3 and 4. All the three columns covered technical competencies

whereas in training the trainer delivery skills or teaching approach must also be emphasised.

3.2.5.3 Issuing party of training record books for approved seagoing service of tanker ships

The regulation V/1-1 and V/1-2 made a mandatory requirement for onboard training requirements to be instituted for those who have the intention to obtain advance tanker endorsement and the UK format and content of the training record book was recommended. The issue is who will be the issuing party for this training record book. Would it be the training institution which issued the record book as part of their training or the administration as the endorsement authority ?

3.3 Summary

Seven main MET institutes or universities from the top seafarer (officers) supplying 7 countries of the Far East region were chosen for the questionnaire survey. The purpose of the survey was to investigate the challenges faced by each country in implementing the STCW Manila Amendments. These 7 countries represent 86.8% of the officers supplies in the Far East region.

Some of the problems faced by the countries in implementation of the STCW Manila Amendments are as follows:

- Difficulties in providing sufficient onboard training placements for cadets to serve their sea service requirements as required under regulation to get CoC;
- The distance learning and E-learning are useful methods to eliminate barriers to give high quality education to seafarers. However, most MET institutes or universities do not have that system or have some difficulties even if they have it;
- Hours of rest regulations is harmonized with MLC 2006. However, there are important factors that have to be considered to determine hours of rest and

standard manning levels such as paper workload, disparity of manning standards and a lot of ship inspection by different authorities;

- Additional budget needed for installation of new equipment to comply with STCW Manila Amendments or provide better training programs; and
- Other issues that need to be considered in the STCW Manila Amendments as follows
 - The possibility of misinterpretation of KUPs
 - Definition of qualified person was not defined
 - Issuing party of training record books for approved seagoing service of tanker ships

CHAPTER 4

POSSIBLE PROPOSALS

4.1 Introduction

The STCW Manila Amendments are more comprehensive as compared to the previous version. Many core training courses have been made mandatory instead of optional. More emphasis has been put on the mandatory qualifications requirements of officers and ratings other than deck and engine. The STCW Manila Amendments also shows support in introducing more technology based on training methodology and they harmonize some of the certification requirements with other international conventions.

However, it is not all a bed of roses. Based on the questionnaire survey conducted, some MET institutes or universities are facing problems in implementing the requirements.

This chapter will discuss the possible proposals on some of the problems highlighted in Chapter 3.

4.2 Lack of onboard training placements

As highlighted in Chapter 3, 3.2.1, most MET institutes or universities are facing increasing challenges in securing onboard ship training placement on seagoing ships as required in the STCW, Regulation II/1 and III/ 1

4.2.1 Storage in qualified seafarers

The BIMCO/ISF Manpower 2010 update report stated that by 2020, there will be a general shortage of qualified officers and ratings. The breakdown based on broad national groups is illustrated in the Table 16.

Table 16 Supply and Differences by Broad National Group for 2020

Flag	Supply : 2010 stock				Difference	
	Less Wastage		Forecast Demand		(Supply-Demand)	
	Officers	Ratings	Officers	Ratings	Officers	Ratings
OECD Countries	204,867	95,332	275,496	316,397	-70,629	-221,065
Eastern Europe	154,412	107,933	35,949	35,336	11,8463	72,597
African/Latin America	67,006	112,324	227,972	214,170	-160,966	-101,846
Far East	242,276	318,580	180,228	196,931	62,048	121,849
Indian Sub-continent	95,719	156,908	52,552	57,881	43,167	99,027
All national groups	764,281	791,077	772,198	820,515	-7,917	-29,438

Source: (BIMCO/ISF, 2010)

Thus, the demand for qualified seafarers has been increasing. The importance of providing continuous education and training for the younger generation in this profession is also increasing. However, the efforts have evidently not been successful due to lack of available placements for on board training.

In addition, the STCW Manila Amendments state the importance of seagoing services as follows in the STCW Section B-II/1-3

The mandatory periods of seagoing service are of prime importance in learning the job of being a ship's officer and in achieving the overall standard of competence required. Properly planned and structured, the periods of seagoing service will enable prospective officers to acquire and practice skills and will offer opportunities for competences achieved to be demonstrated and assessed.

There are several reasons that led to insufficient placements capacity for on board training to cadets. High costs in building and maintaining of training ships are one of the contributing factors. Other alternatives such as commercial ships are also limited, as the manning are mostly reserved for qualified seafarers in order for the ship to operate safely. Also, the cost for training cadets can be burden a to small shipping companies.

Based on the survey conducted, 6 MET ⁴⁷ institutes or universities are depending on commercial ships for placements of on board training for the cadets. Out of these six, two of the MET institutes or universities own their own training ship (VIMARU, DMU). The only exception is KIMFT which owns two training ships with a total capacity of 318 cadets. This has been proven to be sufficiently cope with the demand for on board training placements. The 6 MET had commented that as they are highly dependent on commercial ships for on board training, at a lot of times not all the cadets will get a placement to fulfil the onboard training requirement on time.

4.2.2 Proposal – Joint On-board Training Centre (JOBTC)

In this proposal, the country with relatively sufficient capacity for on board training may extend such vacancies to other countries which require such placement for their cadets to fulfil their on-board training. This could be carried out through a Joint On-Board Training Centre (JOBTC) taking the ROK as an example, the total on board training capacity available is 1,084 (i.e. KIMFT, Korea Maritime University and Mokpo Maritime University), and in addition commercial companies are also providing opportunities for the cadets to complete their on board training service on commercial ships. Hence, the ROK has more than sufficient placements to cope with the on board training demand in the ROK. In this case, the remaining vacancies of training ships could be extended to other countries. Table 7 of Chapter 3, 3.2.1 lists types of on board training placement available in the surveyed institutes or universities and their capacities based on statistics collated from the questionnaires.

According to more detailed research which regarding the status of training ships in the ROK, the author recognized the following information. Table 17 shows the general particulars of training ships in KIMFT, KMU and MMU of the ROK.

⁴⁷ DMU, Indonesia, VIMARU, SMA and ALAM

Table 17 General particulars of training ship of KIMFT, KMU and MMU

	KIMFT		KMU		MMU	
Name of Ship	HANBANDO	HANWOORI ⁴⁸	HANBADA ⁴⁹	HANNARA	SAE YU DAL	SAE NU RI
G/T	3,491	4,108	6,686	3,640	3644	4701
L/B/D	99.80× 14.50× 9.50(M)	87.55× 16.00× 10.00(M)	117.20× 17.8× 8.15(M)	102.70× 14.50× 7.00(M)	102.7× 14.5× 9.5(M)	103.0× 15.6× 9.9(M)
Built	1975	1989	2005	1993	1993	2003
Capacity	174	144	204	152	202	208
Total capacity	318		356		410	

Source: (KIMFT, 2008) (KMU, 2008) (MMU, 2010)

Table 18 shows actual boarding rates of training ships in each MET (KIMFT, KMU, MMU) of the ROK. The data of the actual number of cadets in each ship are from each MET institute and universities as dated on 1st September 2011. On the average, the boarding rate is only about 51.3%.

Table 18 Training ship boarding rates of ROK

	KIMFT		KMU		MMU	
Name of Ship	HANBANDO	HANWOORI	HANBADA	HANNARA	SAE YU DAL	SAE NU RI
Capacity	174	144	204	152	202	208
Number of students (boarded)	89	119	83	97	81	87
Boarded Rates	51.1%	82.6%	40.7%	63.8%	40.1%	41.8%
Average	65.4%		50.6%		41.0%	
Total average	51.3% (556 Boarded)					

Source: (KMU, 2008), (KIMFT, 2008), (MMU, 2010)

Dates : 1st September 2011

The JOBTC idea was first raised during the STCW diplomatic conference in Manila on 22nd June 2010. An agreement to establish a Global On-Board

⁴⁸ KIMFT bought second-hand training ship “HANWOORI” with cost about 12 million US\$ on 2010 (KIMFT, 2008)

⁴⁹ KMU built new training ship “HANBADA” with cost about 42.5 million US\$ on 2005. (KMU, 2008)

Training Centre (GOBTC) to provide on-board training placements was established. This is a potential organization in its embryonic stage, started by 5 maritime universities (KMU, DMU, Maritime State University of Russia, Istanbul Technical university and Jhon B. Lacson foundation maritime university) and structured to support the initiative to have all shipping companies work globally to meet the current and future needs of qualified officers by supplying onboard training positions. However, so far there is no progress of GOBTC beyond the agreement. This may be due to several factors. First, the agreement was not established at governmental level, unlike the Official Development Assistance (ODA) programs (IMO, 2007). This makes it difficult for it to be pursued further at later stage. Second, the funding for supporting this program was not clearly established and properly worked. Taking as lessons learnt, the proposed JOBTC, could be funded by IMO through an international technical cooperation program.

Table 19 demonstrates the breakdown costs for training a cadet in accordance to the STCW Convention requirements. It is to be noted that the costs may vary depending on the commodities of each country and market influences. Nevertheless, Tables 19 and 20 can be taken as a reasonable guide to estimate the training costs per cadet varying from USD 5,000 at KIMFT or USD 11,000 at KMU per year⁵⁰. Therefore, if the donor country donates 1 million US\$, then about 100 cadets in KMU or 200 cadets in KIMFT can have onboard training in the ROK.

⁵⁰ The costs different are mainly depending on ships size, capacity, personnel expenses and ship operation period of each MET institutes. The costs of onboard training per cadet are in between 11,000US\$ ~19,000 US\$ in ROK, if the personnel expenses to operation training ships are included.

