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WORLD MARITIME UNIVERSITY
Malmö, Sweden

**MARITIME EDUCATION AND TRAINING IN
CHILE**

**An analysis of the current management system and a proposal
for its restructure**

By

LUIS FELIPE GRACIA TAPIA
Chile

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 EDUCATION AND TRAINING
(Nautical)

2000

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Declaration

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

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

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ABSTRACT

Title of Dissertation: **Maritime Education and Training in Chile – An analysis of the current management system and a proposal for its restructure.**

Degree: **MSc**

The ratification of the STCW 78/95 Convention brought to the Chilean Maritime Authority new monitoring and control tasks of MET institutions that were allocated to the Maritime Instruction Centre (CIMAR). During the last few years, the same authority have received some claims from private institutions, which argue that CIMAR has a double standard, in the sense that it offers IMO model courses and at the same time monitors and controls private institutions, which also offer them. On the other hand, the MET organisational structure in Chile is segregated and needs to be grouped under a single structure.

This dissertation analyses the current management system for MET in Chile and compares it with that of the countries with a long maritime tradition. Regulatory functions are removed from CIMAR, proposing the mission, objectives and functions of a new management structure, which takes care of all processes involving quality assurance in MET. Quality standards of the revised STCW Convention are incorporated in the new structure, transferring the responsibilities of the examination process to institutions and reinforcing the auditing and approval process. To complete and fulfil the research endeavour, conclusions and recommendations are provided in order to submit them to the Chilean Maritime Administration.

KEY WORDS: Examination, Approval, Certification, Auditing, Restructuring, MET.

TABLE OF CONTENTS

| | |
|---|----------|
| Declaration | ii |
| Acknowledgement | iii |
| Abstract | iv |
| Table of Contents | v |
| List of Tables | viii |
| List of Figures | viii |
| List of Abbreviations | ix |
| | |
| 1. Introduction | 1 |
| 1.1 Background and purpose of the study | 1 |
| 1.2 Research methodology | 2 |
| 1.3 Difficulties encountered in the investigation | 3 |
| | |
| 2. Maritime Education in Chile | 5 |
| 2.1 Chilean maritime industry background | 5 |
| 2.1.1 Chile's maritime dependence | 6 |
| 2.2 The teaching process in Chile | 10 |
| 2.2.1 The maritime teaching process in Chile | 12 |
| 2.3 Teaching institutions in the maritime field | 15 |
| 2.3.1 Teaching institutions for merchant marine officers | 16 |
| 2.3.2 Teaching institutions for special vessel officers | 16 |
| 2.3.3 Other institutions that offer IMO model courses | 17 |
| 2.4 The legal framework for MET in Chile | 17 |
| 2.4.1 The new political constitution | 17 |
| 2.4.2 The constitutional organic law on teaching | 18 |
| 2.4.3 The consolidated text of the organic law of the National Maritime Authority (DIRECTEMAR) | 18 |

| | | |
|-----------|--|-----------|
| 2.4.4 | The consolidated text of the Navigation Law | 19 |
| 2.4.5 | Supreme Decree on the creation of the Maritime Instruction Center | 20 |
| 2.4.6 | Some ratified international conventions | 20 |
| 3. | The Current Structure of the MET System in Chile | 22 |
| 3.1 | The MET system background | 22 |
| 3.2 | The position of the MET system | 24 |
| 3.3 | The Maritime Personnel Department | 26 |
| 3.4 | The Maritime Instruction Center | 27 |
| 3.4.1 | Organization of the Maritime Instruction Center | 28 |
| 3.5 | The Institutes' Control Division | 31 |
| 3.6 | Weaknesses of the current MET management system | 32 |
| 4. | The Structure of the MET System in Countries with a Long Maritime Tradition | 37 |
| 4.1 | The MET structure in Norway | 37 |
| 4.1.1 | Vocational and professional maritime training in Norway | 39 |
| 4.1.2 | Organization of the MET system in Norway | 40 |
| 4.1.3 | Quality assurance at maritime academies and training Centers | 42 |
| 4.1.4 | Assessment and audits of maritime education and training | 42 |
| 4.2 | The MET system in Denmark | 43 |
| 4.2.1 | Organization of the MET system in Denmark | 44 |
| 4.2.2 | Mission of the Maritime Education Division | 47 |
| 4.2.3 | Quality assurance in the Danish MET system | 47 |
| 4.3 | The Maritime Education and Training in Spain | 49 |
| 4.3.1 | The current MET system in Spain | 50 |
| 4.3.2 | Nautical schools and institutes in Spain | 51 |

| | | |
|-----------|--|-----------|
| 4.3.3 | Organization of the MET system in Spain | 51 |
| 4.3.4 | Quality assurance in the Spanish MET system | 53 |
| 4.4 | Relevant strengths of MET structures of Norway, Denmark, and Spain that can be applied in the Chilean MET structure | 54 |
| 5. | Proposal for the Restructuring of the Maritime Education and Training Structure in Chile | 59 |
| 5.1 | Creation of the MET Service, its mission and vision | 59 |
| 5.1.1 | Objectives of the MET Service | 65 |
| 5.2 | The new organizational structure of the MET Service | 66 |
| 5.3 | The functions of the MET Service | 70 |
| 5.3.1 | Functions common to the organization | 70 |
| 5.3.2 | Functions of the chief of the MET Service | 71 |
| 5.3.3 | Functions of the advisory committee | 72 |
| 5.3.4 | Functions of the approval unit | 72 |
| 5.3.5 | Functions of the certification unit | 73 |
| 5.3.6 | Functions of the register unit | 74 |
| 5.3.7 | Functions of the auditing unit | 75 |
| 5.3.8 | Functions of the coordinator officers | 77 |
| 5.4 | Implementing the new structure | 77 |
| 6. | Conclusions and Recommendations | 79 |
| 6.1 | Conclusions | 79 |
| 6.2 | Recommendations | 81 |
| | References | 83 |

LIST OF TABLES

| | | |
|-----------|--|---------|
| Table 2.1 | Mobilized Tonnage on Chilean Vessels during 1998 | page 7 |
| Table 2.2 | Sub-division of the Merchant Marine Officers in Chile | page 13 |
| Table 2.3 | Sub-division of the Special Vessel Officers in Chile | page 14 |
| Table 2.4 | Merchant Marine Officer Certificate for which Fishing Officers Can Apply | page 15 |

LIST OF FIGURES

| | | |
|------------|--|---------|
| Figure 2.1 | Location of Chile in the South Pacific Ocean | page 6 |
| Figure 2.2 | Number of Registered Merchant Marine Officers and Skippers (1989 – 1998) | page 9 |
| Figure 3.1 | Current Structure and Position of the MET System in Chile | page 25 |
| Figure 3.2 | Organisation Chart of the Maritime Instruction Centre | page 29 |
| Figure 4.1 | Organisation Structure of the Norwegian MET System | page 41 |
| Figure 4.2 | Organisation Structure of the Danish MET System | page 46 |
| Figure 4.3 | Organisation Structure of the MET System in Spain | page 52 |
| Figure 5.1 | Proposed Organisation Structure of the MET Service | page 69 |

LIST OF ABBREVIATIONS

| | |
|-------------------|---|
| ALADI | Latin-American Association of Integration |
| APEC | Asia Pacific Economic Co-operation |
| CIMAR | Maritime Instruction Centre |
| DIRECTEMAR | Directorate General of the Maritime Territory and Merchant Marine |
| DMA | Danish Maritime Authority |
| GMDSS | Global Maritime Distress and Safety System |
| IMO | International Maritime Organisation |
| ISO | International Standards Organisation |
| MARAD | Maritime Administration |
| MDF | Maritime Dependence Factor |
| MERCOSUR | Common Market of the South |
| MET | Maritime Education and Training |
| NIS | Norwegian International Shipregister |
| NMD | Norwegian Maritime Directorate |
| QA | Quality Assurance |
| STCW | Standards of Training Certification and Watchkeeping |

CHAPTER I

1.0 INTRODUCTION

1.1 Background and Purpose of the Study

In 1998 when the author of this dissertation was notified about his transference to the World Maritime University to follow a master degree course in Maritime Education and Training (nautical specialisation), he made the decision to develop a dissertation topic. By then, the head of the Institutes Control Department of the Maritime Instruction Centre (CIMAR) in Chile suggested the author prepare a document aimed to propose the creation of a Maritime Education and Training structure, different from CIMAR, which would be able to carry out all functions related to quality assurance for training of seafarers in Chile. Special attention was to be placed on the monitoring and control processes for MET institutions.

An interview with the director of the Maritime Instruction Centre and a telephone conversation with the head of the Maritime Personnel Department of the Directorate General of the Maritime Territory and Merchant Marine at the end of 1999, allowed the author of this paper to realise that most of the functions for quality assurance in the MET process were well accomplished, but they were placed in different scenarios and needed to be grouped under a single management system and organisational structure.

The aim of this dissertation is to analyse, from the managerial point of view, the current management system of the MET process in Chile and propose a new organisational structure, subordinated to the National Maritime Administration,

which establishes the regulatory frame for MET institutions to comply with provisions of the STCW 78/95 Convention.

1.2 Research Methodology

The research method employed in the investigation responds and follows the basic management continuum cycle, composed of planning, organising, implementing and controlling. This dissertation work basically deals with planning and organising stages. However, basic ideas about implementing and controlling stages will be presented in order to facilitate the job of the decision makers in Chile.

As MET activities are undertaken by the staff of the Maritime Authority, the analysis of its current management system will be described in chapters II and III. The environmental scanning (planning stage) where MET moves will be presented at first, describing the Chilean Maritime Industry and the teaching system of the country. Legal matters are going to be discussed to understand the genesis of the MET organisation and recognise the contributions it makes in performing regulatory functions. The organisational structure of the current system is going to be exposed later, to identify its weaknesses and strengths, in order to know what aspects need attention and which ones should be kept in place. All information required to develop this stage has been received from the Chilean Maritime Administration and from the analysis of statistical data made by the author.

In order to get an idea about what the MET organisational structure is in countries with a long maritime tradition, the author will look at the MET structures of the Norwegian, Danish and Spanish Administration in chapter IV. Special interest is going to be placed in the quality assurance system these countries are implementing for MET activities, in order to extract their main strengths and study the feasibility of including them in the Chilean MET system. Information required to develop this task is going to be got from professors and visiting professors of the

World Maritime University, in field trips and by requesting data through available media of the WMU.

The organising stage is part of the conclusions of this dissertation. In chapter V, relevant information from other chapters will be gathered to structure the new organisation the Chilean Maritime Authority needs to fully comply with regulation the state has allocated it in terms of controlling and monitoring professional knowledge of maritime personnel. The process of organising will be developed by determining specific activities that are necessary to accomplish the planned objectives and grouping the activities into a logical pattern of framework. This stage will finish with the assignment of activities to specific positions and people. Necessary information and guidance to develop this stage will be extracted from management literature and handouts given by professors of the University during study years.

Since the decision for implementing the proposed structure is not part of this dissertation, this stage will not be treated in depth. However, some ideas and comments will be proposed at the end of chapter V to facilitate the decision making process, which necessarily needs take place in Chile. The same occurs with the controlling stage, therefore, comments will be included in the same chapter advising the Chilean Maritime Authority on the ‘whats’ more than the ‘hows’ of the controlling process.

1.3 Difficulties Encountered in the Investigation

Main difficulties encountered in the investigation refer to distance. Of course the fact of writing a dissertation about Chilean issues when the author is placed in Sweden is not the best alternative. Therefore, distance affected the collection of useful material related to administrative processes, interviews and costs. The following paragraphs explain so.

It had been interesting to analyse more deeply administrative processes that are currently being applied to carry out MET activities. Unfortunately, the best way of doing this is by interviewing and looking at personnel who perform such tasks. Despite the fact that the author of this work interviewed several people through the telephone line and emails, it was not enough to get a very clear idea of the administration procedures, regardless the cost of the telephone calls from Sweden to Chile.

It was not possible to get the opinion of private MET institutions about the topic. Several emails were sent to different institutes, but they never answered. Basically what the author wanted of private institutions was to know the willingness they have to face the proposed changes of this dissertation, in matters of quality standards, examination and monitoring. This can be easily got in Chile before the implementation stage takes place.

The cost of implementing a new structure is very useful information when planning. Despite the fact that this document has been prepared taking into account that many activities need to be grouped and not created, so that funding is not a great concern, it would have been convenient to bear in mind a clearer idea about the budget needed to develop this project. Unfortunately, distance played a relevant role in this matter, because it was not possible to get numbers, which reveal a better perspective of the meaning of moving people and offices for an adequate restructuring.

Taking into account difficulties encountered, which represent the weaknesses of this work, the author strongly recommends its dissemination, because it gives an interesting approach of how to face the restructuring of an MET management system, including the quality standards suggested by the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers 1978/1995.

CHAPTER II

2.0 MARITIME EDUCATION IN CHILE

2.1 Chilean Maritime Industry Background

Chile, with 14.8 million inhabitants, is located in the southwest border of the American Continent. The country possesses a territory of 2,006,096 square kilometers, including the Antarctic possessions. The population of Chile is homogeneous, because of the mix between Spanish and Native people. Nowadays, the population growth rate reaches 1.6%, the work force is composed of 5.6 million people and the level of literacy surpasses 95% with 3.3 million children and youths in the education system.

During the last decade Chile has made a great effort to insert itself into the most important markets of world trade. This has allowed the improvement of Chilean products competitively, and these have successfully reached many of the most demanding markets of the globe. Within these markets are the Asia Pacific Economic Cooperation (APEC), the Latin-American Association of Integration (ALADI), the Common Market of the South (MERCOSUR) and many other free trade agreements signed with almost the totality of the American countries. Nowadays, Chile and the European Union are starting negotiations to get a political and economical association. This confirms that Chile is a reliable country, opened to the world and with a dynamic industrial sector.

Today, it is possible to ensure that Chile is an Oceanic Country. With its 4,329 km of coast, its structure and geographical position (see fig. 2.1), Chile has no better objective, richness and destiny than the sea (Subercaseaux, 1946); its oceanic

domain is composed of more than 3 million square kilometers of sea, including the projected spaces of its continental territory and its oceanic islands. This area involves the internal waters, the territorial sea and the exclusive economic zone, defined in the Third United Nation Conference on the Law of the Sea. All the above-mentioned particulars of the country demonstrate its being strongly linked to the sea.

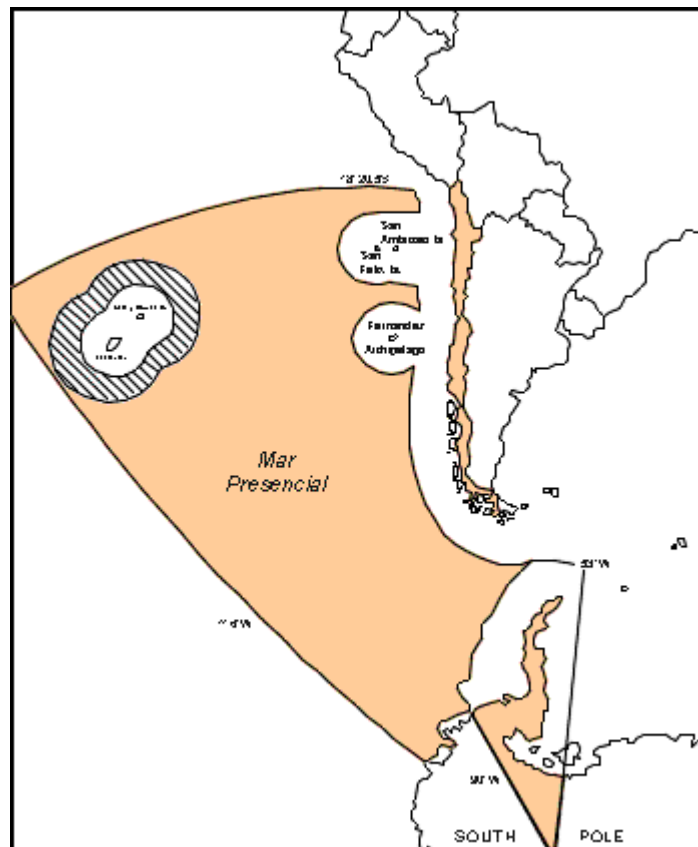


Figure 2.1 Location of Chile in the South Pacific Ocean

2.1.1 Chile's Maritime Dependence

The particular geographical disposition of Chile implies a strong maritime dependence. According to Ma Shuo (1999) Chile would be within the 20 countries with the highest Maritime Dependence Factor (MDF). This means that the shipping and fishing industries in Chile are very important for the development of the country and, of course, they provide a great number of jobs for people who work in the

maritime scope.

a. Shipping Industry: The national merchant fleet of Chile was composed of 100 vessels in 1999. This number of ships involved all kinds of vessels and made a total figure of 589,603 gross ton and 807,999 dwt. Despite the facts that the deadweight tonnage of the merchant fleet has kept a similar trend since 1989, the number of vessels has increased from 74 in 1989 to 100 in 1999. On the other hand, the mobilized tonnage on Chilean vessels in 1998 can be observed in the following numbers of the table 2.1 below.

