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Education and training of maritime personnel in Bangladesh

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EDUCATION AND TRAINING OF MARITIME PERSONNEL IN BANGLADESH

by

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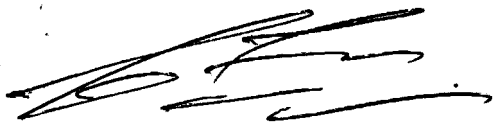
The contents of this paper reflect my own personal views and are not necessarily endorsed by the UNIVERSITY.

Signature: 

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ABSTRACT

Bangladesh has got several state run maritime training establishments for its seafaring personnel.These establishments are attracting a lot of bright youths with good education for training to man the merchant navy and fishing fleet.These establishments are faced with many problems and unable to provide a broad based education to become leaders in the industry or for post-sea career. The merchant navy is saturated with officers and ratings. Presently many officers are working in lower capacity with superior certificates with little hope for progress in career. The situation is frustrating to all.

The main purpose of this paper is to assess the present condition of maritime education and suggest a broad based education so that the seafarers can become leaders of the industry and can seek post-sea career

In order to do that it will look at the maritime industries in Bangladesh, the various national and international requirementsfor maritime training, the present system avaliable in various developed countries before reaching the conclusion and recommendations.

Among the main conclusions reached are the absence of national legislation on certification of officers,lack of development fund,lack of qualified teaching staff. The main recommendations are integration of maritime education with national system and national legislation for certification of officers of merchant navy to degree level and diploma for fishing vessel officers.

PREFACE

This project has been produced as a part of course requirement of World Maritime University. I have got a personal reason for choosing this subject. It is generally agreed that Bangladesh has sent lots of its bright boys to sea. These boys soon get disappointed to discover that seafaring is not a life long profession and they are very ill prepared to start shore life for they were given a poor education while preparing for a sea life. I fully share their opinion and the system requires a change. It is with these things in mind I choose to write this project. In writing, this project I do not intend writing any model course or syllabus but will justify the reason for higher education.

Collection of data and literature from Bangladesh had been a very problematic one. Some of the information provided here are based on my own past experience and discussions with my friends and persons associated with profession in home and abroad.

I have received a lot of help from many people in some form or other to produce this work and I express my indebtedness to them.

My sincere thanks go to Mr. Abul Kassem, Deputy General Manager, Ship repair Department, Bangladesh Shipping Corporation, my brother Anisur Rahman, Deputy Secretary, Ministry of Agriculture, Government of Bangladesh, Captain Fazlur Rahman Chowdhury, Chief Nautical Surveyor, Department of Shipping, Government of Bangladesh, who have collected valuable data and literature for me.

It is not possible to accommodate the names of every person who have helped me. To them, I would like to say it is not by mistake or by intention. It is by constraint.

Table Contents

CHAPTER I

INTRODUCTION

1.1 General

The training of maritime personnel all over the world is going through a radical change. This is due to a number of factors technical, economical, social and international conventions.

The technical progress in the shipping world has been tremendous in the last three decades and it is expected to be so in the decades to come. The progress in ship design and their machineries call for better qualified personnel at all level.

Economic causes like increased automation and diminishing of traditional liner trade demand less but better personnel.

Social factors have changed attitude towards making a career at sea. This has necessitated a broadening of training, so that after a number of years at sea the possibility would exist to find a job ashore.

International conventions like STCW convention makes it obligatory for all the parties to the convention to fulfill the requirements of the convention.

It is necessary for Bangladesh to take note of this radical change that is taking place all over the world and review the training of maritime personnel according to the new international requirement

for its very success and survival.

This paper will deal with the education, training and certification of Bangladeshi seafarers. It will review the position of maritime industries, maritime training institutes, present method of education, training and certification of seafarers and proposed draft examination and certification regulations of Bangladesh. It will examine STCW convention and various international resolution regarding maritime training. The paper will study the training and certification system of seafarers' in developed countries like USA, UK and FRG to examine the trend there.

1.2 The purpose and Task of the Paper

The purpose of this paper is to suggest a broad based education to maritime personnel that will offer equal job opportunities ashore and accepted by the national educational system.

To achieve this twin objective it will be necessary to suggest a degree level education to officers serving in seagoing vessel and diploma level education to Fishing vessel personnel.

1.3 Justification of Problem

Bangladesh has not got an examination and certification system of its own. Under the present arrangement, the officers' are sent to the UK for certification purpose. UK certification system fulfills the requirement of shipboard duties, its academic content is low and prospect of shore job with this certificate is poor.

The seafarers' and responsible people in marine industry in Bangladesh have expressed opinion for its change and improvement. It does not justify the time and money devoted to achieve this certificate. The general educational requirements for entry as cadet in merchant navy and in fishing fleet is Higher Secondary School Certificate (HSC) which is roughly equal to UK GCE 'A' level education. The cadets can easily achieve a much higher standard of education and certification requirement than the one now being offered within the present time limit.