Table 19 On-board training cost of KIMFT

Unit : US\$

Category	MET	KIMFT	
		Training ship "A"	Training ship "B"
Cost category*			
Ship operation costs		683,000	314,000
Food expenses		189,000	179,000
Insurance		153,000	126,000
Personnel expenses (52 persons)		981,000	981,000
Total cost**		2,006,000	1,600,000
Total capacity		174	144
Actual boarded 2011		89	119
Costs/cadet with actual boarded		22,539/year	13,445/year
Costs/cadet with total capacity		11,529/year	11,111/year
Except personnel expenses		5,890/year	4,299/year
average		11,320 US\$ 5,094 US\$ (except personnel expenses)	
* Cost category are included only major expenditure			
** Total cost included personnel expenses of each ship			

Sources : (KIMFT, 2008)

Dates : 1 September, 2011

Table 20 On-board training cost of KMU

Unit : US\$

Category	MET	KMU	
		Training Ship "A"	Training Ship "B"
Cost category*			
Ship operation costs		1,590,000	1,403,000
Food expenses		299,000	299,000 US\$
Insurances		162,000	162,000
Personnel expenses (72 persons)		1,358,000	1,358,000
Total cost**		3,409,000	3,222,000
Total capacity		204	152
Actual boarded 2011		83	97
Costs/cadet with actual boarded		41,072/year	33,216/year
Costs/cadet with total capacity		16,711/year	21,197/year
Except personnel expenses		10,054/year	12,263/year
average		18,954 US\$/year 11,158 US\$/year(except personnel expenses)	
* Cost category are included only major expenditure			
** Total cost included personnel expenses of each ship			

Source: (KMU, 2008)

Dates : 1 September, 2011

The financial resources are very important to establish and operate the JOBTC. The mission of the Integrated Technical Co-operation Program (ITCP) is stated as follows:

To help developing countries improve their ability to comply with international rules and standards relating to maritime safety and the prevention and control of maritime pollution, giving priority to technical assistance programs that focus on human resources development and institutional capacity-building. (IMO, 2011)

The resolution A.1006 (25) invites consideration of maritime sector in Official Development Assistance (ODA) programs from Member States and donor organizations (IMO, 2011).

There are 4 funding resources in the IMO for Technical Co-operation.⁵¹ The Multi-Donor Trust Funds (MDTFs) is one of them. The MDTFs “are established to encourage contributions targeted on specific issues and are used to support specific technical co-operation programs”, which could be used for funding of the JOBTC. (IMO, 2011)

There are 3 future priorities of ITCP are as follows:

- Advocacy of global maritime rules and standards
- Institutional capacity-building
- Human resource development (IMO, 2011)

The JOBTC could be inserted as a future priority under the “Human resource development” which includes training of seafarers and shore-based personnel.

An alternative funding option is the “Beneficiary Pays Principle” (BPP), which was introduced by the GOBTC. The beneficiaries in this scheme are: (Maritime Administration of Turkey, 2010)

- Administrations that provide STCW required training for the purpose of certification under the Convention.

⁵¹ IMO TC fund, MDTFs, Bi-lateral arrangements, other arrangements and one-off cash donations.

- Industry that requires steadily flow of educated and trained officers
- Cadets who need to be given assurance on planned and structured programs of training

In summary, the procedures to establish the JOBTC could be developed as follows:

Step 1. Preparation of regional (Asia) on board training strategies

- Making government level regional (Asia) agreement to establish JOBTC
- Work with IMO TCC
- Pre-discussion of **financial resources** (MDTFs or BPP or ODA)

Step 2. Propose to IMO TCC to establish the JOBTC

- Agree between onboard training providing countries and its beneficiaries
- Decide training ship providers
- Decide required money category
- Decide financial resources and procedure (MDTFs or BPP or ODA)

Step 3. Test operations of the JOBTC

- Start testing of the JOBTC operations
- Monitoring operation of the JOBTC
- Finding operation problems of the JOBTC and submit TCC and administrations involved
- Finding operation problems solution and submit TCC and administrations involved

Step 4. Expand and full operation of the JOBTC

- Solving some operational problems of the JOBTC
- Continually monitoring and report to TCC and administrations involved

Source: author

Figure 6 Procedure to establish JOBTC

4.3 Proposal - Joint Asia Maritime E-Learning Systems (JAMES)

The STCW Manila Amendments are embracing enhanced learning methods such as distance learning and E-learning formats as guidance⁵². However, based on the questionnaires, currently most of the MET institutes or universities will not be able to provide distance learning and E-learning programs due to the following reasons:

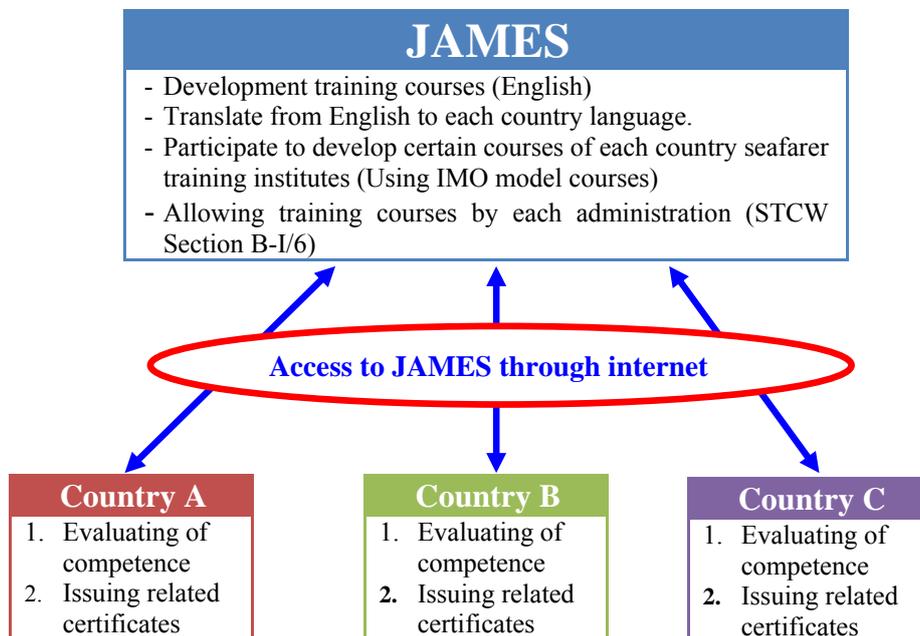
- Lack of infrastructure (i.e. internet)
- Lack of trainer resources for monitoring and assessment
- Difficulty in assessing distance learning and E-learning course by administrations

source: Questionnaire reply

The STCW Convention, focuses on standardising qualification, training and certification for seafarers. Taking ‘standards’ as the concept, a Joint Asia Maritime E-learning System (JAMES) could be established to provide global E-learning courses for developing countries that have difficulty in implementing such training courses. It is, of course, not a mandatory requirement to provide distance learning and E-learning to seafarers. However, it will be popular since it has good advantages as mentioned in Chapter 3, 3.2.2

The IMO model courses should be the format for these courses. Figure 7 illustrates the possible approach of JAMES.

⁵² STCW Manila Amendments, Section B-I/6



Source: author

Figure 7 Concept of Joint Asia Maritime E-learning System (JAMES)

English should be the official language for these courses, as it is more universally used and it also acts as an encouragement and learning platform for using the English language. There should be one expert representative from each participating country, and an assessor should be appointed. A Web-based assessment system could be set up to allow each participating country's assessor to evaluate its cadets easily. With the adoption of such a global platform for distance learning and E-learning, it will make it easier for developing countries to fulfil the STCW Manila Amendments Section B-I/6 paragraph 6 as follows;

Parties may allow the training of seafarers by distance learning and e-learning in accordance with the standards of training and assessment set out in section A-I/6.

The IMO TC fund (MDTFs), or BPP, or through ODA could be the funding body for this proposed program.

4.4 Reducing work-load, ship inspection burden and determine mandatory minimum safety manning standards in a safe way

Based on the questionnaires, most of the MET institutes or universities and experts consulted had opined that the hours of rest stated in the STCW Manila Amendments chapter VIII is reasonable and harmonises with MLC, 2006 requirements. However, based on research and analysis done in Chapter 3, 3.2.3, the hours of rest requirement should take into consideration the work hours for carrying out paper work, disparity of manning standards among flag states and additional work hours in facilitating different types of ship inspections such as PSC, FSC, class surveys and oil major inspections for tankers.

4.4.1 Reducing paper work-load

With the introduction of new conventions, and revision of existing conventions, the working time required for paperwork is eminently increasing. The use of technology could be a solution to reduce the time required for doing paperwork and improvement in data recording procedures. For instance, “Det Norske Veritas (DNV) has developed the DNV Navigator, a computer-based tool that relieves the workload of the bridge team, secures ship operation and reduces costs and risks” (SSG, 2008). This system contains port entry information and checklists to assist specific to ports. This proposal is in line with IMO Facilitation Committee’s (FAL) vision, as the committee is also looking at “Electronic means for the clearance of ships” in a Single Window System⁵³ (MLTM, 2010) to facilitate and simplify the vessel’s clearance processes. By moving towards the electronic platform, it will definitely reduce the paperwork load.

⁵³ “a system that allows traders to lodge information with a single body to fulfil all import or export related regulatory requirements” (UN/CEFACT International Trade Procedures Working Group (ITPWG), 2003)

4.4.2 Mandatory minimum safety manning standards

The UNCLOS Article 94 states the responsibility of flag states with regards to safety manning levels of ships, and paragraph 3 states that,

Every flag states shall take measures for ships to ensure safety at sea with regard to certain matters such as construction of ships, manning of ships, labour conditions and the training of crews, taking into account the applicable international instruments (UNCLOS, 1982, p 58).

Article 94 paragraph 4 states the qualification and numbers of crew required depending on the type, size, machinery and equipment of the ship. UNCLOS is the international legal framework for maritime related matters (Balyk, 2006).

