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**OCCUPATIONAL SAFETY AND HEALTH
PROVISIONS OF THE MLC 2006 – CHANGES AND
COST ANALYSIS FOR A GREEK MEDIUM SIZE
FLEET SHIPMANAGEMENT COMPANY**

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Abstract

The most significant regulations of MLC, 2006 regarding crew occupational safety and relevant health provisions that are added in the international regulatory framework or differentiated in comparison to SOLAS, STCW, MARPOL, are the main subject of this thesis along with a cost analysis of the implementation and audit of relevant articles for a medium sized Greek ship management company.

Under Article IV of MLC, 2006, every seafarer has the right to a safe and secure workplace that complies with safety standards, to fair terms of employment, to decent working and living conditions on board ship and to health protection, medical care, welfare measures and other forms of social protection. Scope of this thesis is to examine how these conditions eventually influenced shipping industry.

Mapping, step by step, the most important changes occurred from the implementation of MLC, 2006, respective costs recognized in order to determine, in monetary terms, how and in what extent shipping companies have been affected.

1. Introduction

Maritime Industry, many would say, is a field of great contrasts such as the size of huge vessels in comparison to the size of man that constructs them but at the same time so tiny when it comes to crossing oceans. The most common opposition though, is that the vast majority of commodities although produced in land, is actually transferred between countries by sea. Around 80 per cent of global trade by volume and over 70 per cent by value are carried by sea and are handled by ports worldwide (UNCTAD, 2018). At the same time shipping is the most efficient and cost-effective method of international transportation for most goods with the highest safety standards in regards to the cargo (IMO, 2019). Additionally, for many countries, sea trade plays a significant role in their GDP (Gross Domestic Product)¹, an indicator that is primarily used to measure the health of their economies. So, another major controversy emerged the last decades in maritime industry. In one hand, there was the safe transport of cargo and countries' economies welfare and in the other hand, safety and health of seafarers that seem to be compromised for the wealth of all the other parties involved.

Throughout shipping history, and not until few decades back, safety and health standards of the crew were not significantly covered by any strict regulatory framework. Strict though in the basis of preventing measures and not in the penalties or the punishment of a shipowner or the employer of seafarers. In the beginning of the twentieth century all parties involved in seaborne trade, such as flag states, international organizations, shipping companies and seafarers' syndicates, reached to the conclusion that it would be of common interest establishing new solid regulations and standards regarding safety at sea. Later on, health provisions added in more details regarding seafarers' occupational environment. This common regulatory framework firstly introduced in the maritime society, in 1948 at Geneva, as United Nations adopted the convention that at last established the

¹ Global economic growth dipped in 2018 and is expected to decline further in 2019. After reaching 3.1 per cent in 2017, growth in world gross domestic product (GDP) remained steady but edged down to 3.0 per cent in 2018 (UNCTAD, 2019).

International Maritime Organization (IMO)². Further, regulations imposed³ by the IMO, established a common and acceptable ground among most parties, resulting in the improvement of safety at sea and giving a positive aura at sea trade in general.

The purpose of the Organization, is "to provide the mechanism for cooperation among Governments in the field of governmental regulation and practices relating to technical matters of all kinds affecting shipping engaged in international trade; to encourage and facilitate the general adoption of the highest practicable standards in matters concerning maritime safety, efficiency of navigation and prevention and control of marine pollution from ships". The Organization is also empowered to deal with administrative and legal matters related to these purposes. (IMO, 2019)

The IMO has produced numerous codes, conventions and resolutions, which are referred as 'Maritime Regulations'. (Karahalios, 2015) The most important of all International treaties regarding merchant vessels' safety is considered to be the SOLAS 1974 (International Convention for the Safety of Life at Sea), as amended. Following SOLAS, the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers adopted on 28th April 1978 (STCW) came to set the minimum requirements for training, certification and watchkeeping for seafarers, with main purpose to promote safety of life and property at sea and the protection of the marine environment. Additionally, the International Convention for the Prevention of Pollution from Ships 1973/1974 (MARPOL) is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes.

In February 2006, at Geneva, MLC 2006 was adopted by the International Labour Conference (ILC) of the International Labour Organization (ILO) under article 19 of its Constitution. Maritime Labour Convention, 2006 being the so-called fourth pillar of Maritime regulations, following SOLAS,

² The original name was the Inter-Governmental Maritime Consultative Organization, or IMCO, but the name was changed in 1982 to IMO.

³ The IMO Convention entered into force in 1958 and the new Organization met for the first time the following year.

MARPOL and STCW, defined more thoroughly seafarers' employment and social rights making working conditions, safer, healthier and more descent. Specifically, under Article IV of MLC, 2006, every seafarer has the right to a safe and secure workplace that complies with safety standards, to fair terms of employment, to decent working and living conditions on board ship and to health protection, medical care, welfare measures and other forms of social protection.

MLC, 2006 and more specific, the most significant regulations regarding crew occupational safety and relevant health provisions that are added in the international regulatory framework or differentiated in comparison to previous existing vital conventions, will be later described more analytically and decomposed, being the main subject of the presented research along with the cost analysis of the implementation and audit of relevant articles for a medium sized Greek ship management company⁴, as part of the management expenses such a company has. In order not to derive from these elements of the research, it was deemed more appropriate to concentrate on changes occurred in the daily routine and management of a vessel and not in the constructional regulations that were implemented. All major changes in Occupational Safety and Health provisions (OSH) will be strictly examined under its general definition set as *“the science of the anticipation, recognition, evaluation and control of hazards arising in or from the workplace that could impair the health and well-being of workers, taking into account the possible impact on the surrounding communities and the general environment”* (Alli, 2008).