1.4 Importance of Subject

Seafarers' are now unable to find suitable shore jobs due to non-recognition of certificate system by educational authorities in Bangladesh. Naturally, the vast practical experience gained by the seafarers' could not be utilised ashore. Bangladesh merchant navy will soon become saturated with the certificated officers. Officers will have to serve in lower rank with much higher certificate of competency with little or no scope for promotion. This will lead to great frustration and the influx of well educated and talented persons in the merchant navy will stop. These are the facts that emphasise that there are urgent need to improve the standard of education and certification in the merchant navy.

It is in the interest of everybody - seafarers' - the marine industry - the nation.

1.5 Limitation of Study

Present study will limit itself to the requirement of Education, training and certification of merchant navy and fishing vessel personnel. It will study and recommend case for its upgradation to degree level for merchant navy officers and diploma level to fishing vessel personnel.

1.6 Assumptions Used

Educational background of the seafarers are high in general to fulfill the requirement of UK certification system. The time devoted to education of the seafarers' are lengthy. Money involved are quite high compared to shore based system. There are general feeling in marine industry and among seafarers' themselves that a high standard be introduced and it be integrated with national educational system.

CHAPTER II

BANGLADESH AS A MARITIME NATION

2.1 General

Bangladesh is situated along the northern tip of Bay of Bengal. It is a deltaic region of 55,598 square miles formed by the rivers of Ganges (known as Padma in Bangladesh) Brahmaphutra (known as Jamuna in Bangladesh), Meghna and Karnaphuli.

2.1.1 Geographical Location

Bangladesh lies between $21^{\circ}31'$ and $27^{\circ}29'$ North Latitude and $88^{\circ}01'$ and $92^{\circ}52'$ East Latitude.

It is bounded by India on three sides - east, north and west. There is also a small boundary with Burma in the south-east.

In the south lies the Bay of Bengal. See Figure-1.

2.1.2 Coastline of Bangladesh

The country has got a coastline of over 1,500 kilometres that runs along the northern most tip of Bay of Bengal.

2.1.3 Islands of Bangladesh

Bangladesh has got many coastal islands, which are inhabited. Notable among the inhabited islands are Bhola, Hattia, Swandip, Kutubdia and Moheskhali.

2.1.4 Territorial Water and Economic Zone at Sea

The territorial water runs 12 miles into the sea from the shore line and economic zone runs 200 miles into the sea from the shore line.

2.1.5 Role of Rivers in the Life of People

More than 85 per cent of the area of Bangladesh is flat alluvial plain criss-crossed by the Mighty Padna, Meghna, Jammuna and their innumerable tributaries and distributaries. These rivers are an important part of the physical environment of Bangladesh and play a very significant role in the life of its people which can be summarised as follows:

A. They provide a ready and cheap means of transport

B. Ensure an abundant supply of fish

C. Serves as a drainage channel

D. Serves as a vast irrigation network.

See Figure-2.

2.1.6 Role of Sea in the Life of People

Bangladesh is the land of 100 million people. It is one of the heaviest populated countries in the world. Population per square mile is around 1,800. A large part of people live along the coastal belt and coastal islands. Naturally people are dependent on the sea for transport and its resources.

India and Burma are the principal neighbours of Bangladesh. She has got little trade with them.

Most of the trade of Bangladesh are with the countries of Western Europe, Far East, South East Asia, Arabian Gulf countries and USA. All these trades are carried out by sea.

Very little scope for developing overland routes for movement of her foreign trade to and from different destinations.

In essence Bangladesh depends on the sea for the following reasons:

A. To carry out its domestic and international trade

B. To meet the requirement of protein from the sea

C. To explore the resources of the sea bed for future requirement

D. Development of tourist centre along the coastal areas.

2.2 Seaborne Trade of Bangladesh

During the year 1979-1980 the ports of Bangladesh handled 7.374 million tons of import cargo and 1.005 million tons of export cargo. Principle export items are Jute and jute goods, tea, leather, frozen foods etc. Principle import items are machinery, general cargo, oil, food grain et. Ships in the nationalised sector could carry only 18.04% of export and 11.25% of import cargo. See table-I.

2.2.1 Required Tonnage of National Fleet

Bangladesh believes in carrying at least 40% of the requirement of the country's foreign trade in its own ships as per principles recommended by UNCTAD.

Bangladesh ports handled about 4 million tons of cargo in the year 1969-70. The country will require a merchant fleet of about 55 vessels of average size (10,000 DWT) to carry 40% of this tonnage.