The SOLAS consolidated edition 2009, mainly stipulates the certification requirements on ships for providing safe manning, with the objective of ensuring sufficiency and efficiency. The guidelines in determining the safe manning level is promulgate in the IMO resolution A. 890(21) and A. 955(23).

The ILO Convention C180, article 11 also stipulates rest hours for seafarers,

“Every ship to which this convention applies shall be sufficiently, safely and efficiently manned, in accordance with the minimum safe manning documents or an equivalent issued by the competent authority” (ILO, 1996)

The Maritime Labour Convention, 2006 (MLC, 2006) was adopted with the objective to unify all maritime labour conventions and guidelines that have been established during past 80 years. The MLC 2006 regulation 2.7 (Manning levels) states that:

Each Member shall require that all ships that fly its flag have a sufficient number of seafarers employed onboard to ensure that ships are operated safety, efficiently and with due regard to security under all conditions, taking into

account concerns about seafarer fatigue and the particular nature and conditions of the voyage (MLC, 2006, pp. 38-39)

When determining, approving or revising manning levels, the competent authority shall take into account the need to avoid or minimize excessive hours of work to ensure sufficient rest and to limit fatigue, as well as the principles in applicable international instruments, especially those of the International Maritime Organization, on manning levels (MLC, 2006, p. 39)

In summary, at the international level of legislation, the IMO instruments are binding, but do not sufficiently restrict countries and companies to specific manning levels. This leads to the proliferation of questionable manning scales where economic motives appear to be more of the issue than the principles of safety manning. The ILO conventions also have limited effects when it only touch on areas determining specific manning levels. (SchroderJens-Uwe, 2007)

At the national level, States set the requirements for safe manning through national laws and regulations, taking into account their international and regional obligations. The ambiguity of the international and regional instruments tends to set in at this point and is exhibited in the variation and discrepancies between the methods and criteria different states use for establishing safe manning for their ships. (Schroder, 2007, p 23)

UNCLOS, SOLAS, IMO Resolution A. 890(21) and A. 955(23), and MLC 2006 are the international regulations which dealt with minimum safe manning standards for flag states and ships to ensure that ships are operated safely, efficiently and with due regard to security under all conditions. However, there is no particular procedure for determination of minimum safe manning levels. Most of the flag states determine safe manning based on the size and type of ship. The flag administrations is the authorised body to approve, reject or modify the ship owner's minimum safe manning standards proposal. (Balyk, 2006) Therefore, there is disparity in manning standards in each flag state.

In order to unify this difference, developing mandatory international regulations which have more binding power to determine reasonable manning levels on board ships will ensure proper application of hours of rest regulations requirements. More intensive PSC inspections would act as the enforcement tool to ensure compliance with the binding international regulations. These may ensure proper work/rest cycles for seafarers are practiced on ships.

4.4.3 Harmonizing ship inspections

Due to safety and commercial reasons, there are a series of inspection requirements, such as PSC, FSC, classification society and major oil companies. However, at a lot of times the items in these inspections are duplicated. For instance, if a tanker has loaded in the Middle East and is discharging in the UK, the tanker may be subjected to two PSC inspections as the two countries are members to different PSC MoU regions. At the same time, the tanker may have to go through major inspections in order to comply with their commercial obligations. Due to the above reasons, the hours of rest for the seafarers may not comply with regulations when the tanker is at berth.

To resolve the duplication of inspection items, it is hence proposed to harmonize the inspection requirements. For a start, each PSC region could consider recognising other PSC region's inspections which are conducted within 6 months. For example, if a ship has undergone PSC inspection in the Tokyo MoU region, it should not be subjected to another PSC inspection in another region. On the commercial side, the requirements from different oil majors may be harmonized through the common platform of OCIMF, or recognising the inspection results from other major inspections (Chae, 2009). If the mandatory and commercial inspections can be combined as suggested above, it will reduce the multiple inspections burdens on ships, specially the tankers. This will help to improve hours of rest compliance on ships.

4.5 Proposal - Technical cooperation fund to support installation of training simulation/equipment

The STCW Convention has imposed RADAR and ARPA simulators training as a mandatory requirement for watch-keepers in the deck department. The STCW Manila Amendments have recently also added mandatory ECDIS, BRM and ERM training. Furthermore, the STCW Manila Amendments have added 84 new competence areas where methods for demonstrating competence has approved simulator training (DNV, 2010).

As mentioned in Chapter 3, DMU, Indonesia MET institutes and VIMARU required enhanced ship simulator/equipment in order to provide better training courses. However, large capital investment is required for installation of training simulator/equipment. Hence, most of the MET institutes surveyed required more time and financial support. Also, one of the main MET institutes in Malaysia requires training of the trainers in order to meet qualified person requirements as stated in Regulation I/6 “training and assessment”.

MET institutes or universities which are lacking in training simulator/ equipment could be supported by other developed countries such as Japan and EU countries which has interest in obtaining deck and engine officers to serve on board their merchant ships. For example, training institutes could be established in the Far East main seafarer supply countries such as in the Philippines. This is because of “The primary marine manpower suppliers have shifted, and continue to shift, from traditional countries in North America and Europe, and Japan, to Eastern Europe, India, and the Far East.” (WMU, 2005) These efforts as follows;

The Maritime Academy of Asia and the Pacific (MAAP)’s JSU-IMMAJ⁵⁴ Campus was a proof of support from interested parties to improve the quality of Filipino seafarers, who are vital to the Japanese commercial fleet. The new

⁵⁴ International Mariners Management Association of Japan

facility provides high-level academic and training programs for mercantile marine college students (Japan Seamen's Union, 2009).

On July 20, 2009 representatives from the JSU, the CSU (Chinese Seafarers Union), the IMMAJ and DIM-SCO (Dalian International Maritime Service Co. Ltd.) have announced the establishment and registration of a CSU/JSU comprehensive training and education center in Dalian. The program includes installation of simulators (Japan Seamen's Union, 2009).

These efforts can be a possible approach to assist developing countries in enhancing their MET institutes and programs by installation of training simulator/equipment. However, this initiative should be restricted to certain MET institutes which are located in certain countries since the capital investments are restricted.

As this initiative will involve regional involvement, it could be funded by IMO (MDTFs) or BPP or ODA programs to resolve the financial difficulties faced by the developing countries in installation of simulator/ equipment. Figure 8 is a possible approach for this program:

<p>Step 1. Seminar with IMO, donor countries and recipient countries</p> <ul style="list-style-type: none"> - Identifying what kind of supporting are required for recipient countries - Identifying what kind of supporting can be by donor countries - Identifying support required sector - Identifying what kind help can be by IMO TCC
<p>Step 2. Finding way to get financial resources</p> <ul style="list-style-type: none"> - Direct assistant from donor to recipient country (ODA); or - Through IMO TCC (MDTFs) or - Beneficiary Pays Principle (BPP)
<p>Step 3. Take a step to supporting financial resources</p> <ul style="list-style-type: none"> - Make a agreement between donor and recipient country to support fund (ex : ODA or BPP) ; or - Propose to IMO TCC to get fund if agreed these support through IMO
<p>Step 4. Install the equipment and monitoring</p> <ul style="list-style-type: none"> - Actual funding through ODA or BPP or IMO TCC - Install the simulator/equipment to recipient countries - Monitoring its operation usefulness

Figure 8 Procedure for supporting financial resources

4.6 Clarify vague terminology

To eliminate the possibility of misinterpretation of KUPs which is not yet in-place after the STCW Manila Amendments, the STW sub-committee and MSC may require that new IMO model courses which were newly added in the STCW Manila Amendment, be developed as soon as possible. Also, before developing new IMO model courses, the training providers need to work together between themselves as well as the administrations to ensure uniform compliance.

Each trainer has different teaching skills and levels even if they are all working in the same country and institutes. Some trainers may having very good skills or

knowledge to teach whereas some trainers may not (Rae, 2002). These differences may affect directly or indirectly the competence of seafarers. Therefore, a certain acceptable level to assess a qualified person is required. Hence, it is recommended to insert a definition for 'qualified person' in the STCW Convention, in order to ensure the acceptable level for such trainers. Also, the JAMES concept (see Figures 7 and 8) should be useful to ensure standardized teaching skills or related knowledge.

Lastly, it is also vital to determine the issuing party for tanker ships training books. Discussions of STW sub-committee should be carried out together with parties to the STCW Convention to determine whether the issuing body of such training books. Should be the Administration, or, by MET institutes on behalf of the Administration.

CHAPTER 5

PROPOSED FURTHER AMENDMENTS TO THE STCW MANILA AMENDMENTS

5.1 Introduction

Although the STCW Manila Amendments have just been introduced, it is noted that certain important areas have not been addressed. That may be due to the insufficient representation from the industry group related to these areas. However, based on the author's opinion, amendments could be considered to include the following proposals.

- Education and training for tug-barge operators.
- IMDG Code training for seafarers who will be dealing with dangerous goods on board ships

5.2 Guidance on the training and qualifications for personnel onboard Tugs-barges

The current requirements under the STCW Convention for officers and masters in charge of a navigational watch on ships of less than 500 G/T are of basic requirements and do not address the special operational knowledge required when officers or masters are onboard specialised ships except tankers and passenger ships. The STCW Manila Amendments address the training, qualification and experience requirements for some of the specialised ships such as OSV, ships operating in polar region and DP systems. However, the more commonly smaller ships which might be engaged in very specialised towage operations, such as tugs and barges have been left out.