Table 2.1 Mobilized tonnage on Chilean Vessels during 1998 (tons)

| Vessels | Exports | Imports | Total |
|-----------------|------------|------------|------------|
| Chilean ships | 994,674 | 1,753,772 | 2,748,446 |
| Other | 27,216,890 | 17,494,499 | 44,711,389 |
| Total mobilized | 28,211,564 | 19,248,271 | 47,459,835 |

The total amount of 2,748,446 tons carried on national merchant ships represents almost 6% of the total Chilean seaborne trade. In addition to this figure, the cabotage (mobilized cargo between national ports) reached 8,518,547 ton in 1998, which was mainly carried by national flag vessels according to the Merchant Marine Promoting Act.

b. Fishing Industry: Today Chile is one of the main producers of fish and shellfish in the world. The purity and richness of its waters, and other factors such as temperature, currents, tides and acidity enable the country to export a huge variety of sea products.

Since 1994 Chile is situated in a detached place among fishing countries of the world, with more than 7 million tons of fishing discharged per year; this number represents 6% of the world catch. The fishing industry provides roughly 2% of the Gross Domestic Product (GDP) and produces around 11% of the total exports of the

country.

Within the total exports of the sector in 1998, the first place was occupied by frozen products, such as salmon and trout, with sales of US\$748 millions. The majority of these were sent to Japan and United States. The second place was occupied by fish meal, with sales of US\$347.9 million, and the sales of other products like refrigerated and canned goods reached values of US\$332.9 and US\$121.8 million respectively.

The national fishing fleet in 1998 was composed of 453 vessels of more than 50 gross tonnage. This figure involves 198,403 gross ton of register which is distributed along the Chilean coast. Of these vessels, 53% are less than 20 years old and a great number of them were built in Chilean shipyards.

Nowadays there are more than 440 fishing factories in Chile. Most of them are dedicated to frozen products (263), followed by those specializing in fresh and cold fish. The nature of the quiet waters of the south of the country have contributed to the important growth of fishing activity. The number of fisheries and the catch quota are controlled and monitored by the National Fishing Service with the support of the Chilean Navy.

c. Ports: There are 31 commercial ports along the Chilean territory which possess a total number of 84 spots. In addition to this number there are 65 terminals, from which 42 are liquid terminals and the rest are grain ones.

d. Maritime Personnel: The Chilean Maritime Authority (DIRECTEMAR) is the national organization in charge of the granting of licenses and monitoring the system, covering the educational status of people who work at sea. According to statistics that this organization possesses, in 1998 there were 3,164 merchant officers registered. Of this number, 2,767 officers were in possession of a license to perform their functions on board a ship dedicated to international trade. The other 397 were in possession of a license which allowed them to sail in certain zones of the country.

It is important to mention that according to national regulations, fishing

captains or skippers have the chance to become a merchant marine officer by passing determined examinations and complying with several requirements, which will be explained in the following chapters. For this reason, the career of the merchant marine officers and the skippers is monitored as a whole, and the statistics data are kept together. The number of fishing captains or skippers controlled by DIRECTEMAR reached 5,370 in 1998.

If merchant marine officers and the fishing ones are put together, they make a total amount of 8,534 officers. Figure 2.2 shows the increment in the number of officers registered by the National Maritime Authority from 1989 to 1998.

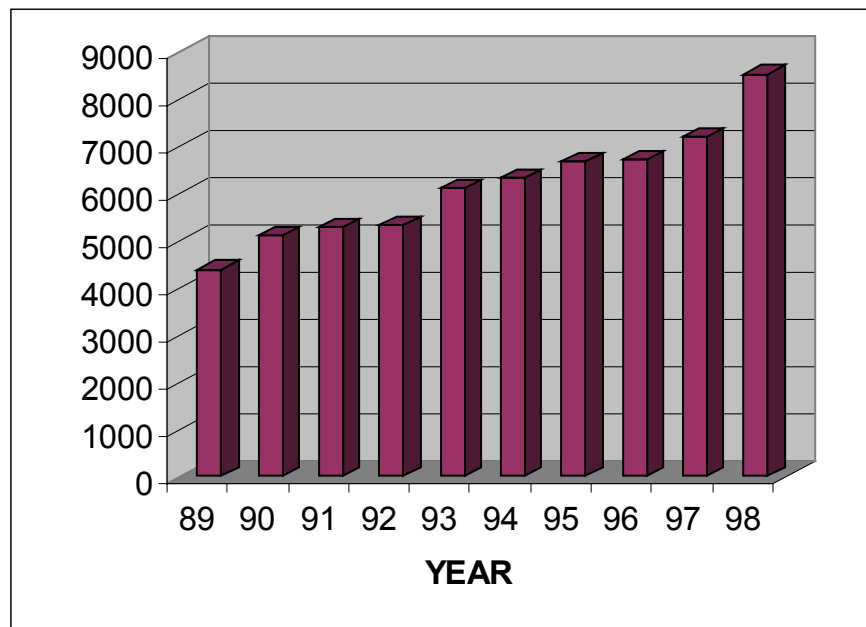


Figure 2.2 Number of Registered Merchant Marine Officers and Skippers (1989 – 1998)

Despite the fact that this dissertation is focused on those institutions which provide maritime teaching and training to future merchant marine and fishing officers, it is convenient to state that the number of people involved in other maritime activities is quite significant. The General Directorate of the Maritime Territory and Merchant Marine (DIRECTEMAR) controlled 164,930 people in 1998. Of these,

81,798 were dedicated to basic fishing activities (fishermen) and 40,130 to port activities.

2.2 The Teaching Process in Chile

According to number 10, article 19, chapter III of the Political Constitution of the Republic of Chile, the State ensures the right to education to all people. It states that education extends the full development of the person during the different stages of his/her life. The same above mentioned article establishes that it is the state's duty to protect the exercise to that right and it says that parents have the preferential right and duty to educate their children.

The State also has to fund a free of charge system in order to ensure the access of the whole population to it. Moreover, the State must urge the development of education at every level, stimulating the scientific and technological research, the artistic creativity and the protection of the cultural patrimony of the nation.

The education process in Chile manifests through the formal teaching. It is scientifically structured and delivered in a systematic way. It is constituted by levels, which ensure the unification of the teaching process and facilitates the continuation of it throughout the people's life.

There are three levels of teaching in Chile: the basic teaching level, the middle teaching level and the superior teaching level.

The basic teaching corresponds to the primary school; it is compulsory, lasts 8 years and starts at the age of 6 years old. This level extends the development of the student's personality and his/her training as regard his/her bonding and active interaction with the social environment. At the end of the basic level the student should be able to:

- a) Read, write and express by himself/herself in a right way in the Spanish language.

- b) Master the fundamental arithmetic operations and to know the principles of basic mathematics.
- c) Develop his/her patriotic sense and know the history and geography of Chile.
- d) Know the elemental notions of the natural and social sciences; understand and value the importance of the environment.
- e) Be conscious of the importance of participating in the expression of culture which is in relation to art, science and technology.

The middle teaching level corresponds to the secondary school and receives students with a maximum age of 18 years old. It lasts four years and serves to scholar population which has finished the basic teaching level. This level ensures that every student gets to learn the minimum compulsory contents stipulated by the law. It considers the upbringing of the student as a person, in order that he/she assumes, in a responsible way, commitments with the family, the community, the culture and the national development. The middle teaching also enables the students to continue with the formal teaching process through the superior education level or he/she can start his/her work life. In order to get the general objectives, the middle teaching students should:

- a) Acquire and value the knowledge of philosophy, the sciences, the arts, the letters and technology in order to act constructively for the development and welfare of humanity.
- b) Acquire the necessary skills to use, in a proper way, oral and written language and to appreciate communication in expressive language.
- c) Acquire the knowledge which allows them to appreciate the projection of modern science and technology.
- d) Know and appreciate the natural place in the dynamic environment, essential for the development of human life.
- e) Know and understand the historic development, values and traditions, which allow them to participate in the development project of the country.
- f) Get a physical development to properly conduct themselves in life.

- g) Acquire the necessary motivation and preparation which facilitate their personal development.

It is important to state that the education system in Chile also provides a parallel education process for adults who, for any reason, did not finish their formal teaching process when children. On the other hand, there are secondary schools which provide to students not only the regular middle teaching, but also a technical one, which allows them to perform special jobs in different areas of industry.

According to the teaching constitutional law, the State of Chile recognizes the following institutions of superior education, which can be private or public:

1. Universities
2. Professional Institutes
3. Technical Education Centers
4. Polytechnic Academies of the Army, Navy, Air force and Police.

All legally recognized educational establishments can issue certificates according to the status they possess. Universities can issue professional certificates and all kind of academic degrees, specially those of bachelor, master and doctor. Professional Institutes can only issue professional certificates for those courses which do not require a bachelor degree. They can also issue technical certificates of superior level for those courses previously referred. Technical Education Centers can only issue technical certificates at superior level. Finally, the Polytechnic Academies of the Army, Navy, Air force and Police can issue professional certificates, technical certificates at superior level and academic degrees (bachelor, master, doctor) for their areas of competence and specialty.

2.2.1 The Maritime Teaching Process in Chile

Because of the focus of this dissertation, only the teaching process for people who become merchant marine officer or special vessel officer will be explained. The

teaching process for people who become ratings on merchant or special vessels, as well as for those who obtain a license for fishing boats or sport vessels (leisure boats) is controlled by the National Maritime Authority through proper examination process, which is controlled by harbor masters. These personnel are registered in harbor master offices and their career is monitored according to national regulations.

Merchant Marine Officers are classified as captains, deck officers, machine officers and radio-communication officers. The following table 2.2 shows the sub-division of every category for merchant marine officers.

Table 2.2 Sub-division of the merchant marine officers in Chile

| Classification | Sub-division |
|------------------------------|--|
| Captain | -Captain |
| Deck officers | -First Mate -Second Mate -Third Mate -Superior Regional Skipper -Regional Skipper -Regional Pilot |
| Machine Officers | -Chief Engineer -First Engineer -Second Engineer -Third Engineer -First Motorist -Second Motorist |
| Radio-communication officers | -First Radio-electronic -Second Radio-electronic |

The professional education to get the third mate, third engineer or second radio-electronic certificate must be reached in the superior education institutions of the State or in those which are recognised by it. Their study plans and programs must be recognised by the National Maritime Authority, DIRECTEMAR.

The professional education for regional pilot, second motorist and ratings can be reached in educational institutions properly recognised by the State, whose study plans and programs are also recognised by DIRECTEMAR. The minimum required background for applicants of any of the courses to become a merchant officer is the middle teaching level.

Special Vessel Officers are classified in fishing officers, internal navigation officers and machine officers. Every category is sub-divided into sub-categories, which can be observed in Table 2.3 over.

Table 2.3 Sub-division of the Special Vessel Officers in Chile

| Classification | Sub-division |
|------------------------------|--|
| Fishing officers | -Fishing Master -2 nd class high sea Skipper -1 st class coastal Skipper -2 nd class coastal Skipper |
| Internal Navigation Officers | -Bay Skipper -Lake Skipper -Fluvial Skipper |
| Machine Officers | -1 st Motorist -2 nd Motorist |

The professional education to become a special vessel officer can be reached in superior educational institutions properly recognised by the State, whose study plans and programs are also recognised by DIRECTEMAR. To get the professional

certificate, students or applicants must successfully pass an examination, which is given by the National Maritime Authority.

There is another way to become a special vessel officer. Ratings, who have reached the position of boatswain, and possess more than two years of experience at that position, have the chance to become a 2nd class coastal skipper, by passing an examination.

It is also very important to state that there is a link between the fishing officer and the merchant marine officers careers. This means that fishing officers can become merchant officer if they comply with the following requirements:

1. To register more than 24 effective months on board fishing vessels in possession of the respective certificate (Table 2.4)
2. To pass the corresponding examinations according the certificate they have applied for.

Table 2.4 Merchant Marine Officer Certificate for which Fishing Officers Can Apply

| Certificate in possession (Fishing) | Certificate which can be opted |
|--|---------------------------------------|
| 2 nd class coastal Skipper | Until Regional Skipper |
| 1 st class coastal Skipper | Until Third Mate |
| 2 nd class high sea Skipper | Until Second Mate |
| Fishing Master | Until First Mate |

2.3 Teaching Institutions in the Maritime Field

Taking into account the objectives of the present dissertation, only those institutions which have been considered important for the development of the present chapter will be covered. For this reason, teaching institutions have been classified into Teaching Institutions for Merchant Marine Officers, for Special Vessel Officers and Others, which offer IMO model courses.

2.3.1 Teaching Institutions for Merchant Marine Officers

Since 1948, when the Merchant Marine Officer Academy merged with the Naval Academy, the education process for merchant marine officers has mainly been carried out by the latter one. Because of the international agreements that Chile has ratified in the IMO forum and the new realities of the shipping industry, from 1997 the Naval Academy offers four-year duration courses for cadets who want to obtain the third mate or third engineer professional certificate. The curriculum net includes IMO model courses and a practice period with companies in the maritime industry. Thus, graduates can also access the academic degree of bachelor, which is issued by the Naval Polytechnic Academy, according to the Teaching Constitutional Organic Law.

The maritime professional education can also be assumed by Superior Education Institutions of the State or recognized private institutions, which are driven by the Teaching Constitutional Organic Law. Such a case corresponds to the Austral University, which convened a deal with DIRECTEMAR (Maritime Authority), whereby students graduated from the Naval Architecture Engineering Career can opt for the Merchant Marine Officer Certificate, by completing the corresponding IMO model courses.

Other officers of the merchant marine such as radio-electronic and regional skippers study at Professional Institutes and Technical Education centers, whose study plans and programs are recognized by DIRECTEMAR. At the end of the course they have to pass the corresponding examination.

2.3.2 Teaching Institutions for Special Vessel Officers

Nowadays, there are 11 Institutions for Special Vessel Officers distributed along the country and their study plans and programs are recognized by the National Maritime Authority. These institutions can be universities, professional institutes and technical education centers. Normally students graduating from fishing specialties of

universities and professional institutes have to complete a practical period on board special vessels to opt for the corresponding professional certificate (2nd class coastal skipper or 2nd motorist). DIRECTEMAR establishes requirements and instructions in order for these institutions to keep above the minimum standards required in the ratified Conventions.

2.3.3 Other Institutions that offer IMO Model Courses

The National Maritime Authority, through its Institute Control Division, monitors and controls more than 60 institutes, which are authorized to deliver the following IMO model courses and other safety courses:

- | | |
|---------------------------------------|----------------|
| 1. Basic Fire fighting | 13 institutes |
| 2. Proficiency in Survival Craft | 16 institutes |
| 3. Medical Emergency – Basic Training | 59 institutes |
| 4. Basic safety on tankers | 1 institution |
| 5. Basic on Communication Systems | 2 institutions |

The Maritime Instruction Center (CIMAR) is a public institution, which offers IMO model courses in those matters that private institutions do not want or cannot provide. The courses and services that CIMAR provides will be described in chapter III of this dissertation

2.4 The Legal Framework for MET in Chile

In order to understand the legal framework for MET institutions in Chile it is necessary to look at the different national laws, acts and regulations which regulate the maritime teaching process.

2.4.1 The New Political Constitution

The Political Constitution of Chile, after being subjected to a plebiscite, was approved by Law Decree No. 3.464, which was published in the official newspaper on August 11 of 1980. Article 19 (11) of the Constitution ensures the teaching

freedom for all people and mentions that a Constitutional Organic Law will establish the minimum requisites for educational centers to obtain the official acknowledgement.