Additionally, it would be of great assistance, in terms of better understanding, to mention that the ILO and the World Health Organization (WHO) have reached to a simpler definition in order to explain Occupational Health and that is *“the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations”*. Based on that definition we should focus in three particular points, i) the maintenance and promotion of workers' health and working capacity, ii) the improvement of the working environment and work to become conducive

⁴ A medium size company manages a fleet of 5-15 vessels (Theotokas, 2007)

to safety and health, and iii) the development of work organizations and working cultures in a direction that supports safety and health at work. (International Labour Organization , 2016)

But before proceeding, it is important to first have a closer view of IMO purposes along with existing regulatory process in order to answer questions such as, who proposes what and for which reason, when relevant regulations come into force, who is responsible for their implementation and whose authority is the final approval and control. Additionally, a short analysis of the SOLAS, MARPOL and STCW will follow, in order to understand the need that led ILO to adopt MLC, 2016 and what deficiencies were covered.

2. IMO – International Maritime Organization

“IMO (International Maritime Organization) is the United Nations specialized agency with responsibility for the safety and security of shipping and the prevention of marine and atmospheric pollution by ships. As a specialized agency of the United Nations, IMO is the global standard-setting authority for the safety, security and environmental performance of international shipping. Its main role is to create a regulatory framework for the shipping industry that is fair and effective, universally adopted and universally implemented. In other words, its role is to create a level playing-field so that ship operators cannot address their financial issues by simply cutting corners and compromising on safety, security and environmental performance. This approach also encourages innovation and efficiency.” (IMO, 2019)

IMO was formally established by the adopted convention, which was the result of the international conference held in Geneva in 1948 under U.N. elections. IMO convention entered into force in 1958 and the following year the first meeting took place. The primary task of IMO was to update and adopt a new version of the International Convention for the Safety of Life at Sea (SOLAS), which is considered the most important treaty among all dealing with maritime safety. After accomplishing above in 1960, IMO undertook the initiative to cover through relevant regulations issues such as international maritime traffic facilitation, load lines and the carriage of hazardous materials and goods. Additionally, tonnage measurement of vessels was reviewed and further revised.

Safety, being the main responsibility of IMO, was at a point supplanted by the pollution incidents and the continuously need for environment protection. After the **Torrey Canyon** disaster in 1967, when 120.000 tons of oil spilled and numerous measures followed to prevent accidents and their harmful results, the MARPOL 73/78 convention was introduced. The International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978, covers except from

accidental and operational oil pollution, pollution by chemicals, goods in packaged form, sewage, garbage and air pollution.

IMO, except from Life at Sea (SOLAS) and Pollution (MARPOL) issues, adopted a series of measures regarding compensation for those suffered financial damage due to pollution, search and rescue, assistance to those being in distress and safety and security management. But the third more important convention IMO adopted, was the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, which entered into force in 1978. Regulations of STCW improved seafarer standards and, for the first time, gave IMO itself powers to check Government actions with Parties required to submit information to IMO regarding their compliance with the Convention. Full list of IMO Conventions is quoted in appendix no.1.

IMO is currently consisted from 174 State Members and three Associate Members and consists of an Assembly, a Council and five main Committees: (The Maritime Safety Committee; the Marine Environment Protection Committee; the Legal Committee; the Technical Cooperation Committee and the Facilitation Committee) and a number of Sub-Committees support the work of the main technical committees. The Strategic Plan of IMO is adopted by the IMO Assembly, which meets once every two years. In the Strategic Plan, among others, are stated the mission and the vision of the Organization, strategic directions, performance indicators and the list of outputs.

2.1. Adopting a Convention

Regulating and adopting a Convention is a time-consuming procedure with many technicalities and therefore is deemed more valuable only the basic frame to be described. The main committees of IMO, as listed earlier, consisted from all member states that are equally participating, are responsible during their meetings to propose and draft regulations in the form of conventions, rules and recommendations. Following, a UN conference is held at which all members (IMO members or not) are invited to examine and review the proposed maritime regulations. Then, it is on member states decision if they will ratify and adopt proposed regulations or part of them. Each convention describes

the procedure to be followed before it enters into force. However, the formal adoption of a convention can take many years, as the implementation of a regulation may be costly and discourage some states from ratifying them. As a result, the implementation of a maritime regulation at an international level, may be a long process or even incomplete.

Furthermore, in many cases private stakeholders (classification societies, insurers, P&I clubs, etc.) are summoned to participate, without having a vote right, to several committees as their operations are strongly affected from some regulations. That could make relevant procedure more complicated. When finally, a new regulation comes into force, flag states, coastal states and ships operators are guided and instructed accordingly in order to implement adopted regulations. That is succeeded through the incorporation of the regulations to national laws by making them obligatory for ships flying state's flag or for ships with different flag entering to state's coasts and with appropriate inspections respectively. The final stage of the implementation process is that crew members must conform to all applicable IMO regulations

2.2. SOLAS – Safety of Life at Sea

The SOLAS Convention is considered as the most important of all international treaties in regards to the safety of merchant ships. Triggered by the Titanic loss, first adopted in 1914. The second and the third revisions adopted in 1929 and 1948 respectively, the fourth in 1960 and finally resulting at the 1974 Convention⁵ that has been thereafter updated and amended on numerous occasions. The Convention in force today is sometimes referred to as SOLAS, 1974, as amended.