5.2.1 Findings

Based on the statistics collated by the Korea Maritime Safety Tribunal (KMST) on maritime accidents, the rate of ship accidents versus total registered ships (B/A) is more or less 1% recorded. The rate of tug-barge accidents (2.81% ~ 5.22%) was 3 ~ 5 times higher than the rate of maritime accidents of total registered ships (0.72% ~ 1.16%) as shown in Tables 21, 22, 23 and 24.

Table 21 The rate of ship accidents versus total registered ships

	2006	2007	2008	2009	2010
Registered ships(A)	93,405	93,114	88,854	86,087	83,010
Accident ships(B)	865	759	636	915	961
Incidence of Accident (B/A)	0.93%	0.82%	0.72%	1.06%	1.16%

Source: (KMST, 2011)

Table 22 The rate of tug-barge accidents versus total registered tug-barge

	2006	2007	2008	2009	2010
Registered tug-barge(A)	1,236	1,266	1,259	1,245	1,246
Accident tug-barge(B)	53	55	52	35	65
Incidence of accident (B/A)	4.29%	4.34%	4.13%	2.81%	5.22%

Source: (KMST, 2011)

Navigational duty negligence is the highest accident cause for the tug-barge recorded at 80.3 % of total accidents, followed by poor maintenance and defects of machinery on board ship as 15.0 % as stated in Table 23.

Table 23 Causes of accidents on tug-barge

	Navigational negligence	Poor maintenance and defects	ETC
Accident case	102	19	6
Rate	80.3%	15.0%	4.7%

Source: (KMST, 2011)

Furthermore, nearly half of accident types are collisions, followed by grounding and sinking in operating tug-barges. These causes are recorded as 77.7% from 2006 to 2010 in the Republic of Korea as stated in Table 24

Table 24 Types of accidents on tug-barges

Year	Type of accidents on tug-barge										Total
	Major Collision	Minor Collision	Aground	Capsize	Fire, Explosion	Sinking	Engine Trouble	Distress	Casualty	Etc	
2006	26	8	5	1	2	4	2	1	-	4	53
2007	29	3	7	3	-	3	1	-	1	8	55
2008	19	6	9	4	3	7	-	-	1	3	52
2009	9	5	6	2	-	3	2	2	1	5	35
2010	29	5	10	1	1	9	2	-	6	2	65
TOTAL	112	27	37	11	6	26	7	3	9	22	260
%	43.1	10.4	14.2	4.2	2.3	10.0	2.7	1.2	3.5	8.5	100.0

Source: (KMST, 2011)

Table 25 The number of ship accidents in Japan

Year	Number of vessels involved in marine accidents		Number of vessels accidents involved less than 500 G/T		Number of vessels accident involved tug-barge	
	Total		Number	%	Number	%
2003	6,502		5,447	83.8	868	13.4
2004	6,474		5,345	82.6	887	13.7
2005	5,631		4,700	83.5	731	13.0
2006	5,081		4,234	83.3	672	13.2
2007	5,158		4,284	83.1	684	13.3
Average	5,769.2		4,802	83.2	768.4	13.3

Source: (MAIA, 2008)

According to Table 25, 83.2 % of ship accidents involved ships of less than 500 G/T ships, and 13.3 % of ship accident are involved with tug-barges from 2003 to 2007 in Japan.

Hence, it is important to ensure that the personnel onboard the tug-barge are properly trained, qualified and are experience with the towage operations.

5.2.2 Proposal

The training requirements for personnel working onboard tugs and barges should be established and be included in the STCW Convention Section B-V “Guidance regarding special training requirements for personnel on certain types of ships”.

The guidance for tug and barge operation may include the followings :

- Definition of tug-barge
- Define its unique operation criteria
- Define the knowledge requirement for personnel onboard tug and barge operation and specific requirements on special towage operations; and
- Define specific training and education criteria

5.3 Mandatory training requirements for seafarers in the IMDG Code

5.3.1 Introduction

The DSC⁵⁵ 12 Session on 21st September, 2007 adopted the mandatory International Maritime Dangerous (IMDG) Code training requirements for shore based personnel engaged in the transport of dangerous goods by sea, the code entered into force on 1st January 2010 (MLTM, 2007).

The IMDG Code Section 1.3.1.1 states as follows ;

⁵⁵ Sub-Committee on Dangerous Goods, Solid cargoes and Containers

Shore based personnel engaged in the transport of dangerous goods intended to be transported by sea shall receive training in the contents of the dangerous goods provisions commensurate with their responsibilities.

However, the training requirements for seafarers, who are dealing with dangerous goods, were not mandatory per se, but only stay as a guidance under the STCW Convention⁵⁶.

In the USA, the training requirements of the IMDG Code apply to all personnel engaged in the transport of dangerous goods by sea. According to 49 CFR (Code of federal Regulations) Part 172⁵⁷ Subpart H 702⁵⁸, the following is stated:

(a) A hazmat employer shall ensure that each of its hazmat employees is trained in accordance with the requirements prescribed in this subpart.

(b) Except as provided in §172.704(c)(1), a hazmat employee who performs any function subject to the requirements of this subchapter may not perform that function unless instructed in the requirements of this subchapter that apply to that function. It is the duty of each hazmat employer to comply with the applicable requirements of this subchapter and to thoroughly instruct each hazmat employee in relation thereto. (GPO, 2011).

Also, 49 CFR Part 176⁵⁹, subpart A. 13 states as follows:

(c) The record of training required by §172.704(d) of this subchapter for a crewmember who is a hazmat employee subject to the training requirements of this subchapter must be kept on board the vessel while the crewmember is in service on board the vessel. (GPO, 2011)

⁵⁶ STCW Convention states that the IMDG Code training for officers and ratings as guideline in Section B-V/c “Guidance regarding training of officers and ratings responsible for cargo handling on ships carrying dangerous and hazardous substances in packaged form”.

⁵⁷ “Hazardous materials table, special provisions, hazardous materials communications, emergency response information, training requirements, and security plans”

⁵⁸ Training, Applicability and responsibility for training and testing

⁵⁹ carriage by vessel

It means that the seafarers, who are involved in carriage of dangerous goods in packaged form will require IMDG training certificates.

Based on the above findings, there is disparity in IMDG Code training requirements between the IMDG Code, the STCW Convention and US CFR as follows:

- SOLAS Chapter 7 Part A states the “the carriage of dangerous goods in packaged form shall be in compliance with the relevant provisions of the IMDG Code”
- The IMDG Code 1.3 states the training requirements for shore based personnel engaged in the transport of dangerous goods.
- The STCW Convention states the training of officer and ratings, who are engaged on ships carrying dangerous and hazardous substances in packaged form as guidance in Section B-V/c. and
- USA 49 CFR Part 172 subpart H states the hazmat employer shall ensure that each of its hazmat employees is trained.

The disparity of IMDG Code training requirements between the IMDG Code, the STCW Convention and the US CFR is creating confusion for the maritime industry, and this disparity can lead to interpretation in different ways.

5.3.2 Proposal

Presently, the training for IMDG Code is only guidance in the STCW Convention, while it is a statutory requirement in US 49 CFR. The 49 CFR requires all shore based personnel engaged in the transports of dangerous goods (IMDG Code) and hazmat employers should be trained for IMDG Code.

To resolve the disparity in the various Conventions and to enhance the training and proficiency of seafarers dealing with dangerous goods in package forms, it is proposed that the training requirements of IMDG Code for seafarer must be in chapter II section A-II/1, Table A-II/1. It should include mandatory minimum requirements for certification of officers. Similar to the concept of the training requirements for ECDIS, an exception note may be included to exempt seafarers not dealing with dangerous goods in package forms from there mandatory training requirements.

In short, the requirements of the IMDG Code training for seafarer may be inserted in the STCW Convention Section A Table A-II/1 as competence “Monitor the loading, stowage, securing, care during the voyage and the unloading of cargos.” Part with a certain exception clause.

CHAPTER 6

CONCLUSION AND SUGGESTIONS

6.1 Conclusion

This dissertation attempted to identify the changes in the STCW Manila Amendments and the difficulties or problems faced by the MET institutes or universities in the Far East region, which covers about 30 % of the officers' supply in the world. It also looks at the possible solutions for the difficulties or problems. The 7 MET institutes or universities chosen are located in these Far East countries in accordance to the ranking of the largest officers suppliers country to the least. Lastly, this dissertation proposed the further amendments required in the future.

New definitions were added in the STCW Manila Amendments Chapter I. For example, CoC, CoP, SSO, ETO, Able seafarer deck and engine, ETR. In addition, procedures of certificates and endorsements, principles governing near-coastal voyages, distance and E-learning guidance, new requirements for medical fitness standards, requirements to establish continued competence for tankers, use of simulators, responsibilities of companies and transitional provisions were either revised or included. New required competences such as ECDIS, BRM, leadership skills were added. New certification requirements for ratings as able seafarers deck were introduced in Chapter II of the Convention. For the on-board training requirement, new competence requirements, such as ERM, operate electrical were added in Chapter III of the Convention. New certification requirements for ratings as able seafarers engine, ETO and ETR were also introduced. The training requirement to get certificate of basic tanker and advanced tanker were added and separated in terms of its cargo character in Chapter V of the Convention. In Chapter VI of the Convention, new refresher training requirements, CoP for SSO were introduced. Lastly, the minimum hours of rest were amended in Chapter VIII of the

Convention. Among them, this dissertation identified some difficulties in implementing the STCW Manila Amendment through questionnaires.

First, some MET institutes or universities (NMP, DMU, Indonesia, VIMARU, SMA and ALAM) are facing difficulties in fulfilling the on-board training requirements for deck and engine officers as the on-board training placements are not enough in their institutes. These MET institutes or universities are heavily dependent on commercial ship on-board training. Also, these resources are also limited.