In a study undertaken by Bangladesh transport survey, there were recommendations for Bangladesh shipping corporation to have a composite fleet of about 40 ships with a combined capacity of 600,000 DWT within a five year period ending in 1978 for lifting 40% of its traded cargo.

The study further noted that the seaborne trade of Bangladesh will almost double up by 1978 if favourable conditions exist. The size of fleet required to deal with this trade will be 98 ocean going vessels with a combined tonnage of about 1.5 million DWT plus 7 coastal vessles with a combined tonnage of about 20,000 DWT.

Similarly fleet requirements in 1982-83 were estimated to be still about 98 vessels with a combined capacity of 1.5 million DWT plus 8/9 coastal vessels with a combined tonnage of about 25,000 DWT.

2.3 Objective of having Merchant Fleet

At the time of liberation of Bangladesh, (year 1971) the country had no ocean going ship of her own. Realising the country's total

dependence on foreign flag ships, the Government decided to have merchant navy of its own in the year 1972.

The main objectives of having a merchant fleet of our own can be summarised as follows:

A. To reduce dependence on foreign flag vessels

B. To save foreign exchange by carrying a reasonable proportion of country's seaborne trade

C. To check the adverse movement of freight rates and thus help promote export trade and minimise the cost of imports

D. To create employment opportunities to Bangladesh nationals and fostering of highly trained technical personnel in Marine Industry

E. Development of related Maritime industries e.g. ship building and repair.

2.3.1 Merchant Fleet of Bangladesh

Bangladesh started with no sea going vessel of her own at the time of her liberation in the year 1971. Bangladesh today has got a fleet of 30 vessels of different kind including oil tanker of her own, having a combined capacity of 357,764 DWT.

The merchant fleet is broadly divided into two sectors:

A. Nationalised sector

B. Private Sector.

2.3.1.1 Nationalised Sector

Bangladesh Shipping Corporation (BSC) is the largest shipping industry of the country. Presently BSC has a fleet of 23 vessels out of which 19 are general cargo vessels, 2 tankers, 2 coasters having a combined oapacity of 297,764 DWT.

BSC has been persuing a policy of reducing dependence on foreign vessels and thereby developing a maritime fleet which should be capable of serving about 30% of the country's seaborne trade by 1985. To achieve this objective, the corporation will require a mixed fleet of 40 vessels. But due to paucity of funds the growth target has to be limited to 31 vessels after pruning second five year plan. Total DWT capacity of these 31 vessels (28 dry cargo vessels and 3 oil tankers) would be around 543,000 tons which is expected to carry at least 24% of the projected foreign trade.

At the end of third five year plan i.e. by the year 1990 BSC intends to have a fleet of 38 vessels.

2.3.1.2 Private Sector

There are few private shipping companies. Private shipping industry was allowed by the Government during the late seventies. At the moment there are 7 vessels in the private sector with a combined tonnage of 60.000 DWT. Although latecomers in the field, the industry in this sector is growing.

2.4 Fishing Industry

2.4.1 General

Bangladesh is slowly but steadily becoming more involved in the exploitation of sea resources especially the fishing aspect of it. Bangladesh is already a fish exporting country especially in frozen food like prawns and shrimps to countries like USA, Western Europe, Japan and Arabian Gulf.

2.4.2 Fish Stock of Bay of Bengal

The fish stock of Bay of Bengal is very much encouraging as revealed by the survey conducted by Food and Agricultural Organisation (FAO), United Nations Development Project (UNDP) and the Bangladesh Fisheries Development Corporation (BFDC). It is estimated that over 375,000 tons of fish can easily be harvested annually from the Bay of Bengal without hampering the normal stock.

2.4.3 Importance of Fishing Industry

The importance of fishing industry in Bangladesh can be summarised as follows:

A. To diversify export potential and earn much needed foreign exchange

B. To supplement the protein deficiency due to rapid increase in population

C. Fish is the cheapest source of animal protein as

compared to other animal protein such as meat, chicken etc.

D. To boost up food production due to gradual decrease in agricultural land due to natural and man made causes.

2.4.4 Fishing Fleet

Fishing fleet of the country is a very small one. The number of registered vessels are about 80. Most of the vessels are small ones. Mechanised vessel and echo sounding devices have been introduced to accelerate development in the fisheries sector. Most of the fishing vessels are under private sector and in joint collaboration with foreign countries.

2.5. Ports and Harbour Industry

2.5.1 Chittagong Port

It is the major sea port of Bangladesh. It is situated on the bank of the river Karnaphuli 9 miles up stream from the Bay of Bengal and connected with the hinterland by rail, road, river, air and sea. See Figure 3.

The port accounts for over 90% of import and 45% of export of Bangladesh. The transit trade to Nepal started flowing through this port since 1979. During 1977-78 port received 1,812 ships and handled 5.2 million tons of cargo.