“The main objective of the SOLAS Convention is to specify minimum standards for the construction, equipment and operation of ships, compatible with their safety. Flag States are responsible for ensuring that ships under their flag comply with its requirements, and a number of certificates are

⁵ International Convention for the Safety of Life at Sea (SOLAS), 1974 - Adoption: 1 November 1974 & Entry into force: 25 May 1980

prescribed in the Convention as proof that this has been done. Control provisions also allow Contracting Governments to inspect ships of other Contracting States if there are clear grounds for believing that the ship and its equipment do not substantially comply with the requirements of the Convention - this procedure is known as port State control. The current SOLAS Convention includes Articles setting out general obligations, amendment procedure and so on, followed by an Annex divided into 14 Chapters as listed below.” (IMO, 2019)

Chapter I - General Provisions

Chapter II-1 - Construction - Subdivision and stability, machinery and electrical installations

Chapter II-2 - Fire protection, fire detection and fire extinction

Chapter III - Life-saving appliances and arrangements

Chapter IV - Radiocommunications

Chapter V - Safety of navigation

Chapter VI - Carriage of Cargoes

Chapter VII - Carriage of dangerous goods

Chapter VIII - Nuclear ships

Chapter IX - Management for the Safe Operation of Ships

Chapter X - Safety measures for high-speed craft

Chapter XI-1 - Special measures to enhance maritime safety

Chapter XI-2 - Special measures to enhance maritime security

Chapter XII - Additional safety measures for bulk carriers

Chapter XIII - Verification of compliance

Chapter XIV - Safety measures for ships operating in polar waters

2.3. MARPOL – Marine Pollution Prevention Convention

The International Convention for the Prevention of Pollution from Ships (MARPOL) is the basic convention adopted for the marine environment pollution prevention by vessels caused from their

operation or accidents. The MARPOL Convention was adopted on 2 November 1973 at IMO. The Protocol of 1978 was adopted in response to a spate of tanker accidents in 1976-1977⁶.

“As the 1973 MARPOL Convention had not yet entered into force, the 1978 MARPOL Protocol absorbed the parent Convention. The combined instrument entered into force on 2 October 1983. In 1997, a Protocol was adopted to amend the Convention and a new Annex VI was added which entered into force on 19 May 2005. MARPOL has been updated by amendments through the years. The Convention includes regulations aimed at preventing and minimizing pollution from ships - both accidental pollution and that from routine operations - and currently includes six technical Annexes. Special Areas with strict controls on operational discharges are included in most Annexes.” (IMO, 2019)

Annex I - Regulations for the Prevention of Pollution by Oil (entered into force 2 October 1983)

Annex II - Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk (entered into force 2 October 1983)

Annex III - Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Form (entered into force 1 July 1992)

Annex IV - Prevention of Pollution by Sewage from Ships (entered into force 27 September 2003)

Annex V - Prevention of Pollution by Garbage from Ships (entered into force 31 December 1988)

Annex VI - Prevention of Air Pollution from Ships (entered into force 19 May 2005)

2.4. STCW – Standards of Training, Certification and Watchkeeping for Seafarers

International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978 was adopted on 7 July 1978 but entered into force few years later, on 28 April 1984. By setting up in common agreement international standards of training, certification and watchkeeping for seafarers, the main purpose of the Convention is set to advance safety of life and property at sea and

⁶SS Torrey Canyon was an LR2 Suezmax class oil tanker with a cargo capacity of 120,000 short tons (110,000 t) of crude oil. She was shipwrecked off the western coast of Cornwall, England, on 18 March 1967, causing an environmental disaster by spilling the entire cargo in the sea. That incident actually caused a domino of actions resulting in the adoption of MARPOL.

the protection of the marine environment. A major revision of the STCW Convention and Code was made with the Manila amendments that were adopted on 25 June 2010 and set to enter into force on 1 January 2012.

Amongst the amendments adopted, there are a number of important changes to each chapter of the Convention and Code, including:

- Improved measures to prevent fraudulent practices associated with certificates of competency and to strengthen the evaluation process (monitoring of Parties' compliance with the Convention);
- Revised requirements on hours of work and rest and new requirements for the prevention of drug and alcohol abuse, as well as updated standards relating to medical fitness standards for seafarers;
- New certification requirements for able seafarers;
- New requirements relating to training in modern technology such as electronic charts and information systems (ECDIS);
- New requirements for marine environment awareness training and training in leadership and teamwork;
- New training and certification requirements for electro-technical officers;
- Updating of competence requirements for personnel serving on board all types of tankers, including new requirements for personnel serving on liquefied gas tankers;
- New requirements for security training, as well as provisions to ensure that seafarers are properly trained to cope if their ship comes under attack by pirates;
- Introduction of modern training methodology including distance learning and web-based learning;
- New training guidance for personnel serving on board ships operating in polar waters; and
- New training guidance for personnel operating Dynamic Positioning Systems

“The regulations contained in the Convention are supported by sections in the STCW Code. Generally speaking, the Convention contains basic requirements which are then enlarged upon and

explained in the Code. Part A of the Code is mandatory. The minimum standards of competence required for seagoing personnel are given in detail in a series of tables. Chapter II of the Code, for example, deals with standards regarding the master and deck department. Part B of the Code contains recommended guidance which is intended to help Parties implement the Convention. The measures suggested are not mandatory and the examples given are only intended to illustrate how certain Convention requirements may be complied with. However, the recommendations in general represent an approach that has been harmonized by discussions within IMO and consultation with other international organizations.” (IMO, 2019)

3. ILO – International Labour Organization

The International Labour Organization (ILO) was born in 1919 out of the political and social turmoil of the First World War and its aftermath, it is today one of the oldest organizations of the United Nations system and it is unique due to the tripartite structure, in which decisions are taken by representatives of governments, employers and workers. (Maul, 2019) After the Paris Peace Conference, ILO was created as part of the Treaty of Versailles⁷ that ended World War I, to reflect the belief that universal and lasting peace can be accomplished only if it is based on social justice. (ILO, 2019)

With Samuel Gompers, head of American Federation of Labour (AFL) in the United States, chairing the Labour Commission, the Constitution of the ILO was drafted in early 1919 and firstly composed of representatives from nine countries: Belgium, Cuba, Czechoslovakia, France, Italy, Japan, Poland, the United Kingdom and the United States. Since then the number of ILO members reached the 187 with last one to be The Kingdom of Tonga with effective date of membership the 24th February of 2016. A Committee of Experts was set up in 1926 to supervise the application of ILO standards. The Committee, which still exists today, is composed of independent jurists responsible for examining government reports and presenting each year to the Conference its own report on the implementation of ILO Conventions and Recommendations. In 1946, the ILO became a specialized agency of the newly formed United Nations.