2.4.2 The Constitutional Organic Law on Teaching

It was approved by Law No. 18.962, which was published in the official newspaper on March 10 of 1990. Articles 29 to 74 of this law establish the minimum teaching requirements for every teaching level, and the control mechanism of the State for the acknowledgement of the Superior Education Institutions. The description of every teaching level has already been described in the previous number 2.2 of this chapter.

2.4.3 The Consolidated Text of the Organic Law of the National Maritime Authority (DIRECTEMAR)

This Law was approved by Executive Decree (DFL) Number 292, which was published in the official newspaper on August 5 of 1953 and it was modified by Law Decreed Number 2387 of August 30 of 1979.

The legal text of this act provides legal competence to the Maritime Authority (DIRECTEMAR) for the following functions:

- To take care of navigation safety and the human life protection at sea
- To take care of the national merchant marine development
- To control and supervise floating material
- To take care of the fulfillment of the laws, regulations and dispositions which are related to the technical and professional part of the national merchant marine
- To issue certificates, licenses and special permissions for performance onboard vessels
- To control discipline and order on board ships
- To judge and punish the merchant marine personnel when they are negligent.
- To take care of the fulfillment of the safety measures of the vessels in port

- To conduct and judge the investigations due to maritime accidents and casualties.

2.4.4 The Consolidated Text of the Navigation Law

The text of the Navigation Law was approved by Law Decree No. 2.222 and published on the official newspaper on May 31 of 1978. Since then, it has been modified 6 times. Nowadays, it is one of the most important maritime legal acts in Chile, which regulates the following matters:

- Register of ships and nationality
- navigation
- property and people who take part in vessel operations
- onboard personnel
- discipline, order and safety rules
- navigation risks
- pollution prevention

This Law is the framework for many regulations and directives, and it serves as a base for the following ones:

- Regulation of professional certificates for merchant marine and special vessel officers. Supreme Decree Number 680 of 1985
- Regulation to fix safety crew on board merchant and special vessels. Supreme Decree Number 482 of 1973
- General regulation on order, safety and discipline on board vessels and the littoral of the Republic. Supreme Decree Number 1740 of 1941
- Regulation for the Control and Prevention of the Marine Pollution. Supreme Decree Number 1 of 1992
- Regulation on background, titles and professional career of onboard personnel. Supreme Decree Number 90 of 1999. It includes many provisions of the revised STCW 78/95 Convention

- General regulation of radio-communications for the maritime mobile service. Supreme Decree Number 734 of 1998

2.4.5 Supreme Decree on the Creation of the Maritime Instruction Center

The Supreme Decree Number 415 of 1987 created the Maritime Instruction Center. This center is subordinated to the National Maritime Authority (DIRECTEMAR), and it was created to educate and train the merchant marine personnel. Today it is recognized as a branch of the World Maritime University. The functions and tasks of this center will be explained and analyzed in the following chapter.

2.3.6 Some Ratified International Conventions

Within the legal framework of the MET system in Chile there are several International Conventions which have been ratified by the Chilean Government. This section of the dissertation mentions the most important ones:

- The International Convention on Safety of Life at Sea (SOLAS 74). It was ratified by Law Number 3.175 of 1980
- The International Convention for the Prevention of Pollution from Ships 1973/1978. It was ratified by Supreme Decree Number 474 of 1977
- The Convention on Standard of Training, Certification and Watchkeeping for Seafarers (STCW 78). It was ratified by Supreme Decree Number 662 on July 9 of 1987
- The International Convention on Maritime Search and Rescue 1979
- The Torremolinos International Convention for the Safety of Fishing Vessels, 1977.

The teaching and the maritime education process in Chile is well organized. It obeys a structured legal framework which provides the proper tools for the establishment and creation of institutes, schools, universities and academies. The

merchant marine officers and skippers who study in Chile are provided with the necessary knowledge to perform on board the merchant and fishing vessels respectively. They follow a defined career, which is regulated by the Maritime Authority and designed according to international and national laws.

Nowadays, the Maritime Education in Chile matches the needs of the national maritime industry and the development of the general teaching process of the country. The number of public and private institutions dedicated to teach maritime subjects and careers is enough to fulfill the vacancies of the current fleet of the national merchant marine.

CHAPTER III

3.0 THE CURRENT STRUCTURE OF THE MET SYSTEM IN CHILE

This chapter deals with the structure of the Maritime Education and Training system, which is currently in place in Chile. The MET system background will be explained to get an idea of its genesis and understand the position of institutions that offer different courses in the maritime field in the country. The structure of two important organisations such as the Maritime Instruction Centre (CIMAR) and the Institutes' Control Division will be shown to identify their administrative weaknesses and their strengths.

It is important to mention that the current management system complies with all requirements of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW78/95); however, as explained in chapter I, this dissertation intends to improve administrative tasks of the National Maritime Administration, by facilitating the monitoring, examination and control process of public and private institutions which deliver courses in the maritime field.

3.1 The MET System Background

The Maritime Education System in Chile is strongly linked to the Chilean Merchant Marine and the Navy. Just three years after Chile's independence, the government made the decision of reducing tax rates for products arriving to the country on vessels which flew the Chilean flag. Taxes were also reduced for ships whose crews were composed of at least 2/3 Chilean seafarers. In 1813, the government had to hire foreign seafarers to fulfil crews of the vessels that took part on the Liberating Expedition of Peru. In 1846 most of the seafarers came from the port sector and they did not have any preparation or studies to serve efficiently on

board ships. The creation of the Naval Academy in 1818 and the Elementary Academy for Naval Personnel in 1868 contributed to improve the education level of the merchant seafarers because officers and ratings used to join the merchant marine after serving in the navy or when they left it. Even today the merchant marine recruits retired personnel from the navy. Moreover, most of the pilots come from the navy.

In 1919 the School for Merchant Navigation and Naval Engineers was created in Valparaíso, in order to provide qualified officers for merchant vessels. Later on, in 1940, initiatives were launched to create a school for merchant ratings, nowadays called School for Ratings of the Merchant Marine.

In 1948 a great change was introduced to the maritime education structure. The Naval Academy and the Academy for Merchant Officers were merged to provide merchant officers with proper knowledge according to the advanced technology at that time. The Supreme Decree which formalised this fusion establishes that the objective of preparing both naval and merchant officers together is to take advantage of the resources and to increase safety to navigation. The results of this fusion were excellent due to the standardisation on safety matters in the Chilean maritime industry and Navy. The quality of Chilean merchant marine officers is recognised in the region and it has contributed to the prestige gained by the country in international forums as a country with a maritime tradition.

The National Maritime Authority (DIRECTEMAR) has always controlled and monitored the teaching process for maritime personnel. This organisation, according to national regulations and laws, is in charge of the granting of licences and the monitoring system to control the knowledge of people who work at sea. DIRECTEMAR has a Maritime Personnel Department, which carries out all tasks to register, certificate and monitor personnel careers. Merchant and fishing officers are

registered in this organisation; ratings and fishermen are registered in harbour masters' offices, which are distributed along the country (58).

In 1987 by Supreme Decree number 662, the Chilean government ratified the STCW 78 Convention. This international instrument forced the National Maritime Administration to create the Maritime Instruction Centre (CIMAR), in order to develop and introduce in the Chilean Maritime Education System all new requirements contained in the Convention. In this way, the idea was to establish an organisation which educated and trained the merchant marine personnel and others who perform fishing activities according to international conventions related to maritime issues.

3.2 The Position of the MET System

The functions of the National Maritime Authority or National Maritime Administration in Chile are carried out by the Directorate General of the Maritime Territory and Merchant Marine (DIRECTEMAR). This organisation is a branch of the Navy, Coast Guard Corp, and it is subordinated to the Ministry of Defence through the Commander in Chief of the Chilean Navy. The functions of DIRECTEMAR were previously listed in Chapter II, number 2.4.3.

DIRECTEMAR possesses two subordinated directorates: the Directorate of Safety and Maritime Operations and the Directorate of Maritime Interests and Marine Environment. The former deals with operative matters such as: search and rescue, surveys, maritime telecommunications and pilot services; the latter deals with all matters involving merchant marine, marine environment, ports and terminals, maritime personnel and the Maritime Instruction Centre (CIMAR).

The maritime education matters in Directemar are carried out by CIMAR, the Maritime Personnel Department and the Institutes' Control Division. Nowadays, CIMAR, as a public institution, offers IMO model courses for maritime personnel;

the Maritime Personnel Department develops many tasks related to certification, registration, monitoring and control of personnel and the last one, the Institutes' Control Division, was created two years ago to audit, monitor and control private institutions. More detailed information about these three organisations will be presented later in this chapter. The following figure shows the current structure and position of the maritime education system.

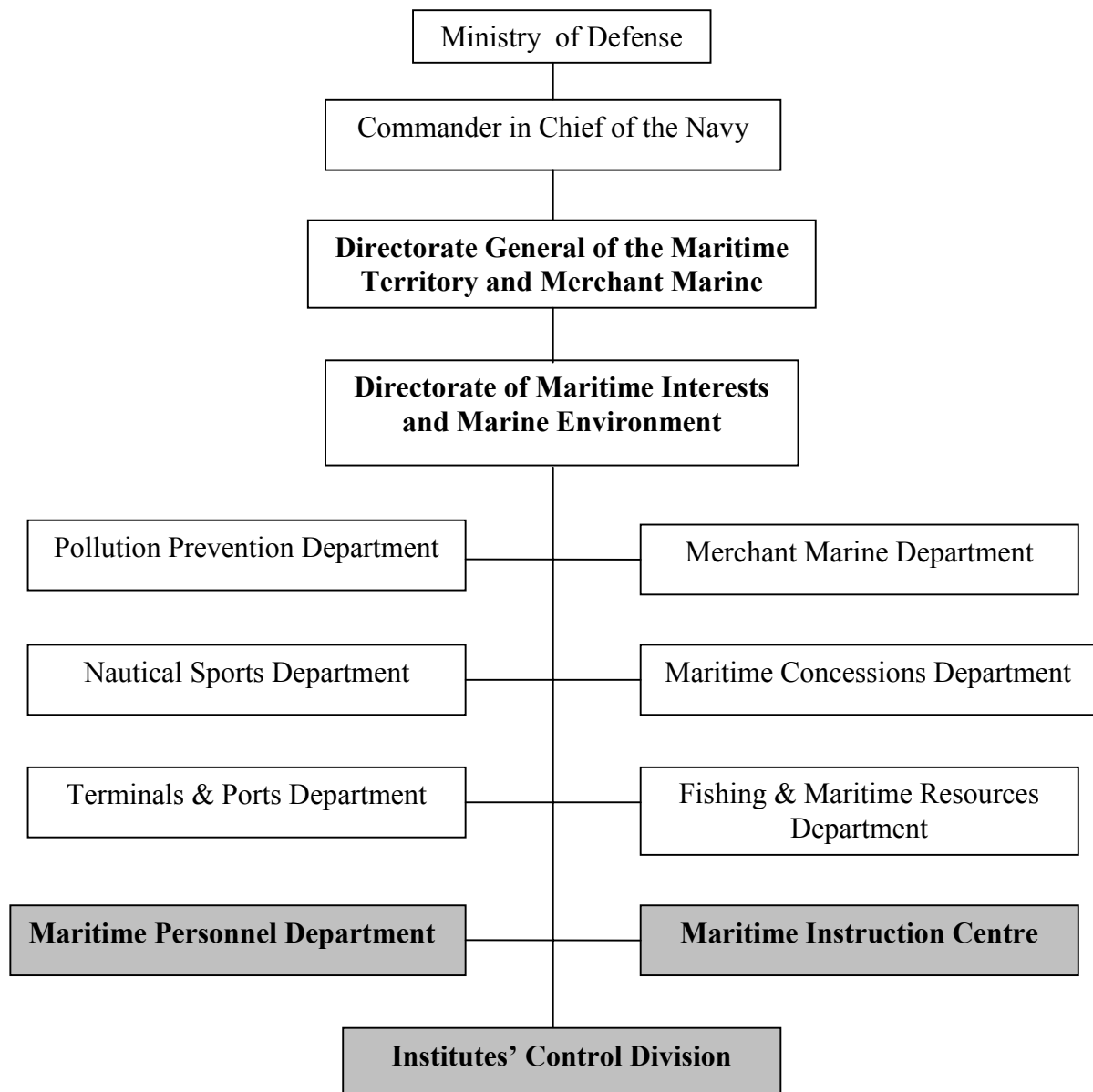


Figure 3.1 Current Structure and Position of the MET System in Chile

In the above structure, positions which are involved in the maritime education process have been heightened to identify the current structure. It is convenient to say that the Institutes' Control Division has been created temporarily, while a new structure (department, service or division) is put in place.

3.3 The Maritime Personnel Department

The Maritime Personnel Department is one of the oldest of the Organisation and its functions are in direct relation with people who work at sea or in the port sector. This department manages important personnel registers which are fed and updated automatically by harbour masters' offices, through a computer network that is installed along the Chilean coast. The followings are the main functions of this department:

1. To propose to the General Director the granting of professional certificates, licences and boarding permits for merchant marine and special vessels' officers, taking into account compliance with of corresponding requirements.
2. To propose to the General Director the members of the examination board.
3. To keep up to date a technical register of merchant marine and special vessel officers, by controlling their professional performance and knowledge level.
4. To keep up to date the register of officers and ratings of the national merchant marine and, in general, that of all kinds of personnel who work on maritime or port activities within the jurisdiction of the Maritime Authority.
5. To propose to the General Director the granting of authorisations to perform as Shipping Agent and Stowage Agent, controlling their performance and obligations.
6. To carry out the register of Shipping Agents and legal representatives which operate in national ports.
7. To carry out the register of General Agents.
8. In co-ordination with the National Commission for Ships' Surveys, to propose the minimal safety crew for merchant marine and fishing vessels.
9. To issue nautical sport licenses for applicants to 'high sea yacht Captain'.

10. To monitor and control the operation authorisations for national and mixed fishing vessels and fisheries.
11. To transcribe to harbour master offices copies of the authorisations given by the Fishing Under-secretary for fishing activities.
12. To monitor and control professional diving activities in the country, specially those related to equipment surveys and knowledge of divers.

By carrying out all these functions, the Maritime Personnel Department focuses its attention on all those tasks to update their registers and monitor harbour master offices' performance (local maritime authorities of each port). It also distributes directives and instructions to improve the flow of documents and reports within the organisation (renewals, duplicates and granting). Some of the administrative tasks of this department, specially those involving professional knowledge, examination and registration should be centralised in a maritime education service or department. These tasks will be deeply analysed in chapter V of this dissertation.

3.4 The Maritime Instruction Centre (CIMAR)

CIMAR is a public organisation subordinated to the General Directorate of the Maritime Territory and Merchant Marine whose mission is to instruct and train merchant marine and fishing vessels personnel in all those matters contained in international conventions ratified by the Chilean government, and, in particular, those provisions specified in the STCW78/95 and the STCW (F) Conventions.

The centre was created by Supreme Decree number 415 on May 13th of 1987, with the purpose of issuing certain professional competencies to officers and ratings and to comply with the international commitment acquired by the State of Chile. In 1987 CIMAR started the delivery of several IMO model courses and, two years later, it was recognised and authorised by the Ministry of Work (National Service of Training and Employment) as a Teaching Technical Organisation. Today, in this

Centre the minimum competencies, professional profile, plans and study programs are defined and executed by means of structured courses, which are delivered over the year.

Because of its teaching excellency and good results obtained, on November 20th of 1990, despite the fact that it was a new institution, CIMAR was recognised by IMO as a branch of the World Maritime University, which located the Centre at the same level as other specialised institutions that provide this kind of teaching around the world. The signed agreement between IMO and CIMAR establishes that ‘the Centre will provide free of charge, for the IMO model courses and other maritime training programmes, national teaching staff, appropriate classroom and training facilities, audio-visual aids and laboratory facilities, local transportation, medical services, facilities for the reproduction of training materials and suitable residential accommodation and meals at a reasonable rate for foreign students participating in regional training exercises’(1990).

During the last thirteen years of trajectory, CIMAR has undertaken an important role in the teaching and training process for maritime personnel. Its courses are focused as to comply with the spirit of the STCW78/95 Convention, safety principles for human life at sea and pollution prevention. Moreover, this centre contributes to the teaching process of both naval and coast guard personnel and also it co-operates with other state organisations such as Custom Service and Fishing National Service, by delivering certain courses to improve the control measures of these institutions.