Second, most of the MET institutes or universities did not established distance learning and E-learning systems yet even though the STCW Manila Amendments have emphasised that these education methods as a guidance with the advantages to giving education programs to seafarers. The reason behind this is mainly due to lack of financial resources and infrastructure. Other related reasons are the difficulty faced in monitoring and assessing the program, and mentoring the candidates who are outside their class.

Third, most of the MET institutes or universities and their experts replied that the hours of rest regulations are reasonable since they were harmonize with MLC 2006 even if there are some exception clauses in the STCW Manila Amendments section A-VIII. However, some experts opined that in some cases, they would not be able to comply with the scope for hours of rest regulations. Disparity of minimum safety manning levels, increased paper work and numerous ship inspections can lead to reducing hours of rest and increasing fatigue of seafarers.

Fourth, because there are additional costs to install simulation/equipment investments are required in some institutes or universities (DMU, Indonesia and VIMARU). Therefore, financial support is required.

Fifth, there is a possibility of misinterpretation of KUP since certain IMO courses have not yet been developed; the possibility of individual interpretation of “qualified person” in regulation I/6 as it was not defined in regulation I/1 “definition and

clarifications”. Further, regulation I/1 did not defined issuing party of training record book for approved seagoing services of tanker ships, which should be clear and accurate.

The following possible solutions were proposed

First, the JOBTC could be a good solution to provide on-board training placements to cadets who want to have on-board training from different countries, specially in the Far East countries. This is because some MET institutes or universities have sufficient capacity to provide on-board training placement. At the same time, financial resources are required to establish JOBTC. The MDTFs from IMO TCC, BPP from beneficiary bodies and ODA from countries could be one of the financial resources to establish this programme.

Second, the JAMES could be established to provide collaborated global E-learning courses for developing countries that have difficulty in establishing such training courses. The JAMES could share the financial resources and experts who can monitor, assess and mentor participants. English and IMO model courses should be the format for this system.

Third, the computer based paper work tool to facilitate and simplify vessel clearance processes through the Single Window System could be a solution to reduce paper work on board ships. The mandatory minimum safety manning standards which have more binding power will ensure proper application of hours of rest requirements. Also, the harmonized ship inspections requirements between the PSC MoU regions and the major oil companies will reduce the multiple inspections burden for seafarers. As a result, this will help to meet hours of rest requirements of the Convention.

Fourth, the MDTFs, BPP and ODA to support installation of training simulation/equipment for developing countries who have financial difficulties will be an effective solution to provide better quality training courses for seafarers.

Fifth, before developing new IMO model courses for the new KUP, the training providers will need to work together with the administration to eliminate misinterpretation among the parities. A clear definition of “qualified person” should also be established including issues like who can be the issuing party of training books for tanker ships training through the STW sub-committee.

In addition, the author has identified areas that need further amendments beyond the STCW Manila Amendments in the future.

First, many accidents which involved tug-barges occurred in the ROK and Japan. These ships have unique operation characteristics compared to general cargo ships. Therefore, the training requirements for personnel onboard the tug-barges should be established in the STCW Convention Section B-V “Guidance regarding special training requirements for personnel on tug-barges” similar to the OSV, DP ships added in Section B-V.

Second, the IMDG Code training requirement under the IMDG Code, the USA 49 CFR and STCW Convention are different. The IMDG Code requires IMDG Code training for shore based person only. The USA 49 CFR Part 172 states IMDG Code training for hazmat employees, which included not only shore based person but also seafarers. However, the STCW Convention states the training of the IMDG Code as guidance in Section B-V/c. Therefore, it is proposed that training requirements of the IMDG Code for seafarers should be in Chapter II section A-II/1 as a mandatory competence.

6.2 Suggestions

Based on the outcome of the research, the author has developed the following recommendations to the Far East major seafarer supply countries and MET institutes or universities and IMO to solve their difficulties or problems with effective implementation of the STCW Manila Amendments.

- a) The JOBTC can be good solution to provide on-board training services to cadets who have difficulties to meet on-board training requirements.
- b) The MDTFs from IMO, Beneficiary pays principle from interested bodies and ODA from developed countries can be good financial resources to establish JOBTC. Further, these financial resources can be used for installation simulation/equipment for developing countries who required more advanced training systems to meet the STCW Manila Amendments.
- c) The JAMES can be good solution to provide global E-learning education programmes for seafarers who are staying in different countries.
- d) The STW sub-committee of IMO should clarify the vague terminology of “qualified person” and make sure who can be the issuing party of training books for tanker ship training. Also, the training providers have to work together to ensure uniform compliance of KUPs.
- e) The training requirements for persons who are involved in tug-barge operations should be included in the STCW Convention Section B-V since it has unique operation characteristics.
- f) The IMDG Code training requirements for seafarers should be included in the STCW Convention, Chapter II section A-II/1 as a mandatory competence for seafarers.

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Appendix 1 Summary of STCW Manila Amendments and its Resolutions

Affected Sections	Regulation	Section A	Section B
Definition and clarifications	<p>Reg I/1.7 New definition for engineer officer</p> <p>Reg I/1.12 New definition for GMDSS radio operator</p> <p>Reg I/1.21 Change to definition of ro-ro passenger ship</p> <p>Reg I/1.27-36 New definition added – ISPS Code, Ship Security Officer, Certificate of Competency, Certificate of Proficiency, Security duties, electro-technical rating and documentary evidence</p>		
Certificates and endorsements	<p>Reg I/2.1 New certificate of competency issuing rules for administrations</p> <p>Reg I/2.2 New regulation on the issuing of certificates to masters and officers for tanker training</p> <p>Reg I/2.6 New endorsement format regulation</p> <p>Reg I/2.7 New rules for administrations recognising certificate prior to endorsement</p> <p>Reg I/2.8 Changes for administrations Endorsing certificates</p> <p>Reg I/2.12 Parties issuing certificates new compliance requirements</p> <p>Reg I/2.13 New candidates for certification proof requirements</p> <p>Reg I/2.14 All parties endorsing or issuing certification now require a register of documents</p> <p>Reg I/2.15 and Reg I/2.16 All Parties endorsing or issuing certification must make information available to other administrations and companies (by 1 January 2017 this must be through electronic means)</p>	<p>New requirements for the issue and registration of certificates</p> <p>A I/2.5 Approval of seagoing service</p> <p>A I/2.6 Approval of training courses</p> <p>A I/2.7 Electronic access to registers</p>	

Affected Sections	Regulation	Section A	Section B
Principles governing near-coastal voyages	<p>Reg I/3.2 New rule for Parties with ships on near coastal voyages in another party's limits</p> <p>Reg I/3.5 New rules for certificates for seafarers operating in near coastal voyages</p> <p>Reg I/3.6 Altered requirements for parties defining near-coastal voyages</p>	<p>New Principles governing near-coastal voyages</p> <p>A-I/3.1 Factors to be considered when issuing certificates for near coastal voyages</p> <p>A-I/3.2 New requirements on the limits of near-coastal voyages</p>	<p>B-I/3 Amended near-coastal voyage limits guidance</p>
Control procedures	<p>Reg I/4.1 New security and environmental requirements</p>	<p>A-I/4.6 Assessment of new competency requirements for those with security duties</p>	
National provisions	<p>Reg I/5.1 New requirement to investigate any incompetency, act, omission or compromise to security</p> <p>Reg I/5.2 New requirement for the prevention and enforcement of measures in relation to unlawful certificates and endorsements</p>		
Guidance regarding training and assessment			<p>B-I/6.6 – 6.10 New guidance for use of distance learning and e-learning</p> <p>B-I/6.11 New guidance for assessing a trainees's progress and achievements by distance learning and e-learning</p> <p>B-I/6.12 New guidance on a register of approved training providers, courses and programmes added</p>
Communication of information	<p>Reg I/7 New requirements for the IMO MSC with respect to the communication of information by governments to IMO</p>	<p>A-I/7.2 Amendments to initial communication of information requirements</p> <p>A-I/7.4, .5 and .6 Alteration and additions to subsequent report requirements</p> <p>A-I/7.7, .9 and .11 Amendment to panel of competent persons requirements</p>	<p>B-I/7 New guidance added on the communication of information</p>
Quality standards	<p>Reg I/8 Medical certification requirement added, more requirements for evaluation</p>	<p>A-I/8.3 New addition to national objectives and quality standards requirements to ensure all provisions of STCW are covered by quality standards system</p>	

Affected Sections	Regulation	Section A	Section B
Medical Standards	Reg I/9.1 – 9.7 New requirements for medical fitness standards	A-I/9 More detailed medical standards and requirement for certification introduced	B-I/9 Medical examination and certification guidance amended
Recognition of certificates	Reg I/10.1 New requirement for administrations who recognize certificates Reg I/10.5 Clarification of 3 months flexibility for endorsement		B-I/10.2 and .3 New guidance regarding the recognition of certificates
Revalidation of certificates	Reg I/11.3 Requirement for tanker training certificate holders to maintain competence every 5 years Reg I/11.4 Requirement to compare standards of competence for certificates issued before 1 January 2017 to determine if refresher/updating training is required	A-I/11 Amendments to requirements for the revalidation of certificates	B-I/11 Amended guidance regarding the revalidation of certificates
Guidance regarding the use of simulators			B-I/12.19 Addition of ECDIS B-I/12.36-66 New guidance on training and assessment in ECDIS introduced B-I/12.68 Navigation and watch-keeping simulation recommendations amended
Responsibilities of companies	Reg I/14 New responsibilities for companies	A-I/14.3 New ro-ro passenger ship familiarisation requirements	B-I/14 New guidance for companies to ensure employed seafarers are familiar with the vessel and their duties and responsibilities New ro-ro familiarisation requirements
Transitional provisions	Reg I/15 New transitional provisions for 2010 amendments		