“The ILO accomplishes its work through three main bodies which includes governments', employers' and workers' representatives:

⁷ At the end of World War I, during a peace conference held in Paris, France, the victorious Allies concluded a series of peace treaties that would be imposed on the defeated Central Powers. The most important of these was the Treaty of Versailles, signed in June 1919 at the Palace of Versailles in Paris. (History.com, 2009)

- *the International Labour Conference sets the International Labour standards and the broad policies of the ILO. It meets annually in Geneva. Often called an international parliament of Labour, the Conference is also a forum for discussion of key social and Labour questions.*
- *the Governing body is the executive council of the ILO. It meets three times a year in Geneva. It takes decisions on ILO policy and establishes the program and the budget, which it then submits to the Conference for adoption.*
- *the International Labour Office is the permanent secretariat of the International Labour Organization. It is the focal point for International Labour Organization's overall activities, which it prepares under the scrutiny of the Governing Body and under the leadership of the Director-General.*” (ILO, 2019)

International Labour standards are supported by a supervisory system that helps to ensure that conventions are properly implemented by member states that ratify them. The ILO regularly checks the application of standards in member states and makes out recommendations where they could be better applied. If there are any problems in the application of standards, the ILO seeks to assist countries through social dialogue and technical assistance.

The ILO has developed various means of supervising the application of Conventions and Recommendations in law and practice following their adoption by the International Labour Conference and their ratification by States. There are two kinds of supervisory mechanism:

- The regular system of supervision: examination of periodic reports submitted by Member States on the measures they have taken to implement the provisions of the ratified Conventions
- Special procedures: a representations procedure and a complaints procedure of general application, together with a special procedure for freedom of association

Since 1919, the International Labour Organization has maintained and developed a system of International Labour standards aimed at promoting equal opportunities for women and men for

decent and productive work in a framework of dignity, freedom and security. In today's globalized economy, International Labour standards are an essential substance of the international environment for ensuring that the growth of the global economy is distributed to all. Under that system and within this framework ILO has adopted the Maritime Labour Convention, 2006, which is the main subject of analysis in our research.

3.1. MLC – Maritime Labour Convention, 2006

The MLC, 2006, was adopted by the International Labour Conference (ILC) of the International Labour Organization (ILO) in 2006 and entered into force on 20 August 2013, one year after registering 30 ratifications of countries representing over 33 per cent of the worlds' gross tonnage of ships, becoming binding in international law. MLC, 2006 was adopted by government, employer and worker representatives in international level establishing minimum working and living standards for all seafarers employed on ships flying the flag of countries adopted the Convention. Having reached 96 ratifications⁸ of MLC and several amendments, most probably the Convention will eventually receive universal ratification from relevant ILO Members in the near future.

“The Convention mandates that commercially operated ships of 500 gross tonnage or over and governed by its provisions will, if they operate on international voyages, be required to carry, among other things, two specific documents: a Maritime Labour Certificate (MLC) and a Declaration of Maritime Labour Compliance (DMLC) providing prima facie evidence that the ships are in compliance with the requirements of the Convention. These two documents will be subject to inspection when ships enter the ports of other countries that have ratified the Convention. In addition, ships flying the flag of countries that have not ratified the Convention will also be subject to inspection with respect to working and living conditions for seafarers when they enter ports of countries where it is in force. This “no more favorable treatment” approach, is an important aspect to help ensure fair competition for ship-owners that comply with the Convention.” (ILO, 2019)

⁸ On 18 December 2019, the Cook Islands became the 96th Member State of the ILO to have ratified the MLC, 2006 Convention as amended.

The comprehensive Convention sets out in one place seafarers' rights to decent conditions of work on almost every aspect of their working and living conditions including, among others, minimum age, hours of work or rest, payment of wages, paid annual leave, repatriation at the end of contract, onboard medical care, the use of licensed private recruitment and placement services, accommodation, food and catering, health and safety protection and accident prevention and seafarers' complaint handling. (ILO, 2019) The MLC, 2006, covers fundamental principles and rights at work, a right to a fair and secure workplace, fair terms of employment, decent working and living conditions on board ship, health protection and welfare measures. These substantive rights are set out in the first four titles of the Convention (Titles 1 to 4), while the inspection and enforcement provisions of the Convention are set out in Title 5. (Visvikis & Panayides, 2017)

1. Title 1. Minimum requirements for seafarers to work on a ship
2. Title 2. Conditions of employment
3. Title 3. Accommodation, recreational facilities, food and catering
4. Title 4. Health protection, medical care, welfare and social security protection
5. Title 5. Compliance and enforcement Appendixes

From these articles the most significant, in regards to differentiation from previous major Conventions (SOLAS, MARPOL, STCW) will be analyzed and for that is important to know what triggered off ILO to decide developing MLC and what was the reasons for that change.

3.2. MLC – Filling a Gap

Even if ILO has proposed to its members, almost a century ago⁹, in the form of recommendations the National Seamen's Codes Recommendations as a legal instrument, setting out rights and obligations in maritime industry and the further adaptation of the three conventions of IMO (SOLAS, MARPOL, STCW), there was still an extensive need for establishing a more strict framework regarding occupational safety and health conditions of seafarers working environment.