The port can handle 24 ocean going vessels of 605 ft length and 25.5 ft draught at a time for loading and unloading. The

vessel of 38 ft draught can call in outer anchorage. Deeper draught vessels are handled in outer anchorage.

The port can handle oil tankers, container vessels, Roll on Roll off (RORO) vessels, Lash Barge ships, Dangerous cargo ships.

The port is a self sufficient organisation and has got its own facilities for setting navigational aids to channel, barges and dredgers for river training, salvage unit, search and rescue team, heavy lift cranes, repair yard, tugs, survey vessel and weather forecasting system.

The port is carrying out design work for construction of special terminal for handling container ship and working on a project of a deeper draught terminal in Patenga. The port hopes to handle more than 7.5 million tons of cargo by 1985.

2.5.2 Chalna Port

Chalna is the second sea port of the country. It is situated at the confluence of the rivers Passur and Mongla at a distance of 40 miles up stream of Bay of Bengal, connected with the hinterland by road, river and sea. See Figure -3.

During 1977-78, the port received 1,003 vessels and handled 1.8 million tons of cargo. 55% of export and 10% import cargo Bangladesh is handled through this. The port also handles cargo for Nepal.

It is basically an anchorage port. Twenty sea going vessels of

23 ft draft can remain on anchor and handle cargo.

Under a major development programme modern shore facilities are being built up, some of which are at its final stage of completion. Three of the jetties are in operation now.

The port is a self contained organisation and maintains its own facilities for setting navigational aids in Channel, Barge and dredgers for river training, tugs, salvage unit, rescue operation team, port safety unit.

2.5.3 Inland Ports

Bangladesh has a total river route of 5,240 miles. All of it is navigable during monsoon while 3,245 miles are navigable during dry season.

The inland waterways play a vital role in the country's transportation of goods and passengers. A recent survey has shown that about 65% of cargo and 38% of passenger traffic are carried by the inland waterways.

The major inland river ports are Dhaka, Narayanganj, Barisal, Khulna Chandpur, Patuakhali, Chittagong, Chalna Mongla. See Figure-3.

These ports have 68 cargo jetties in addition to landing facilities. The number of passengers handled at these ports during 1977-78 was 17 million tons as against 13.6 million tons in 1975-76. An average of 1.6 tons of cargo is handled at these ports every year.

The country has 862 passenger vessels with a carrying capacity of 110,000 persons, of them, 811 are in private sector. There are over 1,500 cargo vessels with a carrying capacity of over 400,000 tons. About a thousand of these vessels belong to private sector.

2.6 Ship Building and Repair Industry

2.6.1 General

The main ship building and repair facilities in the country are situated in the principle sea and river port areas and they are as follows:

i) Chittagong Dry Dock and Heavy Engineering Works

ii) Khulna Shipyard and Engineering Works

iii) Naranganj Dry Dock and Engineering Works

iv) Barisal Dry Dock and Engineering Works.

2.6.2 Chittagong Dry Dock

It is situated in the port of Chittagong. It is the only dry dock and major ship repair center for the sea going vessel of 16,000 DWT.

2.6.3 Khulna Shipyard

Located at Khulna about 30 miles up stream from the port of Chalna. The yard has got facilities for building and dry docking

of all kinds of coastal and river crafts found in the waters of Bangladesh. Unfortunately due to low draught in the river the seagoing vessels cannot be docked here.

2.6.4 Naranganj Dockyard

Located in the inland port of Naranganj near Dhaka. The yard specialises in building and dry docking of inland river craft.

2.6.5 Barisal Dockyard

The floating dock at Barisal carries out dry docking and repair work of inland river craft.

2.6.7 Miscellaneous Yards and Workshop

Apart from the 4 main yards described above the country has got a large number of marine workshop, slipways and yards that are carrying dry docking and repair works of sea going and inland river vessel, but not sufficient in number to carry out building and maintenance work of shipping industry.

2.7 Inland Water Transport Authority (IWTA)

The Authority controls development aspect of inland shipping and is responsible for developing navigational facilities like dredging, hydrographic studies. Terminal facilities, improving designs of vessels mechanization of country boats, freight study and training of technical personnel are also major functions of this authority.

2.8 Inland Water Tranport Corporation (IWTC)

This corporation is the largest ship owning corporation in the inland shipping sector. It owns and operates all the principal types of vessel in the inland shipping e.g. Coastal passenger ships, river passenger ferries, coastal tanker, coastal cargo ship, tugs, self propelled barges and quite a few number of dry docking and ship repair facilities for its own fleet. The corporation own over 500 inland river vessels of different kinds. It is a corporation under public sector.