Affected Sections	Regulation	Section A	Section B
Mandatory minimum requirements for certification of officers in charge of a navigational watch on ships of 500 G/T or more	Reg II/1.2, and .6 Candidate requirements for certification amended and expanded	A-II/1 Function – Navigation at the operational level Amendments and additions to the competence “Maintain a safe navigational watch” New competence “Use of ECDIS to maintain the safety of Navigation” Amended competence “Use the Imo Standard Marine Communication Phrases and use English in written and oral form” Amended competence “Transmit and receive information by visual signalling” Function – Controlling the operation of the ship and care for persons on board at the operational level Amended competence “Ensure compliance with pollution prevention requirements New competences “Application of leadership and teamworking skill” and “Contribute to the safety of personnel ship”	B-II/1.11 ECDIS added B-II/1.19 and .20 Guidance on training in celestial navigation introduced
Mandatory minimum requirements for certification of masters and chief mates on ships of 500 G/T or more		A-II/2 Function – Navigation at the management level Amended competence “Plan a voyage and conduct navigation”, “Determine position and accuracy of resultant position fix by any means” Expanded competence “Maintain safe navigation through the use of information from navigation equipment and systems assist command decision making” New competence “Maintain the safety of navigation through the use of ECDIS and associated navigation systems to assist command decision making” Amended competence “Forecast weather and oceanographic conditions” Amended and expanded competence “Use of leadership and managerial skill”	
Mandatory minimum requirements for certification of officers in charge of a navigational watch and of masters on ships of less than 500 G/T	Reg II/3 Altered certification requirements for officers and masters on ships not engaged and ships engaged on near coastal voyages	A-II/3 Function – Navigation at the operational level Amended competence “Plan and conduct a coastal passage and determine position”, “Maintain a safe navigational watch” Function – Controlling the operation of the ship and care for persons on board at the operational level New competence “Contribute to the safety of personnel and ship”	
Mandatory minimum requirements for certification of ratings as Able Seafarer Deck	Reg II/5 New regulation for certification of ratings as Able Seafarer Deck introduced	A-II/5 New specification of minimum standards of competence for ratings as Able Seafarer Deck introduced	B-II/5 Requirement for a training record book for Able Seafarer Deck

Affected Sections	Regulation	Section A	Section B
<p>Mandatory minimum requirements for certification of officers in charge of an engine-room or designated duty engineers in a periodically unmanned engine-room</p>	<p>Reg III/1 Amended regulation regarding certificates of candidates to attain them</p>	<p>A-III/1.2 Amended on board training requirements</p> <p>A-III/1.8 Possibility to omit propulsion machinery types on certification</p> <p>A-III/1.10 Near-coastal voyages requirements amended</p> <p>Table A-III/1 Function – Marine engineering at the operational level Amended competence “Maintain a safe engineering watch” to include “Engine-room resource management”, “operate fuel, lubrication, ballast and other pumping systems and associated control systems”, “Operate electrical, electronic and control systems”, “Maintenance and repair of shipboard machinery and equipment” New competence “Use internal communication systems”, “Maintenance and repair of electrical and electronic equipment”, “Appropriate use of hand tools, machine tools and measuring instruments for fabrication and repair on board” Expanded competence “Operate main and auxiliary machinery and associated control systems” Function – Controlling the operation of the ship and care for persons on board at the operational level Amended competence “Ensure compliance with pollution prevention requirements” New competence “Application of leadership and team working skills”, “Contribute to the safety of personnel and ship”</p>	
<p>Mandatory minimum requirements for certification of chief engineer officers and second engineer officers on ships powered by main propulsion machinery of 3,000kW propulsion power or more</p>	<p>Reg III/2 Amended regulation regarding certificates of competence and requirements of candidates to attain them</p>	<p>A-III/2.8 Amended requirements for near coastal voyages</p> <p>Table A-III/2 Function –Marine engineering at the management level New competence “Manage the operation of propulsion plant machinery” Amended competence “Plan and schedule operations”, “operation, surveillance, performance assessment and maintaining safety of propulsion plan and auxiliary machinery” Function – Electrical, electronic and control engineering at the management level Amended competence “Manage operation of electrical and electronic control equipment”, “manage troubleshooting restoration of electrical and electronic control equipment to operating condition”, “manage safe and effective maintenance are repair procedures”, “ensure safe working practices”, “use leadership and managerial skills” Expanded competence “Detect and identify the cause of machinery malfunctions and correct faults”</p>	

Affected Sections	Regulation	Section A	Section B
Mandatory minimum requirements for certification of chief engineer officers and second engineer officers on ships powered by main propulsion machinery of between 750kW and 3,000kW propulsion power		A-III/3.8 Near-coastal voyages requirements amended	
Mandatory minimum requirements for certification of ratings forming part of a watch in a manned engine-room or designated to perform duties in a periodically unmanned engine-room		Table A-III/4 Function – Marine engineering at the support level Amended competence “for keeping a boiler watch”	
Mandatory minimum requirements for certification of ratings as Able Seafarer Engine in a manned engine-room or designated to perform duties in a periodically unmanned engine-room	Reg III/5 New regulation for certification of rating as Able Seafarer Engine introduced	A-III/5 New specification of minimum standards of competence for ratings as Able Seafarer Engine introduced	B-III/5 Requirement for a training record book for Able Seafarer Engine
Mandatory minimum requirements for certification of electro-technical officer	Reg III/6 New regulation for certification for electro-technical officers introduced	A-III/6 New specification of minimum standards of competence for electro-technical officer introduced	B-III/6 Guidance regarding training and certification for electro-technical officers introduced
Mandatory minimum requirements for certification of electro-technical rating	Reg III/7 New regulation for certification for electro-technical ratings introduced	A-III/7 New specification of minimum standards of competence for electro-technical ratings introduced	
Radio communication and radio operators	Reg IV Change of term-radio personnel now named radio operators	A-IV Change of term-radio personnel now named radio operators	B-IV Change of term-radio personnel now named radio operators

Affected Sections	Regulation	Section A	Section B
Mandatory minimum requirements for the training and qualification of masters, officers and ratings on oil and chemical tankers	Reg V/1-1 Amended and expanded regulation for seafarers on board oil and chemical tankers and requirements for basic and advanced training	A-V/1-1 Amended and expanded requirements for the standard and competence of seafarers on board oil and chemical tankers Table A-V/1-1-1 New tables for the specification of minimum standard of competence in basic training for oil and chemical tanker cargo operations Table A-V/1-1-2 New tables for the specification of minimum standard of competence in advance training for oil tanker cargo operations Table A-V/1-1-3 New tables for the specification of minimum standard of competence in advance training for chemical tanker cargo operations	B-V/1 Amended and expanded training guidance for tankers B-V/1-1.20 Amended training guidance for oil tankers B-V/1-1.22 Amended training guidance for chemical tankers
Mandatory minimum requirements for the training and qualification of masters, officers and ratings on liquefied gas tankers	Reg V/1-2 New regulation for seafarers on board liquefied gas tankers introduced	A-V/1-2 New requirements for seafarers on board liquefied gas tankers Table A-V/1-2-1 New tables for the specification of minimum standard of competence in basic training for liquefied gas tanker cargo operations Table A-V/1.2.2 New tables for the specification of minimum standard of competence in advanced training for liquefied gas tanker cargo operations	B-V/1-2 Amended training guidance for liquefied gas tankers
Mandatory minimum requirements for the training and qualification of masters, officers and ratings and other personnel on passenger ships	Reg V/2 Amended to provide guidance for seafarers on board passenger ships including ro-ro passenger ships	A-V/2 Amended to provide guidance for seafarers on board all passenger ships A-V/2.2 New procedures regarding safety training for personnel providing direct service to passengers in passenger spaces A-V/2.4 Amended to include ro-ro passenger ships Amended to clarify application to ro-ro ship spaces	B-V/2 Amended guidance for seafarers on board passenger ships regarding enhanced fire fighting and damage control
Guidance regarding training and qualification of masters and officers in charge of a navigational watch on board OSV			B-V/e New guidance for masters and officers in charge of a navigational watch on board OSV
Guidance on the training and experience for personnel operating DP systems			B-V/f New guidance for personnel operating DP systems
Guidance regarding training of masters and officers for ships operating in polar waters			B-V/g New guidance for masters and officers for ships operating polar waters

Affected Sections	Regulation	Section A	Section B
Mandatory minimum requirements for safety familiarization, basic training and instruction for all seafarers	Reg VI/1.2 New requirements for a certificate of proficiency	A-VI/1 New refresher training requirements Table A-VI/1-4 Amended competence “take precautions to prevent pollution of the marine environment”, “contribute to effective communications on board”, “contribute to effective human relationships on board ship”	
Mandatory minimum requirements for safety familiarization, basic training and instruction for all seafarers	Reg VI/1.2 New requirements for a certificate of proficiency	A-VI/2 New refresher training requirements Table A-VI/2-1 Amended competence “take charge of a survival craft or rescue boat during and after the launch” Table A-VI/2-2 Amended table “specification of the minimum standard of competence in fast rescue boats”	B-VI/2.3 On board training and experience guidance amended
Mandatory minimum training in advanced fire fighting		A-VI/3 New refresher training requirements	
Guidance regarding requirements in medical first aid and medical care			B-VI/4 New guidance for training programmes
Mandatory minimum requirements for the issue of certificate of proficiency for ship security officers	Reg VI/5 New certificates of proficiency for SSO regulation introduced	A-VI/5 Certificates of proficiency for SSO introduced	B-VI/5 Certificates of proficiency for ship security officers guidance introduced
Mandatory minimum requirements for security related training and instruction for all seafarers	Reg VI/6 New regulations for security related training and instruction for all seafarers	A-VI/6 New requirements for security related training and instruction for all seafarers	B-VI/6 New guidance for security related and instruction for all seafarers
Issue of alternative certificate		A-VII/1.4 Amended and expanded certification requirements at the support level	
Certification of seafarers		A-VII/2.3 and .4 Added requirements for seafarers at the support level	B-VII/2 New guidance regarding special integrated deck and engine training
Fitness for duty	Reg VIII/1.1 Amended application of the requirements for the prevention of fatigue Reg VIII/1.2	A-VIII/1 Amended requirements for standards regarding watchkeeping, specifically minimum hours of rest and fitness for duty	B-VIII/1.4 Amended guidance on the prevention of fatigue and use of exceptions for the minimum hours of rest B-VIII/1.6 New guidance for the