But there were not only the severe conditions that have occurred in the past decades on board of vessels that drove ILO to develop the new Convention (MLC, 2006). One major issue that had to be coped with was the globalization of shipping not in terms of transport but regarding the constant increase of non-traditional shipping nations, seafarers of different nationality, port authorities and third parties' involvement in the industry. For that reason, a Convention of broader acceptance was needed, solving in same time issues as effective enforcement and compliance from the most of ILO members. Additionally, there was an obvious necessity providing a more effective preservation of seafarers' rights to decent work and facilitating Shipowners and Governments in applying and controlling proper implementation of relevant regulations.

Going deeper in the main reasons of the change needed to be made, we ought to present them clearly as stated through ILO's presentation on 18th November 2013 of MLC's detailed overview.

- *Many of the existing ILO instruments needed to be updated to reflect the working conditions in the industry*
- *Changes in ownership, financing and the rise of the ship management companies resulting in significant shifts in the labor market for seafarers*

⁹ One year after ILO was created, one of the first legal instruments regarding seafarers' rights was adopted. It was on 15th June 1920 the National Seamen's Codes Recommendation, 1920 (No. 9).

- *Development of consciously composed mixed nationality crews in highly organized network linking shipowners, ship managers, crew managers, labour supplying agencies*
- *Increased internationalization of ship registries and “flag of convenience”*
- *A need to provide a “level playing field” and avoid exploitation of workers*
- *Increased stress and complexity in the maritime work place that has an impact on the health and social security of workers*
- *The high level of detail combined with the large number of Conventions led to problems for compliance and enforcement and relatively low ratification level for some key Conventions (ILO, 2013)*

3.3. Shipboard Occupational Health & Safety Program

As mentioned in the introduction the main goals of a company regarding occupational safety and health are the maintenance and promotion of workers health and working capacity and the improvement of the working environment and work to become conducive to safety and health. But how does a company succeed that and with which instrument finally implements all necessary regulations? This is essential and crucial to be clearly defined because based on that, we will conclude in what was really changed with MLC, 2006 and what is the cost of a medium size ship management company to abide in relevant regulations.

Every company is committed to ensure that seafarers on board of their ships are provided with occupational health protection and live, work and trained in a safe and healthy environment. In order to ensure that seafarers’ work environment on board ships promotes occupational safety and health as well as to achieve and sustain this, every company implements the Occupational Health and Safety Program on board, including risk evaluation, training and instruction of seafarers. A company also has to promote precautions to prevent occupational accidents, injuries and diseases on board ship, including measures to reduce and prevent the risk of exposure to harmful levels of ambient factors and chemicals as well as the risk of injury or disease that may arise from the use of equipment and

machinery on board ships. Additionally, requirements must be met for inspecting, reporting and correcting unsafe conditions and for investigating and reporting on-board occupational accidents.

Having recognized Shipboard Occupational Health and Safety Program (SOHSP) as a major tool for a Company to absorb in practice all regulations and proposals as set by IMO and ILO regarding occupational safety and health, the basic elements of that program must be also outlined in order to be fully aware; i) of what a system like this one is consisted of and ii).how it can be presented and be functional for a company. These elements are defined through the “Guidelines on the Basic Elements of a Shipboard Occupational Health and Safety Program” as released by IMO at 5th June 2006:

- Executive Management commitment and leadership.
- Employee participation.
- Hazard anticipation, identification, evaluation and control.
- Training.
- Record keeping.
- Contract or third-party personnel.
- Fatality, injury, illness and incident investigation.
- Systematic program evaluation and continuous improvement. (IMO, 2006)

Based on the above we conclude that a Company’s SOHSP should be based on the “PLAN – DO – CHECK – ACT” model of an Occupational Safety and Health management system or in an alternative of this model given as “PLAN – IMPLEMENT – AUDIT – REVIEW”.

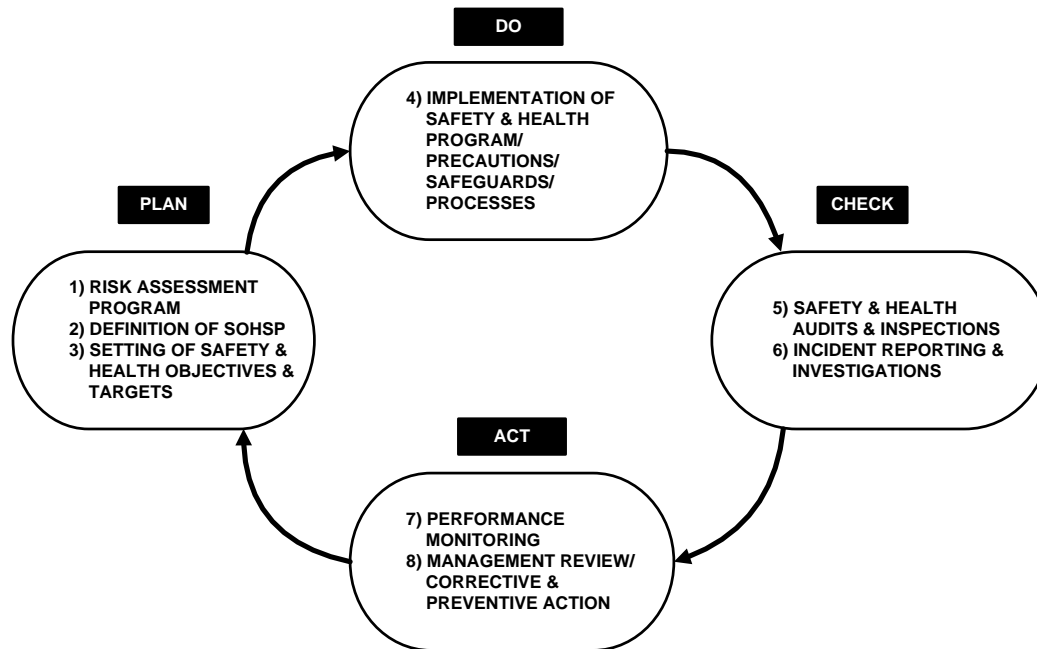


Figure 1 - Occupational Health & Safety Management System

After having defined this major tool with which a company succeeds to be in line with issued and proposed regulations regarding occupational health and safety, we will proceed by identifying what has actually changed for the working environment of seafarers through MLC. By combining these changes along with the parts of the system that are affected we will then be in the position to collect relevant data for the requested cost analysis.