3.4.1 Organisation of The Maritime Instruction Centre

CIMAR is located in Valparaíso and possesses a simple organisation which allows it to comply with its role. The head of the organisation is the Director (Coast Guard officer) who is directly subordinated to the General Director of the Maritime Territory and Merchant Marine through the Director of Maritime Interests and

Marine Environment. He has a group of advisors for academic and economic matters and a secretariat which deals with administrative aspects. Under the highest position, there is a deputy director who takes care of the regimental and administrative aspects and acts as academic dean. He has allocated a registration office, which at the same time carries out administrative tasks, an historical file and a library, which is one of the most complete ones in the country in the maritime field. Finally, there are four departments namely: Instruction, Finance, Logistic and Statistics. The Instruction Department is the most important because it co-ordinates and manages courses and teaching activities. This department also prepares professional profiles, study plans and curriculum design for every course delivered in the Centre and out of it, in private institutions. The following chart shows the structure of CIMAR.

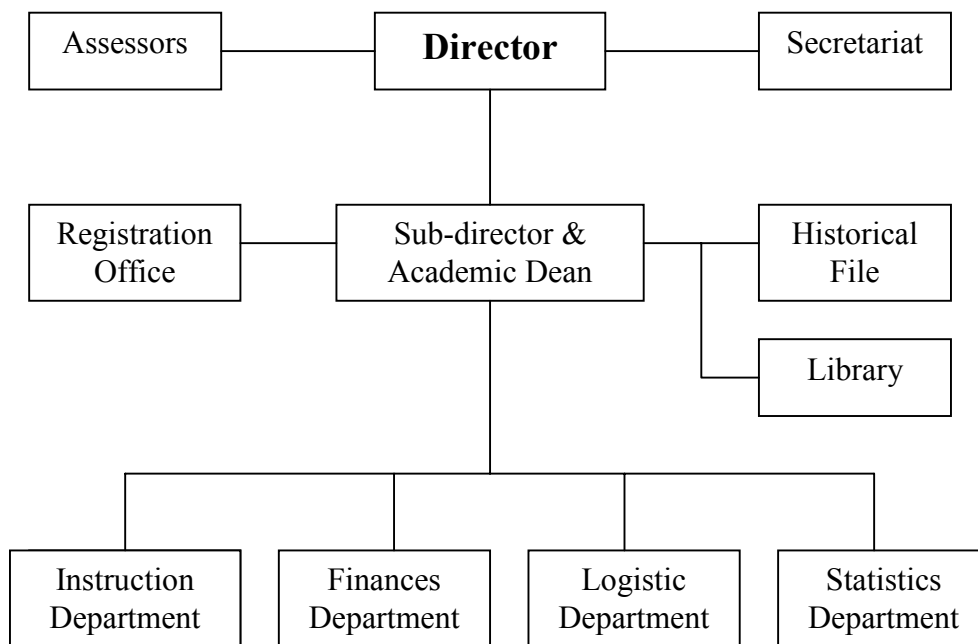


Figure 3.2 Organisation Chart of the Maritime Instruction Centre

The above chart represents the current structure of the Centre, which is focused on executive tasks. This means that CIMAR just offers IMO model courses and others of the maritime field to cover an academic area where private institutions

cannot or do not want to participate. In other words, CIMAR as a State organisation cannot compete with the private sector. The Institutes' Control Division used to belong to this structure two years ago, but DIRECTEMAR made the decision to transfer it to the Directorate General Headquarters due to reasons which will be explained in section 3.5 of this chapter.

Within the most important courses that CIMAR is delivering today it is possible to mention:

1. Oil Tanker Familiarisation
2. Chemical Tanker Familiarisation
3. Radar Observation and Plotting
4. Operational use of ARPA
5. Human Relationship
6. General Operator's Certificate for the GMDSS
7. Engine Room Simulator
8. Survey of Small Craft and Liferafts
9. Liquid Gas Tanker Familiarisation
10. Antarctic waters Operation
11. Pedagogic Techniques
12. Personal Survival
13. Pilot Applicants
14. Updating for Channel Pilots
15. Updating for Pilot of Ports
16. Professional Training to opt to Master Certificate
17. Professional Training to opt to Chief Mate Certificate
18. Professional Training to opt to Second Mate Certificate
19. Professional Training to opt to Chief Engineer

Nowadays, it is possible to say that CIMAR is meeting the role that the State allocated to it. Since the Institutes' Control Division was taken away from its

structure, their academic functions are limited to course execution and it does not take part in the audit process of private institutions. However, there are still functions such as professional profile preparation and definition of minimal competencies which should be placed in a superior organisation that is able to monitor and even audit CIMAR. Moreover, CIMAR has some information such as research work, statistics, examination and staff data, which might be transferred to a higher maritime education structure.

3.5 The Institutes' Control Division

The Institutes' Control Division was established in 1998. It is an informal division which was created temporarily by DIRECTEMAR to develop monitoring, auditing and control tasks over public and private institutions that deliver IMO model courses and others for maritime personnel in the maritime field, who perform in the national jurisdiction of the Maritime Authority. This provisory organisation used to be placed in CIMAR under the name of Institutes' Control Department, but because of claims of private institutions, it had to be moved to the General Directorate Headquarters, under the control of the Director of Maritime Interests and Pollution Prevention.

The former Institutes' Control Department of CIMAR used to monitor and control private institutions. For this reason, they claimed against DIRECTEMAR, stating that CIMAR could not deliver courses and, at the same time, control institutes which also deliver such courses. In other words, CIMAR, as a state organisation, was controlling its competitors. These circumstances and the necessity of arranging the monitoring and control process of the Maritime Education System in Chile, including a quality standards system, accelerated the decision making process, in the sense that it was convenient to separate from CIMAR all regulatory functions by creating an organisational structure for this purpose.

The Institutes' Control Division consists of a single office which is conducted by an experienced Coast Guard officer and a secretary in charge of administrative functions. During the last two years many directives and documents have been sent to institutions to establish audit and recognition procedures and to co-ordinate and facilitate implementation of provisions of the STCW78/95 Convention. The Division manages a budget of USD 7000 roughly, which is mainly used during audits for transportation and auditors' accommodation. Unfortunately, because of the number of personnel this division has been allocated, it has not been possible to dedicate the necessary time to improve and update some regulatory measures such as audit schedule, defining professional profile for some fishing courses and defining check list items for audits.

The officer in charge of this division has to comply with many other functions, which correspond to a different scope such as military activities, protocol functions and logistic matters. He does not have time to dedicate a hundred per cent to his own tasks. Moreover, nobody replaces him when he has to be absent because of audits and commissions. In such a case, decisions have to wait for his coming back and public attention service is affected. The latter influences the reputation of the maritime administration.

3.6 Weaknesses of the Current MET Management System

The purpose of this section is to identify those weak points of the current management system, which require special attention in order that they be solved through a new structure. By analysing the current structure of every organisation involved in the MET process, the author of this dissertation has realised and identified the following weaknesses:

- a) **Lack of centralisation of MET information:** By looking at figure 3.1 of page 25 it is possible to realise that relevant information involving MET matters is segregated and subordinated to different departments. Different information of

the process is gathered by three different organisations and they rarely meet each other to analyse the whole output of the process. For example, the register of merchant marine and special vessel officers is carried out by the Maritime Personnel Department, however the Institutes' Control Division also requires this information to prepare exams and have a clear perspective of the growth of the number of officers. On the other hand, CIMAR can require information from the register to project and prepare those courses which are not delivered in private institutions. The Institutes' Control Division and the Maritime Personnel Department can be grouped under the same commandant, even CIMAR should be subordinated to this new position. This idea would permit to centralise information under the same authority, who would have the whole picture and control of the process.

- b) **Lack of Personnel for audits and monitoring tasks:** Taking into account the number of private institutions and centres that offer IMO model courses along the country (59), the number of allocated personnel to carry out audits and monitoring tasks is not sufficient. This function is being performed by the Institutes' Control Division, which, as it was explained before, does not have a formal structure nor the required personnel to satisfy demands from market (MET institutes). The only officer of this division cannot execute properly all auditing and monitoring tasks per year, so that he has to utilise harbour master officers to check installations, facilities and curriculum development and design of maritime institutions. On the other hand, not all harbour masters are qualified to carry out these functions, they need training and detailed instruction to perform the audit well. The prestige of the organisation is involved again if non-qualified personnel are performing audits. The MET structure requires sufficient personnel in quality and quantity to carry out monitoring tasks from its headquarters and execute auditing tasks in place.

- c) **Lack of participation of unions, associations and some authorities in the teaching process:** Nowadays the MET teaching process in Chile is carried out by the maritime authority only, without active participation of several organisations involved in the maritime field. Maritime universities, shipmaster associations, shipowner associations, unions and authorities such as the National Fishing Service and National Health Service are required to send to the maritime authority relevant information for the examination process, but they do not take part in designing professional profiles and curriculum development. In other words, the loop is not closed and the MET system fails to receive the necessary feedback to improve the education level of maritime personnel. These organisations need to be taken into account and the Maritime Authority needs their support. It is important that the new structure considers participation of all sectors, specially those who have interests in the shipping and fishing industry.
- d) **Lack of mission statement, objectives and functions of the MET System:** Because the current MET Structure is segregated and composed of different organisations (department, division and centre), which are not under the same umbrella or commandant, it does not have a mission statement, written objectives and policies. The Maritime Personnel Department, CIMAR and the Institutes' Control Division have their own missions and functions, but they do not necessarily match with the overview that a National Maritime Education and Training System should possess. If a new structure, grouping functions from the Maritime Personnel Department, CIMAR and the Institutes' Control Division is created, it should possess its own mission, objectives and functions, according to basic rational mandate that international and national regulations allocate to it. In this particular case, the new Chilean MET structure, whatever its name is, must have a mission statement, objectives and policies derived from provisions of the STCW95 Convention and relevant national regulations named in section 2.4 of this dissertation.

- e) **Lack of access to available information:** In the above letter c) of this section it has been already explained that there is a lack of participation of some organisations and authorities in the teaching process. Today, these organisations and private institutes do not have adequate access to information such as: professional profiles, study plans and curriculum design among others. Despite the fact that the DIRECTEMAR computer network is highly modern and covers almost the whole country, the above mentioned information has not been published yet and private institutions do not have proper guidelines and access to it to prepare their curriculum development and design. The country's geography can be considered as a natural barrier for those institutions that are far from the National Maritime Authority's headquarters, which are located in Valparaíso. However, by liberating information through computer network (Internet), institutes can get it easily and quickly to update their study programs and keep in touch with the MET structure. In this way, the new structure can facilitate public attention service and information access to customers.
- f) **The current quality standards system needs to be improved:** According to regulation I/8 and Section A-I/8 of the STCW78/95 Convention, the current MET system requires new quality standards and/or they need to be updated. Many of the standards in place cover the main areas such as certification system, examinations and assessments, endorsement, courses and programs and the qualifications of instructors. However, there is not a monitoring process to examine and check that quality standards are applied and complied according to guidelines and directives issued by the Institutes' Control Division. In other words, checklists need to be established to facilitate the job of auditors and evaluate the degree of efficiency of the teaching process of every institution, according to the objectives they have established for every course and training program. For example, before the STCW convention entered into force, there were no guidelines in order for institutes to demonstrate that they had qualified instructors. Today, the respective directive establishes such a requirement, but

there is no control measure to ensure the fulfilment of that provision. Guidelines for internal and external evaluations must be incorporated in the monitoring process of the new structure, and correspondence forms for reports should be distributed as part of the quality standard system.

All the above mentioned weaknesses have been discovered by reading and analysing the structure, directives and guidelines of the provisional office of the Institutes' Control Division and written information received from parties which take part in the management and monitoring process. It has not been possible to interview all people who work in these processes nor gather all information required to find more detailed failures of the current system. However, the author of this work believes that these six weaknesses involve the main aspects of the management system that need to be re-arranged through a new organisational structure.

CHAPTER IV

4.0 THE STRUCTURE OF THE MET SYSTEM IN COUNTRIES WITH A LONG MARITIME TRADITION

The purpose of this chapter is to know and study the current structure of the Maritime Education and Training system belonging to countries with a long tradition at sea. The MET organic structure of countries such as Norway, Denmark and Spain will be presented to provide an idea about the way these countries have faced the new provisions of the revised STCW Convention, particularly those involving monitoring processes and quality assurance measures. Strengths of every management system will be identified and heightened to study the way they can be applied to the Chilean MET Structure.

It is important to mention that the reasons for including Scandinavian countries like Denmark and Norway in this chapter were based on both, the availability of material and information and their maritime story and culture. The Danish Maritime Authority possesses a very similar structure to that of the Chilean Maritime Authority. In the case of Spain, because of its long maritime tradition, it was considered to exert influence on the genesis of the Chilean Maritime Administration, especially on those matters related to legal and administrative organisation.

4.1 The MET Structure in Norway

Norway has always been a maritime nation with a great number of seafarers and seamen. With a national fleet totalling altogether 5718 vessels, from which 2653 are engaged in fishing activities and more than 1000 ships and ferries in the carriage

of passengers and rolling vehicles, Norwegian ships sail with mixed crews, due to the lack of interest of Norwegian young people to work at sea.

In 1963 there were 44,000 Norwegians and 13,000 foreigners working on board ships sailing under the Norwegian flag. This number changed thirty years later when there were 13,000 Norwegians and 45,500 foreigners. The jobs at sea for Norwegians disappeared during the '80s because of the wave of flagging out. According to Mr. Arild Nodeland (1996), the total elimination of the Norwegian seamen's profession was prevented by the creation of the Norwegian International Ship Register (NIS), and the number of Norwegian seafarers has kept stable since then.

Nowadays, although more than half the number of seafarers serving on board Norwegian registered vessels are Norwegians, they represent no more than 11% of the total manning of the NIS fleet. Moreover, the manning structure has become different because of the following: approximately 50 percent of masters and chief engineers are 50 years old and older; before the year 2003, 1,500 navigators and 1,050 engineers will retire; and experience shows that 2,300 officers will leave the profession for other activities in the coming three year period.

From the middle of the 1980s, one of the main challenges of the Norwegian maritime education and training system has been to have sufficient number of qualified successors to the senior officers. One of the serious problems they have faced has been the cost of having junior officers in trainee positions. That is why authorities, employees and employers have made a great effort to clarify the situation. Figures in 1995 showed that the number of Norwegian seamen in foreign trade had reached 13,400 and it was increasing thanks to the support of the shipping industry. Norwegian shipowners' and seamen's organisations realised that Norwegian seafarers had a competitive handicap compared with their colleagues in other countries.

The structure and content of the shipboard training and its implementation onboard vessels is creating big challenges, but at the same time provides considerable opportunities to develop high-quality training. The Norwegian MET system is demonstrating that it is still important to provide trainee and apprentice positions, therefore its great challenge at present is to ensure quality education at school and in the shipboard training. They believe that education at a high quality, careful monitoring for the apprentice positions, and systematic shipboard training and evaluation will be the key to ensure high competence for Norwegian seamen.

4.1.1 Vocational and Professional Maritime Training in Norway

Nowadays in Norway there are 23 schools conducting vocational officers training and 4 colleges offering professional maritime education at university level. The policy of the system is to increase the extent of education at college level to raise the general competence for officers of the merchant fleet. In 1994 a new training model was introduced for the maritime vocational training, and maritime college training was extended to three years.

Vocational training lasts five years in all, including three years of training for occupational competence as able seaman or motorman. The training, as it was mentioned before, is organised as apprentice training, integrating both school and shipboard training. Following vocational training officer education may be completed at a two-year technical school.

Norwegian officers may also be educated at maritime university level, where education is based on IMO model courses and the revised STCW Convention. Here, education consists of deeper studies and is extended to improve the quality of education and competencies of officers. Prior to college a student has to pass an apprentice course with shipboard training. The years of study are mixed with shipboard cadet service for students.

4.1.2 Organisation of the MET System in Norway

Maritime Education and Training in Norway is an integral part of the national education system. It falls in under the responsibility of the Ministry of Education, Research and Church Affairs, which is in charge of allocating budgets and setting overall policies, including standards for public upper secondary schools and technical colleges. Maritime Colleges and Naval Academies have the responsibility of preparing their own syllabuses, according to the provisions of the STCW Convention.