CHAPTER III

INTERNATIONAL REQUIREMENT AND RECOMMENDATIONS

3. International Convention on standard of training, certification and watchkeeping for Seafarers 1978.

3.1 General

3.1.1 Objectives of the Convention

The main objectives of the convention are to promote

A. Safety of Life and Property at Sea

B. Protection of Marine Environment

In order to realise these twin objectives, the convention wants to ensure that seafarers on board sea going ships are

A. Duly Qualified

B. Physically and Medically fit.

To achieve these goals, the convention prescribes certain basic minimum requirements as to seafarers

A. Education and Training

B. Watch Keeping Duties

C. Physical and Medical fitness.

3.1.2 Obligation of Parties to the Convention

The convention makes it obligatory on all parties to it to give full and complete effect to realise the objective of the convention by promulgating all laws, decrees, orders and regulations.

3.1.3 Obligation of Non-Party States

The non-party states to convention has got no de jure obligation to the convention but have got defacto obligation to it if they want to maintain their merchant fleet.

The convention allows no favourable treatment to non-party states ship in matter of control while visiting the ports of party states.

Indirectly, the convention forces the non-party states to adopt the convention and enjoy the benefit of it in their own interest.

3.1.4 Background of the Convention

The convention is a logical development of IMO resolution A248(VII) taken in 1971 to convene a conference on education and training of seafarers.

In July 1978, the conference adopted the convention on the standard of training, certification and watch keeping.

3.1.5 Date of Enforcement of Convention

It was agreed at the 1978 conference, which adopted the convention, that it would come into force when 25 countries, who collectively represented 50% of the world's shipping had acceded to it. This

position was reached in April 1983 with 25 countries and some 60% of world tonnage. Thus the convention came into force from April 1984.

3.1.6 Application of the Convention

The convention applies to sea going ships with the exception of

a) Warship, Naval auxilaries, Government owned ships on non commercial duties

b) Fishing vessels

c) Pleasure yachts

d) Wooden ships.

3.1.7 Contents of the Convention

3.1.7.1 The Final Act of Conference

3.1.7.2 Attachment 1

Is the convention itself and is mandatory on all parties. It is divided into two parts

a) Articles of the convention

b) Regulation of the convention.

Articles deal with legal matters in terms of Obligation, Definitions, Applications, Communications of Information, Certification, dispensation, certificate of service, control and

host of other things.

There are 17 articles dealing with the legal matters.

Regulations specify the international minimum requirement for training, certification, watchkeeping, and medical fitness. They are mandatory.

3.1.7.3 Attachment 2

This attachment deals with a number of resolutions. These are not legal part of convention and are not mandatory. There are 23 resolutions to this attachment. They are a kind of interpretation of the regulation. There are some resolutions which do not deal with the subject of regulations.

Regulations do not form part of mandatory requirement for they were either lacking general backing as mandatory requirement or it was agreed inappropriate to do so.

All parties to the convention were urged to fulfill it as soon as possible but all parties are free to do whatever they want to do.

3.1.8 The Articles

The articles are self-explanatory but some of them require careful reading.

Some of the important Articles are I, II, III, VI, VII, VIII, X, XI.

Article I, establishes two things: that the Annex to the convention is an integral part of the convention and that every party to the

convention is obliged to make national laws giving full effect to the convention. The convention has got no legal force in any country until the Government of that country has produced such national laws.

Article II, deals with definition of terms used which are easily comprehensible. Worth noting here is the definition of "sea-going ship" where the terms "closely adjacent to" and "sheltered water" are not defined. So it leaves much to the discretion of a Party to define them the way it considers fit.

Every party will have to define them in terms of geographical position bounded by lines.

Article III, deals with application of convention to class of ship and the exemption of the vessels from convention requirement e.g. Naval vessels, Fishing vessel, pleasure yachts, wooden ships etc.

Article VI, specifies that every officer of a sea going ship must hold an appropriate certificate of competency. The holders of such certificates must meet certain requirements specified in the annex to the convention.

If the text of the certificate is not in English, then it must include an English Translation.

Article VII, deals with "certificate of service". There are two types of such certificates prevailing in some countries. One type is that which is issued to The Naval personnel of a country

so that they can legally serve as a certificated officer in that country's merchant navy. The other type is that which may be issued to the merchant navy personnel of a country who have provided a long and satisfactory service but suddenly becomes unqualified for seagoing service when the country enforces the certificate requirement of the convention. This article has been written primarily to protect the seagoing interest of old and aging seafarers who fall mainly in the second catagory of certificate of service.

Article VIII, of the convention specifies that dispensations, permitting a specified seafarer to serve in a specified ship for a specified period in a capacity for which he does not hold the appropriate certificate, can only be issued in "circumstances of exceptional necessity".

In the case of masters and Chief Engineers these dispensations may only be issued "in circumstances of force majeure". The aim is to make dispensations rarely used and for the shortest possible period.