3.4. Changes and Breakthroughs of MLC

In order to be as specific as possible regarding changes that are implemented with MLC, we will focus to the measures that must be drawn from a shipowner, as named in the Declaration of Maritime Labour Compliance (DMLC), which is attached in the Maritime Labour Certificate (MLC). These two certificates do provide evidence that a vessel is in compliance with the Convention.

Many of the changes that came into force with the Convention were more anthropocentric as they were referring to crew rights and qualifications. For example, the minimum age of 18 was set as a limit for employment along with relevant recruiting and checking procedures. Additionally, medical certificates for all crew members are obligatory to be issued and regularly checked. Furthermore, the procedure of seafarers' recruitment has been described more thoroughly, pointing out issues such as proven qualifications, familiarization, training, employment agreements and manning agents working framework.

The changes of working conditions were made by defining issues such as hours of work and rest and the manning level of a vessel in order to be safely manned and managed. Other regulations that were specified were regarding accommodation conditions, on-board recreation facilities and food and catering lists of actions for the proper nutrition of the seafarers. It's important to understand that MLC came to set on-vessel conditions that were already, for decades, universally applicable for shore-based occupations.

Extra caution was also taken regarding the health of crew members as there were set regulations for health, safety and accident prevention. The company must ensure a safe and healthy working environment for the seafarers as long as relevant medical care and adapt procedures for recording occupational accidents, further review and actions.

Additionally, to the above, the Convention also set on-board complaint procedures for the crew members in which is analytically described how seafarers' complaints and alleged breaches of MLC can be fairly and effectively handled. Finally, payment of seafarers' wages and financial security of repatriation is also secured with relevant regulations along with financial security related to shipowners' liabilities like claims that may occur from a seafarer's accident or death.

So, having now defined SOHSP particulars and the basic changes occurred with MLC, in comparison to previous conventions, we will proceed recognizing the costs that were created for a medium size Greek ship-management company in order to fully comply with Convention's proposed regulations.

4. Cost Analysis

In order to have a deeper understanding of what really changed in terms of cost when MLC came into force, regarding occupational safety and health provisions system, we will create a matrix. In this matrix the main field of changes will be combined, as stated in chapter 3.4. “Changes and Breakthroughs of MLC”, along with the elements of SOHSP in order to accomplish focusing in how actually MLC affected a medium size Greek ship-management company and what is the real cost of that. The results of the matrix will point out if there was any change at costs already existed, regarding occupational safety and health provisions and then going through the data of our samples we will reach into a conclusion.

Vertically on the table are depicted the elements of SOHSP and horizontally the most important changes. For every combination of the data there will be one out of four results:

1. “O” – If there was no differentiation in the cost of Company’s SOHSP in regards to specific proposals/changes caused by MLC. This means that even if there were new rules to be followed there was no additional cost for the Company as their implementation was either covered from previous procedures or continued to be facilitated by them.
2. “I” – If there was an initial cost for the MLC new rules implementation but with no significant cost in the daily routine of the Company. As initial cost will be also recognized any cost that is made after an amendment of the MLC or if a review of the system may occur because of e.g. a deficiency or a change in Company’s activities, policy or goals.
3. “II” – If continuous costs exist in the Company’s activities in regards to the management of the vessels but it’s quite difficult to be identified as these costs are produced not only by MLC implementation. That could be e.g. the ashore working manpower hours for the implementation and review of MLC. (Example: Company’s SQE department pre-existed for

the implementation of other Conventions so when MLC came into force employees of the department had to e.g. monitor MLC related activities without any additional compensation).

4. “III” – If major daily or periodical costs exist in the Company’s activities in regards to the management of the vessels. These costs can be easily identified by the constant and distinct appearance of relevant expenses in Company’s data and are clearly addressed for the needs of MLC implementation.

Having analyzed all possible results and after questioning employees of all departments that are directly or indirectly connected with MLC changes, we concluded in the following table (matrix).

System \ Changes		Crew Rights	Crew Recruiting	Crew Medical	Crew Accommodation	Crew Recreation	Crew Catering	Accident/Inness Prevention	Crew Financial "Security"	Working Practises
		PLAN	1. Risk Assessment	I	I	I	I	I	I	I
2. SOHSP Definition	I		I	I	I	I	I	I	I	I
3. Objectives & Targets	I		I	I	I	I	I	I	I	I
DO	4. Implementation	III	II	III	II	I	III	III	III	II
CHECK	5. Audits & Inspections	II	III	O	II	II	II	II	O	I
	6. Incident Report/Investigation	II	O	O	II	O	II	O	O	I
ACT	7. Performance Monitoring	II	II	II	II	II	II	II	II	I
	8. Review/Corrective Actions	II	II	II	II	II	II	II	II	II

Figure 2 - Matrix of "changes"

For the better explanation of the results we will go through the main parts of Company’s system and will give indicative examples for every change in the system that has evidently created extra cost.