The organisation in charge of approving and accrediting maritime colleges is the Norwegian Maritime Directorate (NMD) which is subordinated to the Ministry of Foreign Affairs and deals with aspects such as: casualty investigations, maritime safety, surveys, and the revised STCW Convention. The Norwegian Maritime Directorate has been appointed as administrative authority to carry out provisions of the STCW Convention in Norway. To comply with this task NMD is organised into two departments: the Seamen's department and Telenor Nett. The former possesses a Certification and Education Section which carries out all matters concerning issuing of certificates and approval and/or accreditation for maritime education and training institutes; the latter deals with radio inspections and issuing of certificates for the Global Maritime Distress and Safety System (GMDSS). The certification and Education Section covers the following areas of responsibility:

- Implementing STCW-95
- Issuing STCW-95 certificates
- Renewal of certificates
- Dispensation for certificate requirements
- Dispensation for nationality requirements
- Endorsement of national certificate/qualification document

This Section is subdivided into two main units named Certification Unit and Strategic Unit. The former performs tasks of certification, qualification documents,

endorsements, dispensation and foreign masters; the latter has to develop functions such as: implementing STCW-95, establishment and maintenance of the quality assurance system, auditing maritime education and training institutes, application of Norwegian rules and regulations, auditing the system of foreign maritime administration and assistance for Norwegian foreign service stations.

The following chart shows the organisation structure of the MET System in Norway, regarding the STCW78/95 Convention.

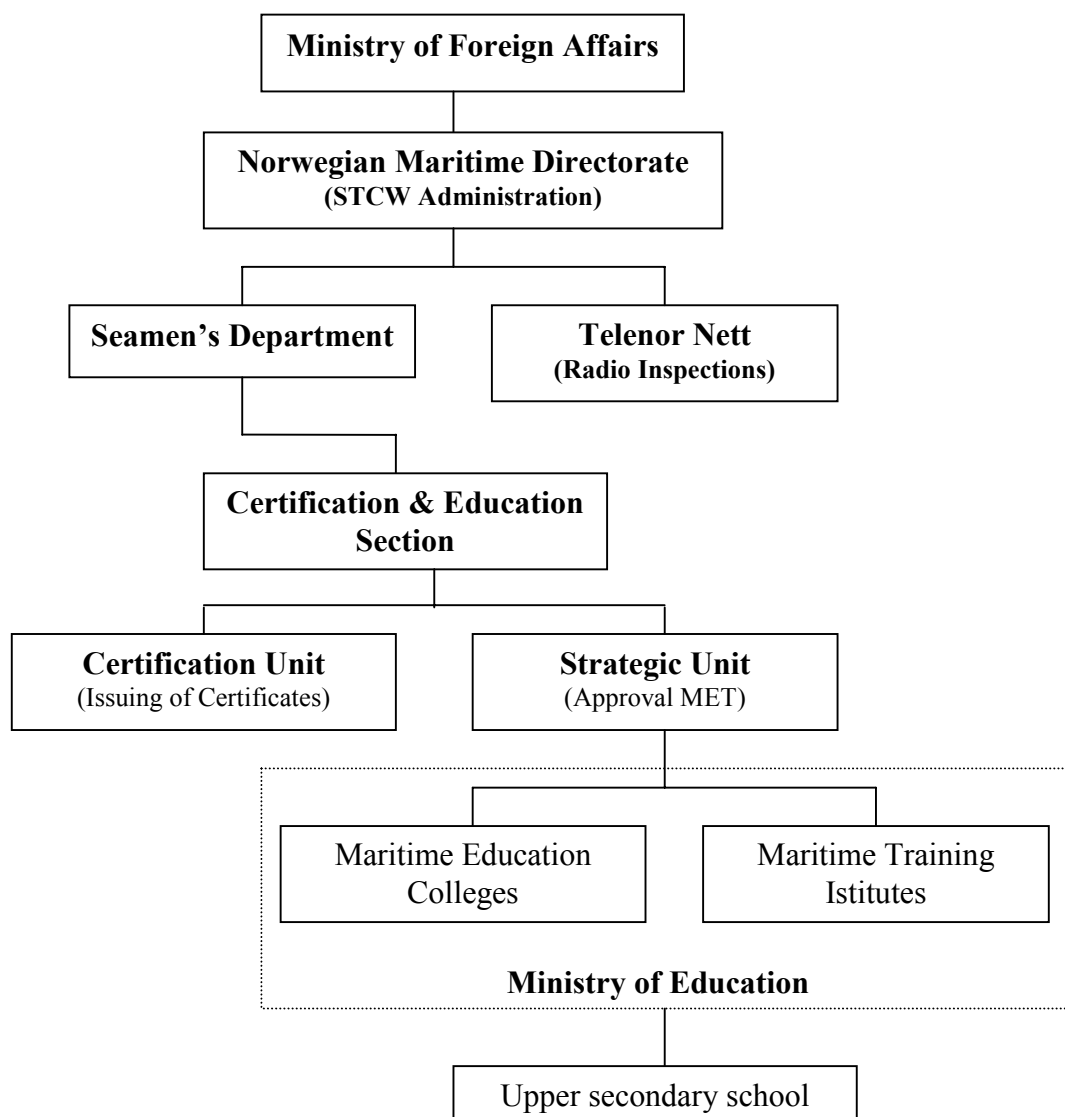


Figure 4.1 Organisation Structure of the Norwegian MET System

4.1.3 Quality Assurance at Maritime Academies and Training Centres

To comply with national regulations and provision of the STCW Convention, every school, institute and centre delivering maritime education within the Norwegian jurisdiction must be accredited by the Norwegian Maritime Directorate. This organisation supervises maritime education in order to ensure that training continuously meets the requirements and standards of the Convention. The supervision task is carried out by means of quality standards for maritime educational institutions and training centres, which are mandatory and are in place from August of 1998.

Systematic monitoring arrangements are contained in the quality standard system, including internal evaluations of the quality assurance to ensure the achievement of the previously defined objectives. The QA system includes qualification and experience of instructors and assessors. Moreover, in the case of an institute using subcontractors to comply with requirements of courses and programs this also must be part of the quality assurance system.

According to Norwegian MET policy, any person conducting instruction or assessment of on board training, for the purpose of certification, must be qualified in accordance with the STCW Code and approved by the Norwegian Maritime Directorate. If the person wants to be approved, he or she must hold a management level certificate for the subject area to be taught or assessed and has to have at least three years of seagoing experience as an officer.

4.1.4 Assessment and Audits of Maritime Education and Training

The Norwegian Maritime Directorate has established a proper system of maritime audit and assessment to comply with Regulation I/8 of the STCW Convention. The aim of the system is to ensure that the STCW Convention is in full effect at institutes and colleges supplying seafarers to vessels flying the Norwegian flag.

In 1998 a study about all-national maritime education and training facilities was developed to ensure syllabus and quality standard system compliance. Since then, all national maritime academies are being audited, which is considered a high priority. Audit and assessment programmes comprise all activities related to training, assessment of competence, certification, endorsement and revalidation of certificates. These programmes also provide information about the standard of competence of foreign seafarers serving on board Norwegian vessels.

4.2 The MET System in Denmark

The Maritime Education and Training process in Denmark is managed and controlled by the Danish Maritime Authority. This is a state organisation subordinated to the Ministry of Industry, which is in charge of matters such as: safety at sea, working environment, register of ships, administration and maritime education. The budget this organisation controls roughly reaches USD 53 million, from which USD 25 million, representing a 48% of the whole budget, are allocated to the MET system. The Danish Maritime Authority is responsible for the operation of all maritime training institutions and training ships.

In July of 1997, a new scheme for Maritime Education and Training of officers for merchant ships was implemented in Denmark. The new scheme, addressed to apprentices employed by Danish shipowners, consists of a dual program which integrates deck and engine departments subjects. The first stage of this scheme is admission and recruitment of students coming from upper secondary school to maritime education and training for junior officers. The first semester (6 months) corresponds to education at college and the second to sea service training. Then, there are 6 months of workshop training, followed by one year of education at college. After that, the student has sea service training for one year, where he/she has to follow an approved Training Record Book. Finally, the last year of education at college is developed before the student gets his/her dual-purpose certificate.

After a period of sea service as a junior officer, studies at college are resumed at management level either at nautical or engineering college, with the purpose of qualifying students as senior officer in the deck or engine department. The whole process is carried out according to Regulation II/1 and III/1 of the STCW Convention.

Education and Training for officers of fishing vessels and masters who perform home trade (restricted navigation in range), takes place at nautical schools or skipper schools. Students entering these schools must possess sea service experience as assistant on board fishing ships. At the end of 6 months, students get the lowest certificate of competency called skipper 3rd class or restricted master (home trade).

In the case of ratings, they receive education at nautical schools or training vessels during 20 weeks. Then, they have sea service training for 6 months and go back to nautical school for another 20 weeks of studies. They receive a ship's assistant certificate, after a last period of sea service training of 12 months.

4.2.1 Organisation of the MET System in Denmark

It has already been said that the Danish Maritime Authority is the governmental organisation that takes care of the MET System. To have an idea of the aspects this organisation must deal with, it is convenient to mention that in Denmark there are 5 schools for ratings, 4 nautical colleges for deck officers (3 governmental and 1 private for skippers) and 8 private/governmental engineering colleges for engineer officers. For training in fire fighting courses there are 5 private training centres (Danish Maritime Education Division, 1999).

The Danish Maritime Authority manages and monitors the MET system through its Maritime Education Division. This performs the following tasks:

- Conduct education and training of ratings, officers, skippers and cooks
- Conduct external audits of state and private nautical schools and colleges

- To appoint the board of examiners for masters and mates
- To appoint the board of examiners for marine engineers
- To carry out the certification process and safety at sea training
- To conduct education of ship's cooks
- To update and upgrade IMO model courses.

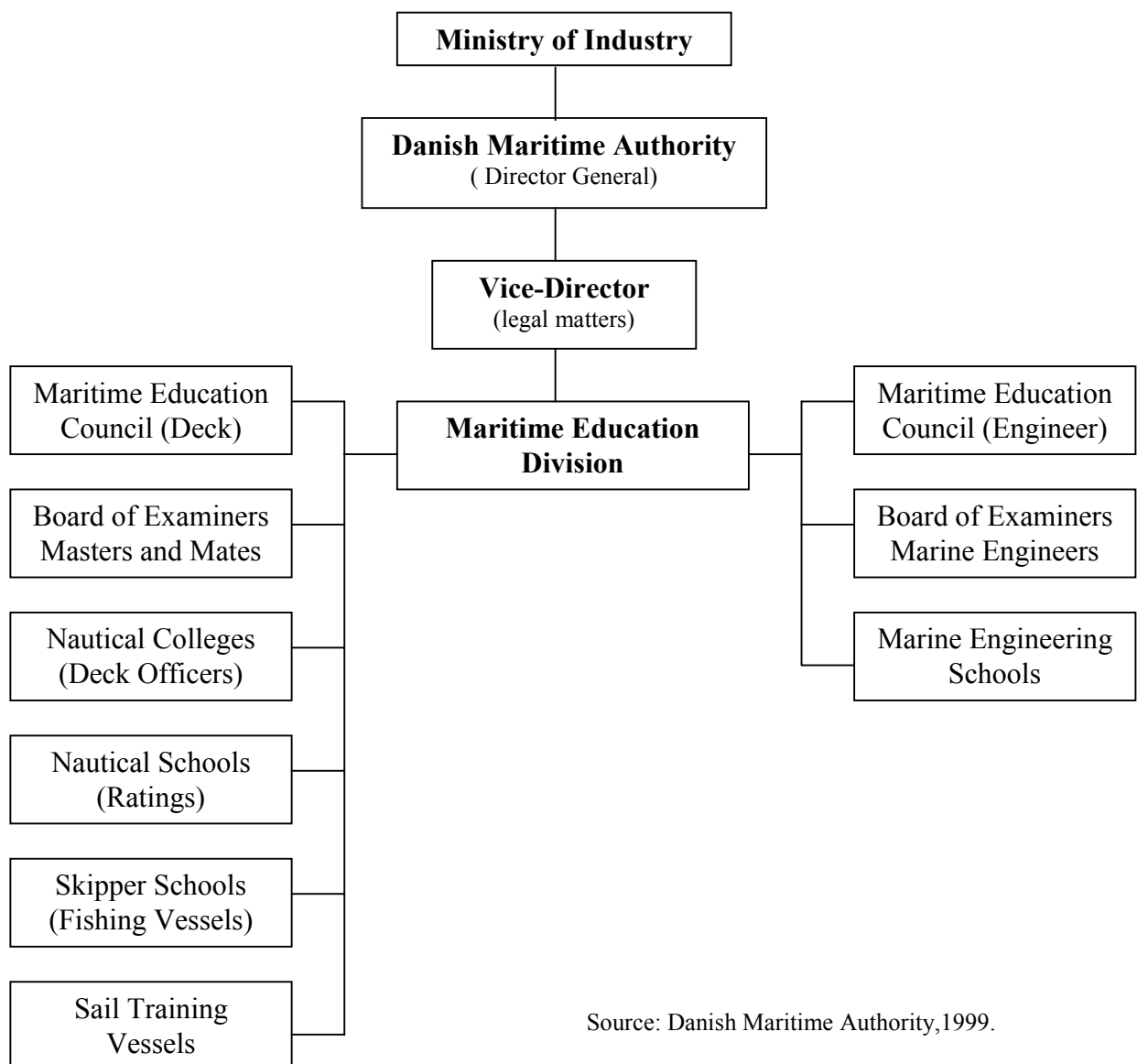
The Maritime Education Division is subdivided into different corps and sections. First of all, the Maritime Education Council (deck and engineers), whose members are representatives of shipowners' and seafarers' associations, lecturers and student organisations, the Royal Danish Navy and the Danish maritime authority. The chairman of the council is appointed by the Ministry, and this council is responsible for studying and analysing all important issues concerning MET. Secondly, the Board of Examiners (deck and engineering), which is composed of a chairman and at least three members, who must have passed examinations to qualify for master/chief engineer and must have served as mate/engineer in the merchant fleet for at least two years. They normally are senior officers, teachers and people from the shipping industry. Their main functions are to conduct quality assurance through external audits and to prepare oral and written examinations. Finally, there are other sections such as: Nautical Colleges (deck officers), Marine Engineer Schools, Nautical Schools (ratings), Skipper Schools (fishing vessels) and Sail Training vessels which, of course, monitor and control the work and necessities of their respective areas.

The following division of responsibilities has been done by the Danish Education Division between institutions and the board of examiners:

| | |
|---------------------------------------|---|
| Responsibility at institutions | <ul style="list-style-type: none"> - For the detailed contents of the training programmes - Assessment of competence (evaluation) - Implementing a quality management system |
|---------------------------------------|---|

| | |
|---|--|
| Responsibility at the board of examiners | <ul style="list-style-type: none"> - Determine objectives (officers) - Monitoring all MET activities at institutions (external audits) - Examinations |
|---|--|

The following figure 4.2 shows the organisation structure of the MET system in Denmark:



Source: Danish Maritime Authority, 1999.

Figure 4.2 Organisation Structure of the Danish MET System

4.2.2 Mission of the Maritime Education Division

According to information provided by Mr. Hemming Hindborg, visiting professor of WMU, quality co-ordinator of the Danish Maritime Education Division, the Danish Maritime Authority has established the following mission for the Education Division:

- To ensure that the training institutions under DMA educate a sufficient number of Danish seafarers with such qualifications as those needed to assist the improvement of the safety at sea and be a vital factor for the ability of Danish shipping to compete internationally
- To ensure that the training institutions under DMA educate a sufficient number of engineers with such qualifications as to make them attractive for both the shipping industry and shore based enterprises
- To assist with the development of up-to-date training of fishermen with qualifications such as to enable them to make a considerable contribution both to the improvement of safety at sea and the fishing industry, and at the same time become a vital element for the ability of the industry to compete internationally
- To ensure a wide scope of education to be offered to Danish yachtsmen
- To audit maritime education and training, which is performed in accordance with domestic and international rules and legislation
- To operate the government owned training vessel “Denmark”
- To implement the revised STCW 95 Convention in all maritime education and training in Denmark
- To provide service to other divisions of DMA – to the Minister and the Parliament and to other public institutions and to citizens regarding questions and matters concerning maritime education

4.2.3 Quality Assurance in the Danish MET System

As explained previously, the Danish Maritime Education Division made the decision of dividing responsibilities between the central administrative body, the

Danish Maritime Authority, and the individual MET Institutions. The MET system in Denmark used to have a centralised organisation until 1998. This means that all responsibilities such as study programs, curriculum design, objectives, management and quality assurance system were carried out by the Maritime Education Division (State). The new project pretends to place greater responsibilities on the institutions, so that they prepare the contents of training programmes and, at the same time, perform the assessment of competence of students. Today, individual MET institutions are assuming much greater responsibilities for setting up study programs and curriculum design based on general objectives issued by the Danish Maritime Authority.