Article X, allows duly authorised port state officers to detain ships in certain conditions specified in detail in the annex to the convention. However, the article X states that all possible efforts shall be made to avoid ship being unduly delayed or detained and that if a ship is so detained it should be entitled to compensation for any loss or damage resulting therefrom.

Article XI, promotes technical cooperation among the parties in order to provide assistance to those parties to the convention who needed technical support to meet the requirements of the convention.

Article XII, establishes a "tacit acceptance" procedure. Under this procedure, amendments to the convention can be adopted by IMO Maritime Safety Committee and then they automatically enter into force some two and a half years later unless they are rejected by one-third of the parties or by parties whose combined fleets represent 50% world tonnage.

3.1.9 The Regulations

The mandatory regulations and their appendices are contained in six chapters.

I General Provisions

II Deck Department

III Engine Department

IV Radio Department

V Special Requirement for Tankers

VI Proficiency in survival craft.

3.1.10 Chapter I, General Provisions

This Chapter contains four regulations of general application.

They are self-explanatory and deal with the following:

Reg. I/1 Definitions

Reg. I/2 Content of certificates and Form of Endorsement

Reg. I/3 Principles Governing near Coastal Voyages

Reg. I/4 Control Procedures.

3.1.11 Chapter II, Master-Deck Department

This chapter contains eight regulations covering watch keeping and certification requirements for masters, deck officers and ratings who form part of navigation watches. Such requirements include specifications of the education and practical training of seafarers in the deck department of various classes of ships which are classed in ranges of gross registered tons, and also include specifications for continued proficiency and updating of knowledge of masters and deck officers. See Appendix I.

3.1.11.1 List of Certificates and Qualifications under Chapter II

The Chapter II, establishes following grades of certificate and qualifications;

1) Master of Ships of 1600 GT or more (unrestricted)

2) Chief Mate of Ships of 1600 GT or more (unrestricted)

3) Master of Ships of 200-1600 GT (unrestricted)

4) Chief Mate of Ships of 200-1600 GT (unrestricted)

5) Officer in Charge of Navigational Watch on Ships of 200 GT or more (unrestricted)

6) Mandatory Minimum Requirement for a Rating forming part of a Navigational Watch.

Table-II illustrates how the regulations apply to deck officers.

3.1.11.2 Level of Basic Training

The chapter II of the convention suggests the following basic training or fundamental knowledge requirement for the deck personnel.

I) A set of requirement for Masters and Chief Mates

II) A set of requirements for Deck officers in charge of a watch

III) A set of requirements for ratings forming part of a navigational watch.

For cases I) and II) there are provisions for lesser levels of knowledge for service on ships of limited size in unrestricted operations; and for ships of unlimited size in near coastal voyages.

3.1.11.3 Minimum Knowledge Requirement

This basic minimum theoretical and practical knowledge requirement for Master, Chief mates and watch keeping officers are covered under

the following headings:

1) Navigation and position determination
2) Watch keeping
3) Radar equipment
4) Compasses - magnetic and gyro
5) Meterorology and Oceanography
6) Ship manoeuvering and handling
7) Ship stability, construction and damage control
8) Ship power plants
9) Cargo handling and stowage
10) Fire prevention and fire fighting appliances
11) Emergency procedures
12) Medical care
13) Maritime Law
14) Personnel management and training responsibilities
15) Communications
16) Life-saving
17) Search and rescue
18) Methods for demonstration of proficiency.

The level of knowledge and inclusion of subjects for examination purposes varies according to the level of certification. Much of the level of knowledge for certification depend upon interpretation of the individual administration.

3.1.12 Chapter III, Engine Department

The chapter contains six regulations which are very similar to the

regulations of Chapter II. They apply to the engineer officers and ratings who form part of an engineering watch on various classes of ships which are classed in ranges of propulsion power. The regulations deal with watch keeping and certification requirements for Engine room personnel. Such requirements include specification of the education, practical training, continued proficiency and updating of knowledge. See Appendix -II.

3.1.12.1 List of Certificates and Qualifications under Chapter III

This chapter establishes the following categories of certificates and qualifications.

1. Chief Engineer Officer of ships powered by main propulsion machinery of 3,000 KW or more (unrestricted)

2. Second Engineer officer of ships powered by main propulsion machinery of 3,000 KW or more (unrestricted)

3. Engineer officer in charge of a watch on ships powered by main propulsion machinery of 750 KW or more

4. Chief Engineer officer of ships powered by main propulsion machinery between 750 KW and 3,000 KW (unrestricted)

5. Second Engineer officer of ships powered by main propulsion machinery between 750 KW and 3,000 KW (unrestricted)

6. Mandatory Minimum Requirements for a rating forming part

of an Egnine Room Watch

7. Minimum Requirements for a Rating nominated as the Assistant to the Engineer Officer in charge of the watch.

In case 2, an authorization to serve as Chief Engineer officers of ships powered by main propulsion machinery of less than 3,000 KW (unrestricted) may be endorsed on the Second Engineer officer certificate but no separate course for them is necessary.