4.1. Plan

Our findings in regards to the cost of the Plan of Company's system is rather solid. The results of the research pointed out that there was an initial cost occurred by MLC enforcement but no other cost produced in the daily management of the company. Being more specific, when MLC came into force, what a company had to do, was a gap analysis in order to identify if SOHSP needed to be amended in order to incorporate any possible regulations that were not already followed. This gap analysis, followed by a list of actions and a final review came with a cost of around \$3,500 - \$5,000¹⁰ per vessel but that was a fixed cost and for one time only.

However, we must note that a similar cost may occur in any possible amendment of MLC or in an incident record. In such circumstances the system must again be reviewed in order to be identified what changes must implemented. But an MLC amendment or an incident may take years to turn up, so that cost cannot be recognized as usual or epileptic.

4.2. Do

In regards to the Implementation of MLC's requirements it is clear that costs occurred are distinctively higher from those in the Planning of SOHSP. Except from crew recreation expenses that initially created, such as e.g. supply of basketball or table-tennis equipment, TVs and movie players etc. and which are extremely difficult to become continuous, all other costs are recognized as daily or periodic.

From those, crew recruiting and accommodation along with working practices expenses increased, not in a significant level but apparently appear more often. For example, due to shorter (in terms of

¹⁰ All amounts documented in the research are in US Dollars (\$)

time) contracts that seafarers are now entitled, companies are obliged to make changes in less convenient ports with relatively higher costs such as agents expenses, air tickets and accommodation costs, finally increasing overall recruiting expenses.

Increase in Crew Recruiting Expenses								
Year	Vessel A	Average	Vessel B	Average	Vessel C	Average	3 VsIs Av.	Change
2010	\$35,700.00		\$34,662.00				\$36,771.33	3%
2011	\$38,200.00		\$40,622.00		\$22,279.00			
2012	\$46,490.00	\$40,130.00	\$35,155.00	\$36,813.00	\$44,463.00	\$33,371.00		
2013	\$33,950.00		\$53,303.00		\$35,573.00			
2014	\$37,510.00		\$34,858.00		\$24,497.00			
2015	\$44,570.00		\$50,402.00		\$38,724.00			
2016	\$26,350.00	\$35,595.00	\$38,498.00	\$44,265.25	\$37,123.00	\$33,979.25		

Figure 3 - Increase in Crew Recruiting Expenses

Based on the data gathered these costs have yearly increased approximately 3% per vessel, eventually having a cost of \$1,000-\$1,500 for each vessel managed from the Shipmanagement Company. Data analyzed are three years prior 2013, that MLC came into force and three years after. Even if MLC came into force on 20 August 2013, data of this year are added to the “after” period as it is obviously affected from MLC new regulations. Another conclusion that must be outlined is that many companies have covered the majority of MLC regulations with pre-existing systems but on the other hand, many other were forced in major changes. So again, is difficult to precisely calculate the cost of changes overall in Maritime Industry due to the objectiveness of the case and different policies of the companies. The safest conclusion though and a fact is that extra cost has been created but not in an excessive level.

Crew accommodation (on the vessel) requirements have been adequately covered from previous regulations as issues like heating, ventilation and lighting were most probably been arranged accordingly. However, constant but small modifications are needed, always for covering accommodation specifications as per MLC. Unfortunately, these costs even if indeed exist, they are difficult to be recognized as they are again subjective for every company. In regards to working practices, again, most issues such as safe access to the vessel, entry into close spaces, hot works etc. were already covered from previous existing regulations. What has though changed, is the cost for

relevant training of the seafarers and the ashore personnel that increased in yearly basis at about \$800-\$1,000. That additional cost, actually covers all needed training actions on these cases, everyone involved, must have.

Expenses occurred for the Implementation of MLC requirements in regards to crew rights, crew medical cover, catering, crew accident/illness prevention and financial “security”, directly or indirectly, we could say that they are noticeable higher through the year. A good example of how indirect costs occurred from making crew rights framework stricter is the expenses in regards to crew salaries settlement. The companies, being obliged to timely pay crew wages, have been charged with extra bank costs for crew’s home/extra allotments and with additional expenses for agents’ fees in order to supply vessels with cash on board (CTM)¹¹ for crew payments. However, the extra costs are difficult to be precisely calculated as these expenses are not significant enough to be separately recorded from the rest of Company’s bank expenses or agents’ fees but as indicative figures, allotments may cost \$25-\$50 per payment order to the bank and CTM may have an extra cost of \$250-\$500 depending the port authorities and agents.

Now, for crew medical expenses and crew catering there was an increase to the same levels as previous mentioned expenses, mainly occurred due to e.g. essential dental care applied to crew members and supply of cabin stores respectively. With the example of dental care, it is pointed out that matters that were considered of “less” importance for crew’s physical condition are now handled with more responsibility. As for the cabin stores for crew catering purposes, these may be additional protective equipment like tools, gloves, uniforms etc. or expenses are now made for the environmental protection such as food disposal procedures.

Finally, the cost for crew accidents/illness prevention has increased due to expenses mainly occurred for crew additional training and safety committees for Systems’ risk assessment but what significantly added extra cost was crew social security coverage that reached to an increase of \$2,000-\$2,500 per

¹¹ For cash given on board for vessel’s expenses at ports and for crew wages the term “Cash To Master” is commonly used, in brief CTM.

vessel on yearly basis. Additionally, crew financial security cost has increased for covering cases such as abandonment and seafarer personal injury, disability or death, reaching to a level of extra cost of \$3,000-\$4,000 per year for insurances paid to Clubs and Insurance Companies.

4.3. Check – Act

It is clear enough, based on the research made, that the parts of the System in regards to Audits, Incident Reports, Performance Monitoring and System's Review have been affected in a small scale as some of them were already covered from previous procedures without adding any extra cost to the Company. If there was any increase in these expenses it would most probably be due to the allocation of manpower to the new procedures created for the needs of MLC's new regulations.