The content of the programs (documents) must be presented to the board of examiners in order to approve them and check that they comply with objectives given by the Maritime Authority and by provisions of the STCW Convention. In other words, this methodology or new project binds institutions to establish a quality assurance system, according to specific directives provided by the Maritime Education Division.

This project, which is still on-going, includes education and training of quality co-ordinators at each institution, education of a team of auditors within the Danish Maritime Authority, and the development of management conditions at every institution to help them with this new way of leadership.

Audits are very important and one of the principal parts of the quality assurance system. Individual lecturers are no longer independent, in the sense that they have to document to auditors the way they intend to meet requirements of the institution and the Danish Maritime Authority. Teaching programmes are presented to explain how the learning process is planned, regarding methods and delivery media, procedures and course material used.

The implementation process of the quality system was finished at the end of 1999 but there are still some roles that have to be adjusted to the new structure. It is probable that the board of examiners will not perform external audits any more. The current auditors of the organisation are all employed by the Danish Maritime Authority and for the moment, the audit team consists of 10 fully examined auditors, who have already audited all MET institutions at least once a year. This external auditing process is exercised by 2 or 3 auditors who attend to schools for 2 days.

The quality system of the Danish MET Institutions has been influenced by ISO 9000 quality standards. However, it pretends to promote development of new values, which permit evaluation of placed standards in order to permanently improve and amend the quality system.

4.3 The Maritime Education and Training in Spain

The MET process in Spain goes back to the 13th and 14th centuries, when nautical academies were created. Before that time, nautical schools did not exist and the seafarer's performance used to depend on accumulated experience acquired on board ships. Seamen used to work on board in accordance with verbal instructions given by older seafarers, and by doing this, they gained knowledge and experience at sea. The first schools or teaching institutions were called associations or trade unions.

After 1925, the MET system and institutions were controlled and monitored by the Ministry of Transport and, for some time, by the Ministry of Commerce. There were three courses that used to have sea training periods, but they were not recognised as university studies because entrance requirements and academic background of students did not match university standards, which were set by the Ministry of Education.

In 1977 there was a very important change in the MET system. Maritime studies from MET institutions were officially recognised at university level and graduates, after a period of 5 years of study and training at sea, were issued with a certificate, which allowed them to work not only on board ships but in maritime industries also. In 1978 MET studies were modified to match the provisions of the STCW 78 Convention, and in 1985 the MET system was completely incorporated into the university structure under dependence of the Ministry of Education. Nowadays, this ministry issues academic certificates, however the professional ones are still issued by the Ministry of Transport.

4.3.1 The Current MET System in Spain

The Current MET System in Spain offers two alternatives named Professional alternative and Academic alternative. The first one is focused on students who possess a vocational interest in working at sea. If these students are not interested in having a university level, they can follow a professional career by studying 3 years at school, after which they have to pass an exam to get a diploma (academic degree). To get the professional certificate of watchkeeping officer, students have to be trained at sea for 12 months. Then, they can continue a professional career until reaching the certificate of chief mate/first engineer after 24 months at sea. If they want to get the professional certificate of master/chief engineer, they have to attend 2 extra years at university, in order to get the bachelor degree first, and in addition to that, they have to sail 12 months as chief mate/first engineer.

The second option, the Academic alternative, corresponds to students who prefer to have posts in land based maritime industries. This type of student has to study five years at university, after which they have to pass a dissertation and undertake 12 months of sea training. By doing this, students get the bachelor degree and the professional certificate of watchkeeping officer. If these students want to get the professional certificate of chief mate/first engineer, they have to comply with 12 months of professional performance on board. Moreover, if they want to reach the

certificate of master/chief engineer, they have to have 12 months of experience at sea as chief mate or first engineer, but it depends on the area they have chosen.

Summing up, the current MET System in Spain offers two alternatives which demand the same years of study at university and almost the same numbers of years at sea, being the larger the one for students who follow the professional alternative (12 months).

4.3.2 Nautical Schools and Institutes in Spain

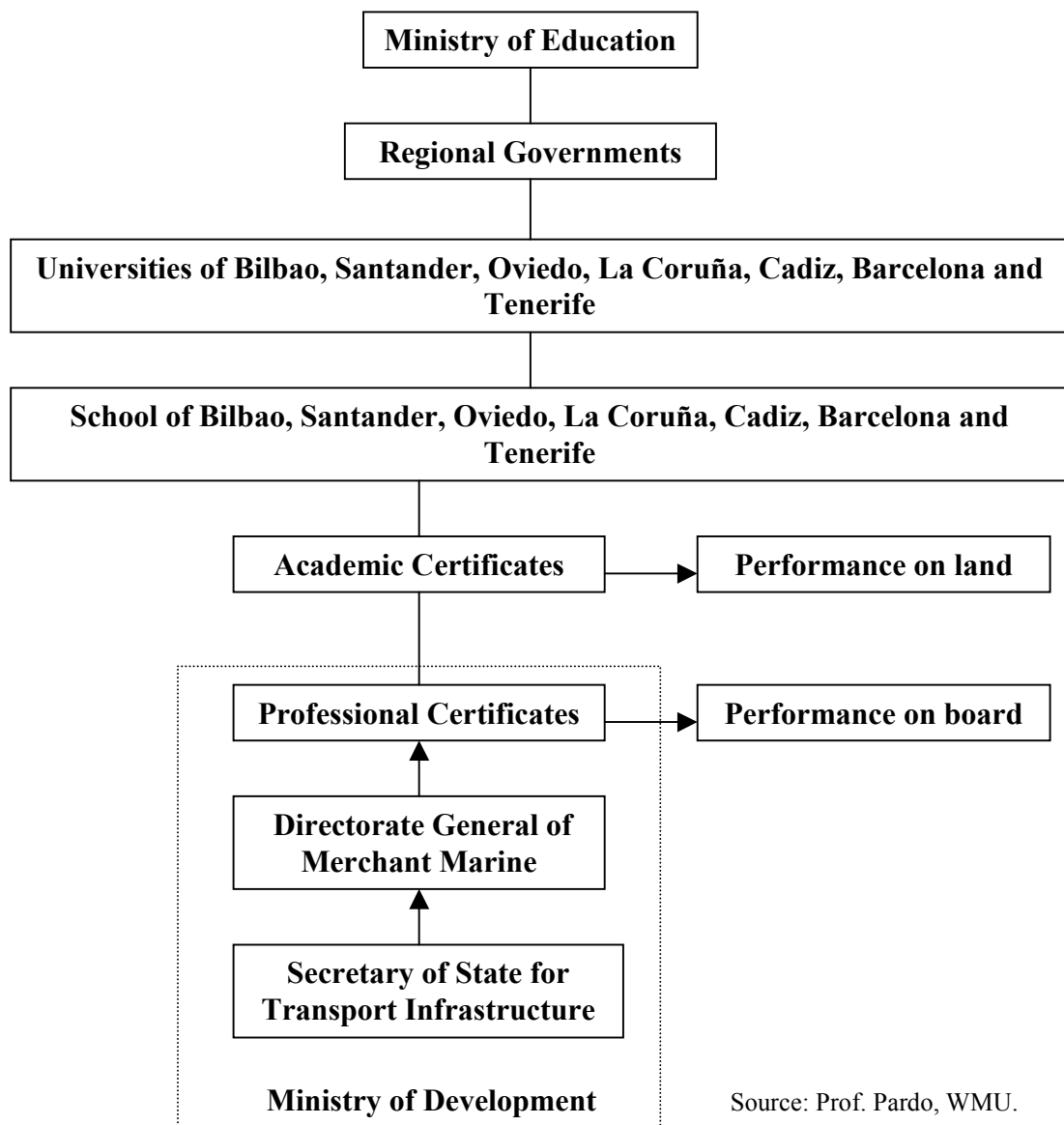
Because MET in Spain is the responsibility of the Ministry of Education, nautical schools are subordinated to state universities which take care of the whole teaching process. However, the granting process of the professional certificate of competency is carried out by the Directorate General of Merchant Marine, an organisation which is subordinated to the Secretary of State for Transport Infrastructure (Ministry of Development). Nowadays, there are 5 schools and 2 faculties, which offer maritime careers to perform on board merchant vessels. They are supported and funded by regional governments, through the corresponding university they are subordinated to. Beside nautical schools and faculties, there are 15 training centres that offer courses for fishing vessel personnel, skippers and mechanics of coastal trade; however, these centres are not part of the university system.

4.3.3 Organisation of the MET System in Spain

Despite the fact that the MET structure in Spain is subordinated to the Ministry of Education, the Directorate General of Merchant Marine plays an important role. In terms of organisation, it possesses a Deputy Director General for Maritime Inspections, which, through the Area of Professional Maritime Training, controls the register of professional certificates and licences issued by the Administration. This department also supervises and monitors those institutions that offer courses for skippers, fishing vessel personnel and mechanics of coastal trade,

but it does not monitor or control universities. In resume, the Directorate General of Merchant Marine can co-ordinate and suggest to universities all kind of changes to objectives, curriculum developments and study plans for officers' careers, but it cannot monitor and control the achievement of objectives, which are set by the university system.

Figure 4.3 represents the organisation structure of the MET System in Spain.



Source: Prof. Pardo, WMU.

Figure 4.3 Organisation Structure of the MET System in Spain

4.3.4 Quality Assurance in the Spanish MET System

Regulations about the quality assurance system for MET institutions in Spain were published on January 21st of year 2000. Article 14 of the Royal Decree number 2062/1999 of December 30, 1999 establishes several instructions for the fulfilment of the quality standards and competencies with regard the STCW 78/95 Convention. Unfortunately, because of the recent publication of the Decree, maritime institutions and universities are just implementing quality standards and it was not possible to get information about it.

The above mentioned article 14 of the Royal Decree establishes that every activity involving teaching, training, certification, endorsement and revalidation must be subject to a quality assurance system, concerning regulation I/8 of the convention's annex. The application and scope of the quality standards must include certification system, courses, curriculum design, study programs, endorsements, examinations, assessments and qualification and experience of professors and evaluators. Moreover, universities and MET institutions that offer careers and courses regulated by the STCW Convention must determine respective standards of competence to be reached, identifying proper levels of knowledge, comprehension and proficiency for examinations and assessments.

According to number 5 of the same article (14), independent audits of institutions must be carried out at least every five years to check activities in relation to teaching, competencies and administrative matters. These audits must be oriented to demonstrate that internal measures of control and vigilance match the objectives and documented procedures. Results of evaluations are documented, responsible persons informed and measures are adopted to correct any deficiencies found. Finally, number 6 of article 14 of the Decree makes reference to qualification of auditors, who must be appointed by the Administration and must not be directly involved in activities the subject of the audit.

4.4 Relevant Strengths of MET Structures of Norway, Denmark and Spain that can be applied in the Chilean MET Structure

The purpose of this section of the dissertation is to identify the main strengths of each MET structure, which has previously been described in this chapter, in order to solve the weaknesses of the Chilean MET structure, identified in section 3.5 of chapter III. By studying the MET organisations of Norway, Denmark and Spain the author of this dissertation can conclude that the following strengths should be incorporated in a new structure of the Chilean MET system:

A. Strengths of the Norwegian MET System

- 1. The Norwegian MET System is focusing on education of a high quality, monitoring apprentice positions on board.*

Despite the fact that in Chile there are not many resources (ships) to create apprentice positions, it would be a good alternative to allocate the task of getting apprentice positions on board to the new MET structure. This would facilitate the work of institutions and students who have to look for apprentice positions by themselves. The Chilean MET structure should encourage shipowners to create apprentice positions on board their ships, to ensure adequate training on board. Monitoring tasks about performance during seagoing training must be kept under the responsibility of colleges and institutes.

- 2. The Norwegian Maritime Administration has created a special structure to carry out provisions of the STCW Convention.*

All matters related to MET in Chile should be grouped within one single structure, which manages and ensures compliance with provisions of the STCW Convention and proper education and training for skippers and fishermen. This is one of the important weaknesses of the current management system, which needs to be solved. It is clear that the Maritime Personnel Department, the Institutes' Control Division and CIMAR must be

subordinated and grouped under the same structure, in order to centralise information and facilitate the access to it. By doing this, weaknesses described in a) and c) of section 3.6 would be solved.

3. *The aim of the Assessment and Audit System of the Norwegian MET structure is 'to ensure that full effect of the STCW Convention has been given by institutes and colleges supplying seafarers to vessels flying Norwegian flag' (Flåtrud, 1999).*

This interesting statement can be adopted by the Chilean Maritime Administration as a part of the mission or policy of the new MET structure. The latter, must establish measures to ensure that public and private institutions have a proper quality assurance system in place, which will allow them the compliance with every provision of the STCW Convention and objectives given by the National Maritime Administration (DIRECTEMAR) with regard to MET. Such an aim of the Norwegian MET structure will serve to create the aim and objectives of the new Chilean Structure, which is the weakness mentioned in d) of section 3.6 of chapter III.

B. Strengths of the Danish MET Structure

1. *The Danish MET Structure considers a Maritime Education Council where all sectors involving shipping industry participate and discuss important issues concerning MET.*

The lack of participation of unions, associations and some authorities in the Chilean MET system was described as one of the weaknesses of the current management structure (see letter c) of section 3.6). Participation of all kinds of organisations involved in the Chilean maritime interests has to be considered in the new structure to ensure that all variables and inquiries are received and analysed before the decision making process is finalised.

2. *The Danish MET Structure possess a pool of qualified auditors to audit MET institutions*

It has already been established in letter b) of section 3.6 of chapter III that the lack of personnel for audits and monitoring task is also one of the weaknesses of the Chilean MET Organisation. To solve this problem the National Maritime Authority should create a pool of qualified people around the country, in different ports, to carry out audits for MET institutions. Harbour masters can co-operate in recruiting proper auditors to facilitate the work of the MET Structure. The new structure should define the professional profile of auditors, who must be qualified and appointed by the National Maritime Administration.

3. *The Danish MET structure has created a section for every area of performance or speciality namely: deck officers, engineer officers, skippers, ratings and training vessel.*

Because of the number of institutions that offer courses for skippers or special vessel officers in Chile, the new structure should consider a section or division which undertakes all functions concerning monitoring and control of these particular institutions. In other words, the new structure must possess a special division that deals with matters concerning the above-mentioned institutions and, of course, another one for institutions which offer courses for merchant marine officers.

4. *The Danish MET Structure has delegated the obligation of establishing a quality assurance system to institutions, keeping the establishment of general objectives.*

From the point of view of the author of this dissertation, the new MET structure in Chile should delegate to MET institutions the obligation of establishing a quality assurance system and also the obligation of preparing study plans and curriculum designs. However, it should keep the obligation

of providing general objectives and MET policies, in order to ensure the fulfilment of international regulations and the supply of competent and well-prepared personnel for the national merchant marine and the fishing industry. The new structure should also approve the quality assurance system, curriculum designs, study plans and specific objectives established by institutions, which should be checked during audit through checklists.

Finally, a quality co-ordinator should be appointed by the MET institutions in order that he/she keeps in touch with the MET structure to facilitate communication and information broadcast to and from the new MET structure. This point was also identified in letter e) of section 3.6 as one of the weaknesses of the current structure that has to be solved.

C. Strengths of the Spanish MET Structure

1. Spanish MET System is fully integrated to university level

The new structure of the MET System in Chile should consider some functions of research and development. These functions may encompass studies concerning recognition of maritime studies not only for officers of the merchant marine but also for mechanics, skippers and ratings. Nowadays, officers get academic recognition of their studies, but co-ordination with universities can be done to facilitate higher and further studies in their faculties.

2. The Spanish Government has sponsored the establishment of a Royal Decree to enforce provisions of the STCW Convention

It would be important that the Chilean Maritime Administration encourage (lobby) and prepared the draft of a Supreme Decree to establish and define regulations concerning provisions of the STCW 78/95 Convention, taking advantage of including in such a draft a proposal for the creation of the MET Service to conduct and monitor all MET activities in the Country.

By studying and collecting information from different MET systems in European countries it has been possible to discover they possess different structures and organisations according to their needs and objectives. The above mentioned strengths of each analysed MET organisation will be drawn upon to define the new MET structure of the Chilean Maritime Administration, taking into account, of course, the national reality of Chile, its maritime interests and the feasibility of its implementation.