Table-III.1 illustrates how the regulations apply to Engineer Officers.

3.1.12.2 Level of Basic Training

The chapter III, suggests following level of basic training and fundamental knowledge requirement for the Engine room personnel.

1. A set of requirements for Chief and Second Engineers
2. A set of requirements for Engineer officers in charge of a watch
3. A set of requirements for ratings forming part of an engine-room watch; and for ratings assisting the engineer in charge of the watch.

For cases 1 and 2 there are provisions for lesser levels of knowledge for ships of limited propulsion power engaged in near coastal voyages.

3.1.12.3 Education and Training Requirements

The main concern of the convention is with safety and pollution prevention so the requirements can be broadly stated as:

1. Ship and machinery operational practices and procedures

2. Special practices and procedures to minimize pollution

3. Watchkeeping practices and procedures

4. Emergency procedures.

The convention identifies knowledge as being theoretical or practical. The convention provisions and requirements can therefore be broadly grouped as follows:

5. The practices and procedures to be used by seafarers in ship and in machinery operation

6. The theoretical and practical knowledge that the seafarer must possess in order to apply and use these practices and procedures.

The practices and procedures can be sub-divided into operational and emergency, viz.,:

Operational

Watch keeping (general)

Watch keeping (in charge)

Machinery operation

Machinery maintenance

Control system

Pollution control

Emergency

Fire fighting

First-Aid

Personal survival

Damage control.

The knowledge necessary to apply the practices and procedures can be sub-divided into three groups:

A. Theoretical

Thermodynamics and heat transmission;

Mechanics and hydromechanics;

Operational principles of ships' power installations (diesel, steam and gas turbines) and refrigeration;

Physical and chemical properties of fuels and lubricants;

Technology of materials;

Chemistry and physics of fire and extinguishing agents;

Marine electrotechnology, electronics and electrical equipments;

Fundamentals of automation, instrumentation and control system;

B. Practical

Operation and Maintenance of:

.1 Marine diesel engines;

.2 Marine steam propulsion;

.3 Marine gas turbines;

Operation and maintenance of auxiliary machinery, including pumping and piping systems, auxiliary boiler plant and steering gear systems;

Operation, testing and maintenance of electrical and control systems;

Operation and maintenance of cargo handling equipment and deck machinery;

Detection of machinery malfunction, location of faults and action to prevent damage;

Organisation of safe maintenance and repair procedures;

Methods of, and aids for fire prevention, detection and extinction;

Methods and aids to prevent pollution of the environment by ships;

Regulations to be observed to prevent pollution of the marine

environment;

Effects of marine pollution on the environment;

First-aid related to injuries which might be expected in machinery spaces and use of first-aid equipments;

Functions and use of life-saving appliances;

Methods of damage controls; and

Safe working practices.

C. Specialized

International law enbodied in international agreements and conventions as they affect the specific obligations and responsibilities of the engine department;

National maritime legislation as it affects the engine department;

Personnel management; and

Shipboard organization and training for engine room personnel.

3.1.13 Chapter IV, Radio Department

This chapter contains three regulations, which deal with requirement of certification of radio officers, the continued proficiency and updating of knowledge and requirements for certification of radio telephone operators. See Apendix-III.

3.1.13.1 List of Certificates and Qualifications

The chapter IV, establishes following categories of certificates and qualifications.

1. Radio communication operator's General certificate for the Maritime Mobile service including the additional knowledge required by the 1978 STCW convention

2. First class Radio Telegraph Operator's certificate including the additional knowledge required by the STCW convention

3. Second class Radio Telegraph Operator's certificate including the additional knowledge required by the 1978 STCW convention

4. Radio telephone operator's General certificate including the additional knowledge required by the 1978 STCW convention

5. Restricted Radio telephone operator's certificate including the additional knowledge required by the 1978 STCW convention

6. Radio telegraph operator's special certificate including the additional knowledge recommended by STCW conference resolution 7.

3.1.14 Chapter V, Special Requirement for Tankers

The chapter contains three regulations dealing with oil, chemical and liquified gas tankers respectively. It applies to officers and ratings. Requirements are more stringent for masters and senior officers. Attention is paid to safety as well as pollution prevention.

3.1.15 Chapter VI, Proficiency in Survival Craft

The chapter contains only one regulation. This regulation applies to all seafarers, irrespective of discipline, and whilst not requiring every seafarer to hold a certificate of proficiency in survival craft, specifies the conditions under which such a certificate may be awarded.