	New regulation for the prevention of drug and alcohol abuse		prevention of drug and alcohol abuse
Watch-keeping arrangements and principles to be observed	Reg VIII/2.2 New additional factors to be considered for watch-keeping arrangements	A-VIII/2.8 New watchkeeping principles A-VIII/2.10 Amended to include cargo watch in the principles applying to watchkeeping at sea A-VIII/2.18 Watch arrangements altered to include ECDIS A-VIII/2.47 Watchkeeping under coastal and congested waters amended to include ECDIS A-VIII/2.107 Cargo watch requirements introduced	B-VIII/2 part 4-1 New guidance for keeping an anchor watch

Source: *Guidelines on the IMO STCW Convention (Including the 2010 “Manila Amendments” (ISF, 2011)*

The STCW Diplomatic Conference also adopted resolutions on:

- Resolution 3 : Expression of appreciation to the host Government;
- Resolution 4 : Transitional provisions and early implementation;
- Resolution 5 : Verification of certificates of competency and endorsements contained;
- Resolution 6 : Standards of training and certification and ships' manning levels;
- Resolution 7 : Promotion of technical knowledge, skills and professionalism of seafarers;
- Resolution 8 : Development of guidelines to implement international standards on medical fitness for seafarers;
- Resolution 9 : Revision of existing model courses published by the International Maritime Organization and development of new model courses;
- Resolution 10 : Promotion of technical co-operation;
- Resolution 11 : Measures to ensure the competency of masters and officers of ships operating in polar waters;
- Resolution 12 : Attracting new entrants to, and retaining seafarers in, the maritime profession;
- Resolution 13 : Accommodation for trainees;
- Resolution 14 : Promotion of the participation of women in the maritime industry;
- Resolution 15 : Future amendments and review of the STCW Convention and Code;
- Resolution 16 : Contribution of the International Labour Organization;
- Resolution 17 : Role of the World Maritime University and IMO International Maritime Law Institute and International Maritime Safety, Security and Environment Academy (IMSSEA) in promoting enhanced maritime standards;
- Resolution 18 : Year of the Seafarer; and
- Resolution 19 : Day of the Seafarer.

Appendix 2 Questionnaire paper

Re: RESEARCH QUESTIONS ON STCW MANILA AMENDMENTS

I am currently undertaking the Masters of Science (MSc) program in Maritime Affairs (MSc) at **the World Maritime University (WMU) at Malmo, Sweden** specializing in Maritime Safety and Environmental Administration. As a professional, I am working for the **Korea Institute of Maritime and Fisheries Technology (KIMFT) as an Assistant Professor.**

As part of the MSc program **I am writing a dissertation on the recent STCW Manila amendments.** In order to address all possible angles and issues related to the Manila amendments, I would like to seek your expertise and opinions on the challenges and impacts with regards to the Manila amendments. I would appreciate if you could complete the questionnaire attached herewith where it is relevant to your area. Your valuable comments are much appreciated.

Due to the short timeline given to complete my dissertation, I would deeply appreciate your prompt response ASAP. Meantime, if there are any queries please do not hesitate to contact me. I had attached my *curriculum vitea* for your reference. I would like to thank you in advance for taking your time to go through this questionnaire.

Thank you.

Yours sincerely,
Chae, Chong Ju
WMU, Sweden

STCW Manila Amendments

The following are only indicative questions. Please provide your comments in areas which are relevant to your area of expertise.

1. What are the procedures for ratifying the STCW Manila amendments or international conventions in your country? (in detail)

(Ex: sign at diplomatic conference → making national regulations → approved by national assembly → send it to IMO → ratify)

2. Are there any additional expenditure required for the implementation of the new training or education curriculums to comply STCW Manila Amendments? If yes, please provide the details.

(Example: Cost for new fire fighting facilities: 20,000US\$, Cost for new employed lecturer or professor: 30,000US\$/year, Cost for manpower etc. in detail, use unit US\$ base)

3. Do you have training ship to comply on board training requirements which mentioned in STCW Chapter 2 and 3 for deck officer and engineer officer.

If yes, is the training ship capacity sufficient for all cadets in your institute or country?

(explain capacity of your training ship)

Alternatively how does the cadets in your country complete their sea service requirement, and what are the difficulties faced?

4. What are the course fees for the education or training courses which are mentioning in STCW Manila amendments for seafarers.

(Example: Basic training for crude oil tanker : 100 US\$, Advanced training for crude oil tanker : 200 US\$.

(Please attach the course fees structure and data)

5. What are the procedures (in sequence) and requirements (in terms of certification and endorsement) for seafarers who want board tanker ship. In addition, are there any problems for seafarer who want get tanker ship certificate?

(Example: Difficult to have one month or three month on board training on tanker ship)

6. Do you have distance learning and e-learning systems?

- If yes, what are the types of distance learning and e-learning programs available. In addition, what kind of problems you have with regard to distance learning.

- If no, are there plans to establish distance learning and e-learning programs. And, describe the challenges faced for implementation.

7. Are there any additional training courses or programs required beyond the STCW Chapter VI- Basic Training requirement.

Please state the types of additional training courses required.

8. What is your opinion on the new rest hour framework for seafarers in the STCW Manila amendments.

- Is it reasonable? why?

- Is it not reasonable? why?

Are there any conflicts with your country's rest hours requirements as compared to the STCW Manila Amendments?

9. In your opinion, what are the advantages and disadvantages of STCW Manila Amendments.

10. What are the difficulties faced for

i) rectifying the STCW Manila amendments in your country; and

ii) the compliances of the requirements in your institute?

11. How many seafarers will be affected by STCW Manila amendment in your country? (Please attach your country's seafarer statistic data if possible)

12. In your opinion, are there any further amendments required to the STCW Conventions for seafarer training in the future and why?

Appendix 3 Brief summary of 7 MET institutes of Far East 7 Countries

NMP (National Maritime Polytechnic)

The NMP was established on May 1, 1978 by virtue of Presidential Decree No. 1369 to meet the need for a maritime training center in the country. Initial operations were handled by employees from the National Seamen Board. The course offerings consisted of Basic Messman Course as well as the supervision of radar-related courses in Manila-based maritime schools.

Expanded operations of the Polytechnic became possible with the acquisition in 1980 of a 17-hectare lot in Cabalawan, Tacloban City.

The increasing demands for bigger and more modern structures, improved accommodations and enhanced services, the Philippines commitment and Japan's generous assistance resulted in the construction of up-to-date training, support and administrative service facilities.

The signing of the Technical Cooperation Program between the Governments of the Philippines and Japan, the latter represented by the Japan International Cooperation Agency (JICA) in 1985. resulted in a two-phased modernization and expansion program.

Phase one consisted of the construction of the Administration, Training and Generator buildings and the donation of simulator equipment, spare parts, technical books and references. This became the basis of the dispatch of experts to the NMP for technology transfer and for the technical training of their Filipino counterparts in Japan.

Executive Order No. 126 signed in 1987 attached NMP to the Department of Labour and Employment (DOLE) converting NMP from state college to a DOLE agency. Governed by a Board of Trustees, chaired by the Secretary of the DOLE, the NMP then took off producing more and more highly competitive seafarers.

With the structures and equipment in place, NMP has since 1986, offered various upgrading and specialized courses for deck and engine officers and the basic safety courses for both officers and ratings. In the ensuing years, the implementation of the Faculty Development Program (Cross-Training, Shipboard Rotation, Foreign and Local Scholarship and Training Grants) and Staff Development Programs were strengthened to boost the competence of the agency's manpower resources.

Recently, the agency attained its ISO certification as the Quality Management Systems of the NMP were assessed and registered against the requirements of ISO 9001 with certificate No. AJA00/2285 and registered on 25 April 2000 by the AJA Registrars of Bristol, England. As proof that the agency is maintaining its quality management systems, the agency successfully passed the first two surveillance audits conducted in November 2000 and in July 2001.

Source : www.nmp.gov.ph

DMU Dalian Maritime University

Dalian Maritime University (DMU) is one of the largest and best maritime universities and is the only key maritime institution under the Ministry of Communications, People's Republic of China. DMU enjoys a high reputation internationally as an excellent center of maritime education and training as recognized by the International Maritime Organization (IMO).

The long history of the University can be traced back to 1909, when the Nanyang Institute in Shanghai established a Shipping Management Section. Chinese higher maritime education went through many difficult periods and was not well developed before the founding of the people's Republic of China in 1949.

DMU was created in 1953 through the amalgamation of three merchant marine institutions: Shanghai Nautical College, the Northeast Navigation College and Fujian Navigation School. At that time its name was Dalian Marine College, and it was the only maritime college in China. In 1960, DMU was designated a national key

institution of higher education. Later in 1983, the Asia-Pacific Region Maritime Training Center was established at DMU by the United Nations Development Program (UNDP), and the IMO and in 1985 a branch of the World Maritime University (WMU) was established.