Unfortunately, it has not been possible to get further information about mission statements, functions, quality assurance systems, quality standards and monitoring tasks that countries are applying to comply with regulation I/8 of the revised STCW Convention. From the point of view of the author of this dissertation, many MET Administrations do not possess quality assurance systems in place yet or they do not want to reveal the method they are applying, maybe because of fear of exposing their weaknesses.

CHAPTER V

5.0 PROPOSAL FOR A RESTRUCTURING OF THE MARITIME EDUCATION AND TRAINING STRUCTURE IN CHILE

The aim of this chapter is to determine and establish the new organisational structure that the Chilean Maritime Authority needs to efficiently comply with the role that the State has allocated to it in terms of controlling the professional knowledge of the maritime personnel. The mission, vision and objectives of this new structure will be proposed, taking into account provisions of the revised STCW Convention, mainly those of the regulation I/6, training and assessment, and I/8, quality standards. Each position of the new structure will be provided with functions, which will be also described and explained, bearing in mind they aim to achieve clear objectives. Finally, suggestions to implement the new structure will be exposed at the end of this chapter, in order to facilitate decisions of the superior Maritime Authority in Chile.

It is convenient to state that this chapter is a suggestion for the National Maritime Administration and, of course, it can be amended to make its content fit within the whole organisation. The author of this dissertation is conscious that some matters such as finances, personnel qualification and administrative procedures can be treated more deeply in Chile before the decision making process takes place.

5.1 Creation of the Maritime Education and Training Service, its Mission and Vision.

As presented in section 2.4 of chapter II of this dissertation, the legal framework for MET in Chile provides the National Maritime Authority (DIRECTEMAR) with the basic mandate to regulate, monitor and control all

teaching activities concerning maritime education and training within the national jurisdiction. In this sense, the Revised STCW Convention has brought to parties (Administrations) the obligation of having proper education management systems to ensure implementation of quality standards not only for the training and assessment process, but also for the administrative ones. In other words, administrative processes of MET institutions have to demonstrate that training and assessment are conducted and controlled according to written and documented procedures, which lead toward the achievement of the aim of the courses.

Ratification of STCW 78/95 Convention implies that the Chilean Maritime Authority has a well-structured management system, which is able to support and guard all MET activities carried out by public and private institutions supplying seafarers to the Chilean maritime industry. Therefore, DIRECTEMAR has the responsibility of establishing a renovated organisation structure for MET, which groups the most important administrative process for quality assurance.

By studying and analysing regulation I/8, section A-I/8 and section B-I/8 of the revised STCW Convention, all related to quality assurance, the author of this dissertation paper has identified the following administrative processes, which deal with quality standards and have to be grouped under a single structure:

- Training
- Examination
- Approval
- Certification and
- Auditing.

All these processes are currently carried out by different components of the organisation and, at the same time, they involve a close relationship between customers (public and private institutions and registered seafarers) and the National

Maritime Authority (DIRECTEMAR and harbour masters' offices). Effectively, these processes imply a public service that a state organisation has to supply to its citizens. In other words, the MET system cannot deny its support and co-operation to maritime personnel and MET institutions, because in doing this, it would be restricting job opportunities for the Chilean seafarers and the competition opportunity and development of the maritime industry of the country.

The **training process** in Chile is carried out by public and private institutions, which are monitored by the Institutes' Control Division. In terms of public service, this process has to be considered as such, because if private institutions do not want or cannot offer IMO model courses, the state has the obligation of imparting them through the Maritime Instruction Centre (CIMAR), which is the only public institution in the country that offers training for registered seafarers. Under these arguments, CIMAR and the Institutes' Control Division should be subordinated to the new MET structure; however, the training process as such must continue in the hands of MET institutions.

The **examination process** is also a public service issue because the Maritime Authority needs to assess and evaluate professional competency of people who perform at sea and ports. On the contrary, maritime personnel need the approval of the Maritime Authority to get the certificate. Nowadays, this process is carried out by both the Institutes' Control Division and CIMAR, which prepare examinations and distribute them. Exams for merchant officers are given in CIMAR and for special vessel officers in harbour masters' offices.

According to the opinion of the author of this document, the examination process does not necessarily need to be carried out by the new organisation structure (State). Properly accredited MET institutions should take care of this process, in order the staff of the new organisation structure dedicates all its effort to control and monitor the quality standards system. Today, in carrying out this process, the Chilean

Maritime Authority loses time, budget and manpower that can be harnessed in other important functions. There is no need for the MET structure to prepare examinations if the QA system in place is reliable and demonstrates the achievement of the objectives. Nevertheless, the examination process has to be managed by the new structure only for those students and seafarers that are educated in ‘non-accredited’ MET institutions (fishing men, basic divers and stevedores). The fact that the MET structure does not manage the examination process for accredited institutes will encourage non-accredited institutions to get recognition from the Maritime Authority.

The **approval process** consists of a review of the documents and the registration of the seafarer or MET institution. It takes place after the examination process and is also a public service. Today, the approval process for maritime personnel is carried out by the Maritime Personnel Department, and for MET institutions by the Institutes’ Control Division. Both of them have established certain requirements in order that maritime personnel get recognition of their competencies and MET institutions of the courses they offer. Approval of seafarers is based on passing examinations and approval of courses requires revision of study plans, curriculum design and specific objectives of every course. The approval process enables the Maritime Authority to register seafarers and MET institutions in the corresponding register. The new structure should have only one unit or division which takes care of the approval process for personnel and/or MET institutions.

Accreditation as seafarers for maritime personnel and as recognised MET institutions for schools, colleges or universities is achieved through the **certification process**. It takes place after the approval process and consists of the granting of the certificate of professional competency for seafarers and the granting of the certificate of recognition for MET institutions. Certification of recognition for MET institutions should last five years and should be subjected to periodical evaluation (STCW). The certification process is based on the results of the approval process and auditing.

Nowadays, this process is carried out by the Maritime Personnel Department for seafarers and by the Institutes' Control Division for MET institutions. The new structure should consider only one unit of certification which groups certification of personnel and MET institutions.

The **auditing process** is part of the controlling stage of the management system. In terms of MET it consists of checking in place (MET institutions) that training and examination processes match with objectives of the courses. This process has to focus on the review of administrative tasks, documents and teaching activities, which allow the Maritime Authority to realise if the audited institution is complying with the quality standard system in place and with national and international regulations.

This process is just being implemented in Chile by the Institutes' Control Division and has to become the most important one to ensure the high quality education. The idea of the author of this dissertation is that the new structure has to define the framework of the quality assurance system, in order that the MET institutions establish their own quality standards and submit them to the Maritime Authority for its approval. Moreover, it is highly convenient that every MET institution appoints a person (**designated person**) who is responsible for the QA system within the institution.

There should be audits for the recognition of courses (certification as MET institution) and/or renewal of them, and periodical audits for monitoring purposes and retention of certificate. The former should be executed by competent auditors every five years, through a predefined method (checklist, questionnaires, interviews). For periodical audits (once a year), the new management structure should be able to instruct and train officers of the harbour masters' offices to perform this task, which would consist of the use of checklists, specially designed for this purpose. These checklists must include the review of training objectives, written documents about

training courses and programmes, examination process and experience of instructors and assessors. The auditor should inform the results of every audit to the highest level of the MET institution (rector or director) by holding a formal meeting with him/her and noting the deficiencies to be corrected. One copy of this audit should be sent to the new organisation structure, which must possess a special unit to analyse and evaluate each particular case.

All the above mentioned processes that the current management system is carrying out in a segregated way, lead the author of this document to strongly believe that the new maritime education and training structure should be re-titled as the “**Maritime Education and Training Service**” whose mission should be:

To manage, monitor and control training, examination, approval, certification and auditing processes of the maritime education in Chile, with the purpose of ensuring professional competence of the maritime personnel graduated from public and private institutions.

From the above mission statement must be understood that the examination process refers to non-accredited or recognised institutions.

In terms of what the organisation has to become and the aspiration their members have to bear in mind, it is highly convenient and necessary to establish the vision of the MET Service. Because shipping and fishing industries have become part of the globalisation, seafarers and fishermen need to be highly qualified to compete in the world maritime market. This binds the MET Service to develop an efficient and effective job, in order that implemented quality standards fully reach the objectives, and members of the organisation strive to facilitate the achievement of the mission. In this sense, the vision of the MET Service should be:

To make Chilean maritime personnel become highly qualified so as to compete in the world maritime market.

It is the persuasion of the author of this dissertation that the above vision statement should be put in a frame, and this frame should be hung on a wall of every office, corridor, lounge and dependence of the MET Service.

5.1.1 Objectives of the Maritime Education and Training Service

“Objectives are the key to the success of the organisation because they determine the nature of the activities” (Albert, 1982). In the public sector objectives are principally directed at the public interest. This is the case of the MET Service in Chile, because activities and functions of the new structure aim for the improvement of education quality of a wide sector of the population (maritime), which is considered of public interest. If the MET system fails in the achievement of its objectives, public interest could be affected due to potential damage of pollution, emanated from a ship, where a human error produced a casualty.

Having done the environmental scanning of the maritime education in Chile (chapter II and III) and knowing the strengths and weaknesses of the current organisation it is possible to define the following objectives for the new MET Service:

1. Quality and Competency

- To have in place a management and quality standard system to be sure that monitoring and control activities of MET institutions are successful and ensure a high level of quality in training and professional competency of maritime personnel.
- To provide to MET institutions clear and defined objectives, levels of knowledge, understanding and skills appropriate to the examinations and assessments of maritime personnel.

2. Register and Performance

- To maintain and keep up to date a technical register of the maritime personnel, by controlling their professional performance and knowledge level.
- To maintain a technical register of MET institutions, monitoring and controlling the performance and output of the courses they offer.

3. Customer Service

- To provide advice, guidance and information to the maritime community and general public as regards training, examination, approval, certification and auditing processes.

4. Advise and Information

- To provide timely, accurate and appropriate advice and information to other departments of the organisation, the Superior Maritime Authority and international maritime organisations.

5.2 The New Organisational Structure of the MET Service

According to the opinion of the author of this work, the new organisational structure must be geared to the activities that the organisation is going to undertake in order to comply with its mission. In this sense, related activities will be grouped logically together into organisational units, and within these units into individual positions (sections). The relationship that should exist in the new organisation structure must be established vertically and horizontally to ensure interaction and co-ordination of action plans.

Because of the military hierarchy of the staff of the National Maritime Authority in Chile and its dependency on the public sector, it is convenient to establish a centralised structure with functional departments and specialisation.

Therefore, the MET Service should be placed within the headquarters of the National Maritime Authority organisation, under the direct responsibility of the General Director of the Maritime Territory and Merchant Marine. The latter may delegate functions to the Directorate on Maritime Interests and Marine Environment. The head of the MET Service should be appointed by the Director General and he/she should be supported by an advisory committee made up of representatives of the different sectors of the maritime industry, MET institutions and authorities which are involved in the maritime field. This committee may meet at regular intervals to provide support to the decision making process and discuss about important issues relating to the MET system.

Considering that many functions carried out by the Maritime Personnel Department and the Institutes' Control Division are an integral part of the examination, approval, certification, auditing and register processes, these two organisations should merge into the MET Service. The service should possess four main units, each one representing the activity it develops; these units should be the Approval unit, the Certification unit, the Register unit and the Auditing unit. Taking into account that the examination process will not be carried out by the new structure, except for non-accredited institutions (artesian fishermen, divers and stevedores) the task of preparing examinations for these personnel may be allocated to the approval unit.

In the case of the Maritime Instruction Centre (CIMAR), which is a public MET institution, it should be technically and administratively subordinated to the MET Service. All the functions it is carrying out concerning registration, auditing and approval have to be transferred to the corresponding units of the above mentioned Service. Militarily, CIMAR cannot be subordinated to the new structure, because it possesses its own infrastructure and is budgeted directly by the General Directorate of the Maritime Territory and Merchant Marine. In resume, CIMAR

should remain in the training field only and it has to get rid of the regulatory functions in favour of the new MET Service.

Subordinated to every unit, there should be as many sections as necessary corresponding to each type of specialisation area for which the Maritime Authority issues certificates, authorisations and licenses. For instance, the certification unit should possess one section for merchant marine officers, one for special vessels officers, one for merchant vessels ratings, one for professional divers, one for shipping agents and one for MET institutions (licenses for fishermen, basic divers and stevedores are controlled in harbour masters' offices).

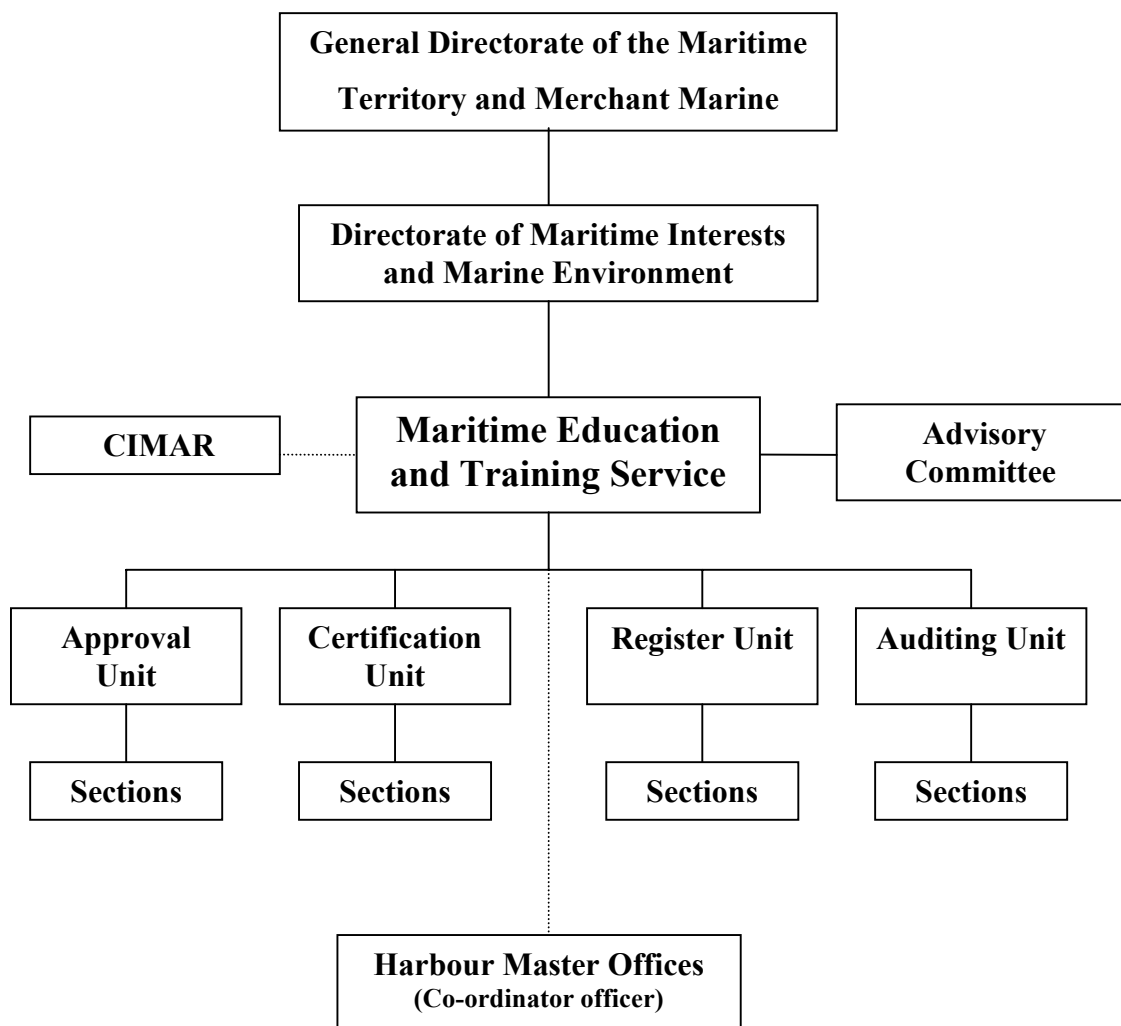
In order to decentralise auditing and monitoring processes, the Maritime Interests' Division of every harbour master's office should be provided with relevant documentation (mission, vision, objectives) and clear instructions as regard administrative procedures and requirements for MET institutions. This will facilitate the job of the staff of the new structure and the access to information for customers.