Maybe the only cost, which could be easily identified, is for the external inspection that must be done in yearly basis for the issuance of relevant certificates but again these inspections are made not only for MLC purposes but for other regulations also. Summing up, the cost of internal/ external inspections and the manhours allocated for the needs of Systems' Check and Act parts is continues through the year but not significant enough.

4.4. Conclusion

As a conclusion, Maritime Labour Convention, 2006, the fourth pillar of Maritime regulations, indeed defined more thoroughly seafarers' employment and social rights making man and woman on board working conditions, safer, healthier and more descent. It was a real breakthrough in regards to seafarers' rights recognition and protection. However, the regulations regarding crew occupational safety and relevant health provisions, added in the international regulatory framework didn't have a costly impact for a medium sized Greek ship management company. Cost analysis of MLC implementation and audit of relevant articles reviled that except from initial expenses, the daily

expenses occurred are usually difficult to be identified because of the fact that preexisting procedures covered the needs of the MLC with just a small allocation of manpower.

The most important conclusion thought, that must be outlined, is that even the cost of implementing MLC, 2006 is not significant enough in comparison to daily running and operational expenses of a medium size ship management company, the cost that may occur for not complying with MLC could be remarkable. For example, if a seafarer is not paid based on relevant contract agreement can easily file an official complaint in most of the ports, worldwide, and manage to stop a vessel's operation. By that way a vessel can be detained in the port for several days concluding in off-hire loss equal to thousand or hundreds of thousands of US Dollars or even lose next employment with a bigger loss reaching to millions of US Dollars.

So, MLC actually came to balance the major controversy previously existing, in maritime industry, between all other parties' welfare and the safety and health of seafarers. And that was eventually succeeded with no considerable cost for the shipping companies but with great success in regards to seafarers' rights safe keeping.

Annex I – Key IMO Conventions,

Key IMO Conventions

- International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended
- International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto and by the Protocol of 1997 (MARPOL)
- International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) as amended, including the 1995 and 2010 Manila Amendments

Other conventions relating to maritime safety and security and ship/port interface

- Convention on the International Regulations for Preventing Collisions at Sea (COLREG), 1972
- Convention on Facilitation of International Maritime Traffic (FAL), 1965
- International Convention on Load Lines (LL), 1966
- International Convention on Maritime Search and Rescue (SAR), 1979
- Convention for the Suppression of Unlawful Acts Against the Safety of Maritime Navigation (SUA), 1988, and Protocol for the Suppression of Unlawful Acts Against the Safety of Fixed Platforms located on the Continental Shelf (and the 2005 Protocols)
- International Convention for Safe Containers (CSC), 1972
- Convention on the International Maritime Satellite Organization (IMSO C), 1976
- The Torremolinos International Convention for the Safety of Fishing Vessels (SFV), 1977, superseded by the 1993 Torremolinos Protocol; Cape Town Agreement of 2012 on the Implementation of the Provisions of the 1993 Protocol relating to the Torremolinos International Convention for the Safety of Fishing Vessels
- International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel (STCW-F), 1995
- Special Trade Passenger Ships Agreement (STP), 1971 and Protocol on Space Requirements for Special Trade Passenger Ships, 1973

Other conventions relating to prevention of marine pollution

- International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties (INTERVENTION), 1969
- Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (LC), 1972 (and the 1996 London Protocol)
- International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC), 1990
- Protocol on Preparedness, Response and Co-operation to pollution Incidents by Hazardous and Noxious Substances, 2000 (OPRC-HNS Protocol)
- International Convention on the Control of Harmful Anti-fouling Systems on Ships (AFS), 2001
- International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004
- The Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009

Conventions covering liability and compensation

- International Convention on Civil Liability for Oil Pollution Damage (CLC), 1969
- 1992 Protocol to the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (FUND 1992)
- Convention relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material (NUCLEAR), 1971
- Athens Convention relating to the Carriage of Passengers and their Luggage by Sea (PAL), 1974
- Convention on Limitation of Liability for Maritime Claims (LLMC), 1976
- International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea (HNS), 1996 (and its 2010 Protocol)
- International Convention on Civil Liability for Bunker Oil Pollution Damage, 2001
- Nairobi International Convention on the Removal of Wrecks, 2007

Other subjects

- International Convention on Tonnage Measurement of Ships (TONNAGE), 1969
- International Convention on Salvage (SALVAGE), 1989

Convention establishing IMO

- Convention on the International Maritime Organization

Annex II – MLC Regulations

1. Minimum Requirements for seafarers to work on ships

- 4.1. Minimum age
- 4.2. Medical certificate
- 4.3. Training and certifications
- 4.4. Recruitment and placement

2. Conditions of Employment

- 2.1. Seafarer's Employment Agreement
- 2.2. Wages
- 2.3. Hours of rest and hours of work
- 2.4. Entitlement to leave
- 2.5. Repatriation
- 2.6. Seafarer compensation for ship's loss or foundering
- 2.7. Manning levels
- 2.8. Career and skill development and opportunities for seafarer's employment

3. Accommodation, Recreation, Food and Catering

- 3.1. Accommodation and recreational facilities
- 3.2. Food and catering

4. Health Protection, Medical Care, Welfare and Social Security Protection

- 4.1. Medical care on board and ashore
- 4.2. Ship owner's liability
- 4.3. Health and safety protection and accident prevention
- 4.4. Access to shore-based welfare facilities
- 4.5. Social Security

5. Compliance and Enforcement

- 5.1. Flag state responsibility
- 5.2. Authorization of recognized organizations
- 5.3. Maritime Labour certificate and declaration of maritime Labour compliance
- 5.4. Inspection and enforcement
- 5.5. On board compliance procedures
- 5.6. Port State Responsibilities
- 5.7. Marine Casualties
- 5.8. Labour Supplying responsibilities

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