With the approval of the Ministry of Education in 1994, the University's name was changed to the present one. In 1998, the University was awarded the ISO9001 Certificate of Quality Assurance accredited by the Norwegian Det Norske Veritas (DNV) and the China Maritime Safety Administration (MSA); it became the first maritime university in China to have the ISO9001 Certificate. In 2004, the University successfully passed the quality assessment of undergraduate teaching by the Ministry of Education. Through continual development, DMU has been at the forefront of similar universities both in broadening the scope and in enhancing the level of its programs.

The University consists of 13 colleges, and in addition to the departments in each college, there are three other departments which serve as support departments for entire University. Presently DMU has a post-doctoral program (R&D base), 16 Doctoral programs, 57 master's degree programs, and 42 undergraduate programs. Both the Traffic Information Engineering and Control and the Marine Engineering are national key disciplines. The University is authorized to confer MBA, MPA, J.M, and Master of Engineering, an on-the-job master's degree.

Since the amalgamation, DMU has educated and trained nearly 50,000 advanced professionals and technical authorities for the country. Many of them are now playing essential roles in maritime and maritime-related industries both in and outside of China. The current student population has risen to approximately 17,000. Additionally, our university enrolls overseas students for Bachelor's Master's Degrees and PhDs. More than 4,000 overseas students and advanced professionals from over 30 countries and regions have been educated and trained at DMU.

Source: (DMU, 2008)

VIMARU (Vietnam Maritime University)

Founded in 1956, Vietnam Maritime University (VIMARU) has been a leading university of Vietnam in the maritime section. With total number of nearly 16,000 students who study 19 (nineteen) fields of education and constant-annual enrolment of 2,400 to 3,000 students, VIMARU nowadays has been being assigned for educating higher education level graduates of nautical science, marine engineering, electrical and electronic engineering, shipbuilding, sea-transport economics, waterway engineering and all the other fields relating to national maritime sector. Besides, the University also educates post-graduates of Master of Science (Msc.) and Doctor of Philosophy (PhD.) in the fields of Nautical Science, Marine Engineering, Energetic Engineering, Naval Architecture, Waterway Engineering, Sea-transport Economics, etc.

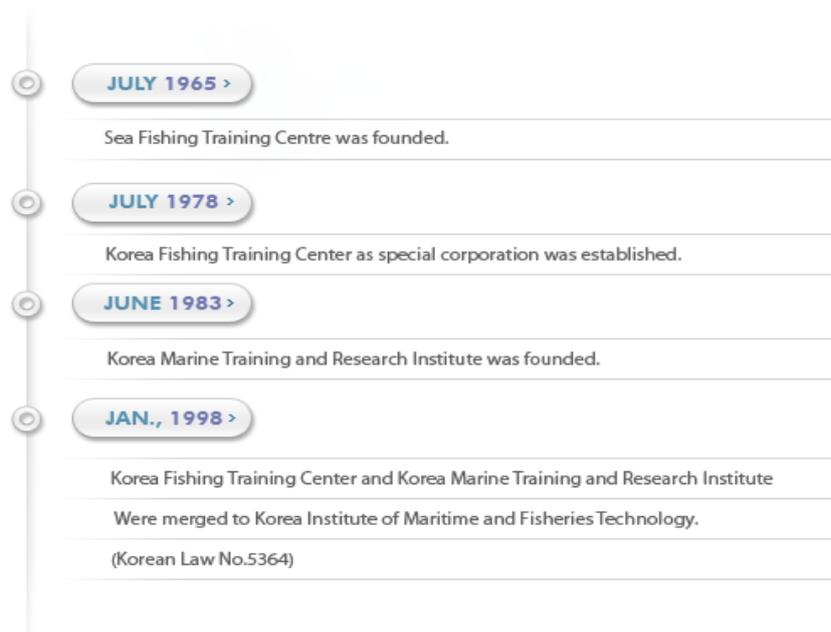
Furthermore, VIMARU is in charge of training for upgrading and refreshing courses to meet the STCW78/95 requirements of all levels of competent certifications (Master, Chief Engineer, Deck and Engine Officers, Chief Radio Operator, Chief Electrician, etc.) for the whole country.

Source: (VIMARU, 2011)

KIMFT

(Korea Institutes of Maritime and Fisheries Technology)

I. History



II. Major Service

- Education and training of personnel engaged in maritime, fisheries and other relative sectors
- Supporting services to the government on making seafarers policy
- Services promoting an international exchange of technology related to maritime affairs and fisheries
- Services for the execution of maritime license examination
- Research and development studies on shipping, port operation and fisheries
- Education and Training of Personnel Engaged in Offshore Safety

Source: (KIMFT, 2008)

SMA (Singapore Maritime Academy)

SMA's history began in 1957 when the Singapore Polytechnic (SP) took over the responsibility of navigation classes from the Sailor's Institution. SMA celebrated her 50th year in Maritime Education and Training with the launch of SatCom@SMA - a maritime satellite communications centre in partnership with SingTel.

SMA have three distinct areas of operation: Marine Engineering, Maritime Business and Nautical Studies. As the country's main maritime training institution, SMA offers a full range of maritime diplomas and specialist diplomas, Certificate of Competency (CoC) courses as well as Standards of Training, Certification and Watchkeeping (STCW) courses.

The academy also launched the SMA-SMTC Safety Training Centre (SSSTC), located at the Poly Marina, which provides safety training for personnel working in the offshore oil and gas industry.

The most recent award clinched by SMA was the Seatrade Asia Awards 2011 for The Education and Training Award. SMA was awarded the global Seatrade Awards 2009 (London) for Investment in People with High Commendation, inaugural Seatrade Asia Awards 2008 for Education and Training and Lloyd's List Asia Awards 2008 for the Training and Crewing' category of excellence. In the decade of Lloyd's List Asia Awards, SMA won seven consecutive awards of a similar category - The Best Seafarer Training Institute and The Youth Development awards. A series of accolades achieved by SMA over the years are:

Over the years, Singapore has developed into a global hub port and a leading International Maritime Centre (IMC). SMA has played an important role by providing quality maritime education and training for more than 50 years. The numerous awards accorded to SMA signify the strong endorsements by the maritime industry on SMA's programmes.

Source : (SMA, 2009)

ALAM (Malaysian Maritime Academy)

The story of the Academy began in 1977. The need to train and prepare Malaysians for the exciting maritime industry was addressed with the establishment of a non-profit making body called MATES (Malaysian Training and Education for Seamen) Foundation. Consisting of the Malaysian International Shipping Corporation Berhad (MISC) (now known as MISC Berhad), International Shipping Carriers Hong Kong and the Malaysian Ministry of Transport as their main promoters, the foundation soon pioneered the Maritime Training Centre (MTC) in 1977.

On 15 August 1981, MTC was subsequently upgraded to academy status and thus named ALAM, short for Akademi Laut Malaysia (Malaysian Maritime Academy). On 1 January 1997, ALAM was privatised to Malaysian Maritime Academy Sdn Bhd (MMA).

ALAM, the nation's premier maritime education and training establishment, has since been designated as a Branch Campus of the World Maritime University, Malmo, Sweden and has also established formal alliances with other leading maritime education and training institutions in Australia, Norway, The Netherlands, Singapore and The United States of America.

Source : (ALAM, 2011)

Appendix 4 Working hour record of two tanker ships

Kinds of work in detail for deck officers during ship to ship (STS) operations

VLCC “A”, H: hours

	Captain	C/O	1/O	2/O	3/O
Day 1	Berthing 2H CIQ 2H U.S.C.G inspection 4 H	Cargo duty 12H	Cargo duty 12H	Bridge duty 12H	Bridge duty 12H
Day 2	Paper work 2H Cargo watch 2H General work 4H	Cargo duty 12H	Cargo duty 10H	Bridge duty 12H	Bridge duty 12H
Day 3	Paper work 2H Cargo watch 2H General work 4H	Cargo duty 12H	Cargo duty 10H	Bridge duty 12H	Bridge duty 12H
Day 4	Paper work 2H Cargo watch 2H General work 4H	Cargo duty 12H	Cargo duty 10H	Bridge duty 12H	Bridge duty 12H
Day 5	Paper work 2H General work 6H	Cargo duty 12H	Cargo duty 12H	Bridge duty 12H	Bridge duty 12H
Day 6	1 day rest	1 day rest	Navigation duty 8H	Bridge duty 8H	Bridge duty 8H
Day 7	Paper work 4H	Navigation duty 8H	Navigation duty 8H	Bridge duty 4H	Bridge duty 4H
TTL	44H	68H	70H	72H	72H

Sources : working hour record of Panama flag state VLCC (Chae, Chong Ju)

VLCC “B”, H: hours

	Captain	C/O	2/O	3/O
Day 1	Bridge duty 12H	Cargo duty 12H USCG inspection 2H	Bridge duty 12H	Bridge duty 12H
Day 2	Bridge duty 12H	Cargo duty 12H Berthing, Un-berthing 2H	Bridge duty 12H	Bridge duty 12H
Day 3	Bridge duty 12H	Cargo duty 12H Berthing, Un-berthing 2H	Bridge duty 12H	Bridge duty 12H
Day 4	Bridge duty 12H	Cargo duty 12H Berthing, Un-berthing 2H	Bridge duty 12H	Bridge duty 12H
Day 5	Bridge duty 12H	Cargo duty 12H Berthing, Un-berthing 2H	Bridge duty 12H	Bridge duty 12H
Day 6	Paper work 2H General work 6H	1 day rest	Bridge duty 8H	Bridge duty 8H
Day 7	Paper work 4H	Navigation duty 8H	Bridge duty 8H	Bridge duty 8H
TTL	44H	78H	76H	76H

Sources: Working hour record of Singapore flag state VLCC (Jolyn Tay Ling Ling)