The MET Service should train and instruct one officer (**co-ordinator officer**) per harbour master's office to perform periodical audits to MET institutions laying within the respective jurisdiction. This officer should be responsible for sending to the MET Service administrative reports about non-conformities, audits results and general state of the training and examination processes. As the examination process will be placed in the hands of MET institutions, co-ordinator officers should be given clear instructions about it. A good measure would be that co-ordinator officers attend to examinations and have the opportunity of seeing the exam papers.

As regards staffing, some employees of different departments and divisions must be reallocated within the new organisation, according to functions they will perform (approval, certification, auditing). It would be convenient to contract an experienced and qualified officer of the merchant marine, who holds at least a

certificate of the management level, in order he/she advise and support the head of the new structure in the implementation stage of this new structure.

Figure Number 5.2 represents the proposed organisation structure of the new Maritime Education and Training Service.



..... : Technical and administrative dependency only.

Figure 5.2 Organisation Structure of the MET Service

5.3 The Functions of the MET Service

In this section the functions of every unit of the new structure will be described, as well as those of the Advisory Committee. Some of the functions of the Maritime Personnel Department and the Institutes' Control Division have been kept the same, being reallocated to the corresponding unit.

5.3.1 Common Functions to the Organisation

The following ones are the functions that must be developed by all members of the new organisation at their corresponding levels:

- a) To optimise to the maximum extent the administrative procedures established by the organisation, which tend to solve the requirements of the customers.
- b) To keep a close relationship with co-ordinating officers of the harbour master offices in order to facilitate their job and performance in the monitoring and control tasks.
- c) To channel relevant inquiries of customers to the highest position of the service in order to provide the best solution to the problem and/or entrust it to superior analysis.
- d) To propose to the highest position of the service, practical and effective administrative procedures to improve the quality standard system within the organisation and in the teaching process developed by MET institutions.
- e) To maintain and take care of the resources allocated by the National Maritime Authority for the fulfilment of the mission.

Common functions – key elements

- To optimise administrative procedures
- To keep a close relationship with co-ordinator officers
- To channel relevant inquiries of customers
- To propose practical procedures for QA system
- To take care of the allocated resources

5.3.2 Functions of the Chief of the MET Service

- a) To manage and control the human, material and financial resources allocated to the service, in order to optimise the activities leading to the achievement of the objectives.
- b) To chair the Advisory Committee, allowing the participation of all sectors of the national maritime industry.
- c) To co-ordinate the external audits of the organisation, taking measures to solve non-conformities found by auditors and preparing reports to the Superior Maritime Authority and international organisations.
- d) To facilitate with shipowners and respective authorities co-ordination of apprentice positions on board, to allow the achievement of the learning objectives and education at high level.
- e) According to national and international standards, to define general objectives of the courses that lead to the granting of professional certificates, and the minimal competencies and skills which must be demonstrated for any person who wishes to work at sea.
- f) To propose to the Director of Maritime Interests and Marine Environment the appointment of Qualified Auditors, in order to have a pool of them around the country and facilitate the job of qualified auditor officers.
- g) To encourage and facilitate research and development in the maritime field, by suggesting and recommending to MET institutions dissertation and project topics to be undertaken by students and professional people.

Chief functions – key elements

- To manage allocated resources
- To chair the Advisory Committee
- To report non-conformities to the Superior Maritime Authority
- To facilitate co-ordination for apprentice positions
- To define general objectives of courses
- To propose appointment of auditors
- To encourage research and development

5.3.3 Functions of the Advisory Committee

The advisory committee shall meet at intervals to be defined by its representatives and, for its work, be supported by a secretary who will register the most important decisions and interventions of its members. In principle, its members will be representatives of shipowners' associations, seafarers' associations, lecturers and students of MET institutions, the Navy and related authorities. The functions of this Committee will be as follows:

- a) To advise the chief of the MET Service in matters concerning MET.
- b) To promote and encourage high quality education and performance of students and maritime personnel who perform at sea.
- c) To propose, analyse and discuss any changes or ideas leading to improvements in the professional quality of seafarers, by presenting arguments and benefits for the maritime industry.
- d) To offer useful information to the MET service which permits a better overview of MET in Chile and facilitates the decision making process.

Advisory Committee functions – key elements

- To advise the Chief of the Service
- To promote quality education for seafarers
- To discuss relevant changes in MET matters
- To provide useful information for decision making

5.3.4 Functions of the Approval Unit

- a) To review and check requirements for approval of study plans, curriculum design and specific objectives of courses presented by MET institutions that opt to obtain recognition of the Maritime Authority.
- b) When approving a requirement, to pass documents to the certification unit for the corresponding granting of certificate; if a requirement is not approved, to send it back to institutions with corresponding notation of the non-conformities to be resolved.

- c) To review and check documentation relating to students, seafarers and persons who opt to obtain professional certificate as merchant marine officer or rating, special vessel officer, professional diver and/or shipping agent.
- d) To determine and specify for each course being offered in MET institutions, methods for demonstrating competencies and criteria for evaluating them, in order to ensure that applicants for a professional certificate comply, at least, with the provisions of the STCW 95 and STCW (F) Conventions.
- e) To prepare and distribute to harbour master offices examinations for students of non-accredited MET institutions, maintaining a bank of questions for this purpose.
- f) To approve qualification and experience of instructors and assessors of MET institutions, as well as their facilities and equipment, taking into account that they are the key in the training process.
- g) To keep records of courses, instructors and relevant facilities of every MET institution for statistical and monitoring purposes.

Approval unit functions – key elements

- To review documents for recognition of courses
- To check personal documents of applicants
- To specify methods for demonstrating competencies
- To prepare examinations for non-accredited institutions
- To approve qualification of instructors and assessors
- To keep records of courses, instructors and facilities

5.3.5 Functions of the Certification Unit

- a) According to national and international regulations, to execute procedures leading to the granting of certificates of competency for seafarers and certificates of recognition for accredited MET institutions.
- b) To feed the computerised system of the register unit with updated and relevant information concerning certification, revalidation, endorsement and duplicates for maritime personnel and MET institutions.

- c) To verify, check and balance permanently the number of certificates issued by the Maritime Authority and the number of seafarers performing in the country and overseas, in order to ensure the appropriate supply of personnel to the maritime industry.
- d) To maintain the security of documentation according to the security policy of the Navy.
- e) In co-ordination with the National Commission for Ships' Surveys, to propose the minimal safety crew for merchant marine and fishing vessels.

Certification unit functions – key elements

- To issue certificates for seafarers and MET institutions
- To feed the computerised system of the register unit
- To balance the number of certificates
- To maintain the security of documentation
- To propose minimal safety crew for ships

5.3.6 Functions of the Register Unit

The register unit already exists in the Maritime Personnel Department. It is in charge of the record keeping for seafarers and all kind of maritime personnel who perform at sea and ports. The Maritime Authority possesses a computer network around the country with a database in Valparaíso, which is fed by harbour master offices with information concerning granting of licences, duplicates and permissions for artisanal fishermen, divers and port providers. The functions of the register unit are as follow:

- a) To maintain an updated databank with information concerning officers and ratings of the merchant marine and special vessels, which have passed IMO model courses, with an indication of their expiry date.
- b) To maintain an historic register of the seafarers who have been given examinations in MET institutions, with indication of their results and the certificate obtained.

- c) To maintain and keep up to date a data bank with information concerning MET institutions which have been recognised and accredited by the Maritime Authority to offer IMO model courses, with an indication of their effective operation and type of course.
- d) To maintain and update a register of professional divers, captains of high sea leisure boats, shipping agents and stowage agents who perform in the national jurisdiction of the Maritime Authority.
- e) To facilitate the job of the other units of the Service, by providing information and statistical analysis of the behaviour of the registers in comparison with the development of the maritime interests.

Register unit functions – key elements

- To maintain a databank of seafarers' career
- To maintain an historic register of exams results
- To maintain a databank about MET institutions
- To analyse behaviour of registers

5.3.7 Functions of the Auditing Unit

This unit is one of the most important because the success of the quality standard system is mainly based on the monitoring and control process. The performance and activities of this unit have to provide reliability and validity to the whole MET system. Therefore, the job of auditors is expected to be objective and with a great degree of equity and fairness, regarding the numbers of MET institutions to be audited. Audits are to be placed on approved courses and MET institutions for the Approval unit. They may be triggered by reports of non-conformity, serious customer complaints and monitoring of irregularities (records keeping and/or orals performance). The functions of the Auditing unit are the following ones:

- a) To monitor and control training courses and teaching activities of MET institutions, leading to the granting of the professional certificates of competency

for seafarers, in order to ensure that they adjust to approved study plans and curriculum design, and achieve the defined objectives.

- b) To design and implement proper control and evaluation instruments of the training and examination processes, in order to apply them in audits and administrative processes.
- c) To provide proper instructions and guidance to co-ordinator officers of the harbour master offices, in order that they perform well in periodical audits and provide useful reports.
- d) To keep a close relationship with persons designated by MET institutions to carry out implementation of quality standard system, in order to facilitate the solution to non-conformities found in audits.
- e) To prepare the planning of audits, optimising the use of allocated resources.
- f) To plan and prepare training courses for auditors, in order to improve their professional preparation and upgrade their knowledge in the MET field.
- g) To keep a record of qualified auditors, introducing to the Chief of the Service the names of the candidates to become auditors of MET institutions.
- h) To analyse and evaluate reports and evidence of non-conformities, establishing measures and deadlines to solve them.
- i) To monitor and control the operation authorisations for national and mixed fishing vessels.
- j) To monitor and control professional diving activities in the country, specially those related to equipment surveys and knowledge of divers.

Auditing unit functions – key elements

- To monitor and control MET institutions
- To design evaluation instruments for training processes
- To provide guidance for co-ordinator officers
- To plan audits
- To keep a record of qualified auditors
- To analyse reports of non-conformities
- To monitor operation of mixed fishing vessels
- To monitor professional diving activities

5.3.8 Functions of the Co-ordinator Officers

- a) To carry out periodical audits of MET institutions placed within the corresponding jurisdiction, by preparing and reporting results to the MET Service.
- b) To keep a local record of the courses, staff, facilities and equipment of the MET institutions existing in his/her jurisdiction, reporting relevant changes to the Service.
- c) According to instructions of the Approval unit, to carry out the examination process for students of non-accredited MET institutions.

Co-ordinator officers' functions – key elements

- To carry out periodical audits of MET institutions
- To keep a local record of courses, staff and facilities
- To examine students of non-accredited institutions

5.4 Implementing the New Structure

Regarding implementation of the new MET structure, the author of this dissertation paper will have to carry out several tasks. First of all, the Director General of the Maritime Territory and Merchant Marine will be informed of the results of this work and will be given a copy of it, in order that a feasible study for its implementation can be undertaken. Secondly, translation to a Spanish version will have to be undertaken by the author, in order to provide the right interpretation of ideas and conclusions. Thirdly, it will be necessary to emphasise that most of the implementing work consists of regrouping activities which already exist, and a few of them are new activities such as the auditing process. Finally, interviews will be held with the highest positions of the Maritime Personnel Department, the Institutes' Control Division and CIMAR, in order to clarify doubts and explain to them the arguments that were taken into account in proposing the changes to the current organisational structure. In this sense, it is important to say that the above mentioned

positions already know the topic of this dissertation and they have provided very important information to the author.

There are certain works which need to be developed in Chile. The cost of implementing this new organisation structure needs to be analysed carefully, as the author of this document was unable to obtain such valuable information. There are expenses such as new contracts of administrative employees, furniture, offices and equipment in general which need to be evaluated and budgeted properly. Training for co-ordinating officers of the harbour master offices is another issue which needs planning and funding. Because of the distance, it has not been possible to get a clear idea of the administrative processes that are applied within the organisation today. By knowing these administrative processes, which are in place, it would be possible to adjust details of the proposed structure to make it fit better within the whole organisational system of the Directorate of Maritime Interests and Marine Environment.

The implementing process may be supported and enforced by law. Because of the ratification of the revised STCW Convention, the National Maritime Authority possesses solid arguments to require a legal revision of the national regulation concerning MET in Chile. Some of these regulations need important changes such as the regulation to fix safety crew on board vessels and the regulation for the creation of the Maritime Instruction Centre. Implementation of the new organisation structure will be quicker/sooner if a proper legal initiative is undertaken to demonstrate that structural changes to the current organisation will allow a better compliance with international agreements, will permit a better harnessing of the human resources and will improve the professional performance and competency of the people who perform at sea. In resume, the proposed changes will indirectly benefit the output of the Chilean maritime industry.

CHAPTER VI

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

In previous chapters the author of this dissertation has developed an investigation work aimed to identify the best organisational structure for MET in Chile. Chapter V, in particular, contains the results of this investigation and it could be considered as the conclusions of the topic. However, it is important to highlight the main conclusions of this document once again, in order to prepare proper recommendations for the national Maritime Authority.

The Chilean Maritime Administration fully complies with provisions of the STCW 78/95 Convention. In developing this dissertation, the author of it had access to the report sent by the National Maritime Administration to the Secretary General of the International Maritime Organisation, as regards compliance with article IV and regulation I/7 of such Convention, and section A-I/7 of the complementary Code. The content of the report demonstrates that the MET system in Chile adjusts to minimal requirements of IMO and there is no reason for not including the country in the so-called ‘white list.’ The latter has never been a matter of discussion in this paper.

The current management system of the MET in Chile is segregated and needs to be grouped under a single organisational structure. As established in letter a) of section 3.6 of this work, administrative procedures concerning MET functions are carried out by different sections and departments of the maritime authority. This

provokes lack of co-ordination and waste of resources, which can be resolved with a new organisational structure based on quality processes (activities) and not in areas of maritime specialisation jobs.

The examination process in the MET system produces waste of time and resources, which can be harnessed in other functions. Four times a year the current MET organisation wastes valuable time and resources (human and material) in preparing and assessing examinations for merchant and special vessel officers. Nowadays, the examination process takes at least three days for the above mentioned type of officers, which means that the staff of the Maritime Authority has to dedicate almost exclusive attention to this task during 12 days of the year. Members of the organisation lose the opportunity of covering other important tasks allocated by law, which are as important as checking the professional knowledge of people who perform at sea. The examination process needs to be modified.

Monitoring and control activities on MET institutions need to be re-evaluated and reinforced. The ratification of the STCW 78/95 Convention and the creation of the Institutes' Control Division two years ago, introduced new tasks of control and monitoring regarding quality assurance on MET institutions. Today, there are not enough procedures and activities in place aimed to ensure quality training and teaching in accredited MET institutions. It is evident that there is the need for a new structure to reinforce monitoring activities and implement proper audits.

There is no specific legislation in place to ratify and reinforce the existence of a MET organisation structure. There are some legal acts such as the navigation law and the Organic Law of the National Maritime Authority, which justify the control of the professional knowledge of the maritime personnel. However, no specific regulations exist to establish a MET organisation structure which is capable of controlling training processes of educational institutions currently authorised to deliver courses by the ministry of education (it is the case with some of them). The

Maritime Instruction Centre was created by a specific decree, but, regarding objectives of this dissertation, it could not control other MET institutions. A specific legal act for the creation of the MET Service in Chile is needed.

6.2 Recommendations

Having recognised all the above mentioned conclusions of the present document, which represent weaknesses of the current MET management system, the author strongly recommends to the National Maritime Administration of Chile to adopt the following measures to face in a better way challenges of a high quality education and provisions of the STCW 78/95 Convention:

1. To regroup, under a single structure called Maritime Education and Training Service, all activities and functions concerning MET. This organisational structure must be of the department type, based on quality processes namely approval, certification, register and auditing processes. Figure 5.2 of page 69, represents the recommended structure.
2. To transfer the responsibility of executing the examination process for merchant and special vessel officers to MET institutions. This measure will release administrative and bureaucratic tasks of the staff of the Maritime Authority and will allow a better use of the allocated resources. The personnel of the Maritime Authority shall be better harnessed in other operative tasks for which there is always a lack of personnel.
3. To implement new and better quality standards for training, approval, examination and auditing processes, and reinforce the current ones, in order to ensure the achievement of objectives of the MET Service, as presented in section 5.1.1 of this dissertation paper. This measure is essential to comply with provisions of the STCW Convention and facilitate the previous recommendation.

4. To send and promote a legal initiative through the corresponding channels to reinforce and formally establish the MET Service, with its corresponding functions and obligations. This measure will also facilitate the implementation tasks of the new structure.

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