3.1.16 Main Feature of The Convention

The convention has set the basic minimum requirement for training and certification of the seafarers. The convention has left a lot of descretion to individual administration to interpret the regulations. The syallabus for the education of the seafarers have been kept deliberately vague in order to take into account the technological developments in shipping world and for each nation to follow up the syallabus as much as possible for them to do so, taking into account the ultimate goal of IMO.

3.1.17 IMO Model Courses

IMO has drawn up certain model training courses for both deck and

engineer officers based on STCW convention requirement for benefit of developing countries. There are 3 and 4 years training courses varying from ordinary certification requirements to degree level courses for certain countries. See Table-IV and Apendix-IV.

CHAPTER IV

MARITIME TRAINING ESTABLISHMENTS IN BANGLADESH

4.1 General

A number of training establishments are in existence in the country to provide education and training to the seafarers. All the centres are run by the Government and they are as follows:

a) Marine Academy; Chittagong.

b) Fisheries Academy; Chittagong.

c) Seamens Training School, Chittagong.

d) Marine Diesel Training Center, Naranganj.

e) Deck Training Center, Naranganj.

f) Training School, Telegraph and Telephone Board, Dhaka.

g) Bangladesh University of Engineering and Technology (BUET), Dhaka.

4.2 Marine Academy, Chittagong.

4.2.1 General

Marine Academy is situated in the port City of Chittagong. It was established in the year 1962. It is the only establishment of its kind in the country that offers pre-sea and post sea

training facilities to Deck and Engineer cadets and officers of the Merchant Navy.

4.2.2 Aims and Objectives of the Academy

The aims and objective of the training in the Academy can be summarised as follows:

a) Leadership Training

To explore and recognise the potential seafaring talents, suitably train and make them adequately equipped with officer like quality so as to groom them up as future leaders in all fields, especially in the field of shipping and guide the men under their command with ability and confidence.

b) Disciplinary Training

To give such co-curricular, extra-curricular and disciplinary training which will enable a cadet to take his place as an officer of Bangladesh mercantile fleet and face with courage, endurance and fortitude the rigours of a life and career at sea.

c) Officer Training

To develop in cadets, through constant guidance and supervision, a sense of purpose, loyalty, devotion to duty, uprightness, adaptability under all circumstances, pride of profession and spirit of service which will make

them valuable and distinguished members of their profession and proud citizens of Bangladesh.

d) Academic and Professional Training

To achieve a minimum academic and professional standard which will enable the cadets to appear in the 2nd Mate/ 2nd class Engineers' Examination of the British Department of Transport or its equivalent after completion of prescribed sea training on board Bangladesh mercantile fleet.

4.2.3 Field of Study and Courses Available

A. Pre Sea Course

i)	Nautical Cadet Training	- 2 years duration
ii)	Engineering Cadet Training Phase I	- 2 years duration

B. Post Sea Course

i)	Engineering Cadet (Phase III)	- 1 year duration
ii)	Engineer Officer Certificate Class 2, Part A & B	- 18 weeks each
iii)	Deck Officer Class	- 26 weeks each
iv)	Deck Officer Class	- 12 weeks each
v)	Deck Officer Class III	- 18 weeks each
vi)	Efficient Deck Hand	- 2 weeks each
vii)	Course on Lifeboat	- 1 week each
viii)	Fire Fighting	

ix)	Restricted Radio Telephony	- 1 week each
x)	Electro Navigation Aid Operation Course	- 2 weeks each
xi)	Electro Navigation System	- 5 weeks each
xii)	Ship Captains Medical	- 2 weeks each
xiii)	First Aid at Sea	- 2 weeks each

C. Crew Training

i)	Basic First Aid for Crew	- 1 week duration
ii)	Basic Fire Fighting	- 4 days duration
iii)	Basic Course on Lifeboat for Crews	- 1 week duration

4.2.4 Duration of Training

The duration of pre sea training is spread over a period of two years which has been split up into four terms, each term stretching for about 18 to 20 weeks. There is a vacation for a period of three months at the end of each academic year from about June to September. The cadets are sometimes required to carry out practical workshop or sea training during this vacation.

4.2.5 Extra-Curricular Activites

Parade, physical training, games and sports, hobbies, literary and cultural activities form a very important part of the training programme and are carried out regularly and form part of daily routine.

4.2.6 Discipline

The whole training programme and the activities of the Academy are designed to achieve high standard of discipline.

4.2.7 Recruitment Procedure and Annual Intake of Cadets

Selection of the cadets is made through four stages, namely,

a) Written Examinations

b) Interviews

c) Medical Examinations

d) Special Eye Tests.

Applications are generally invited from the intending candidates through the leading newspapers.

Annual intake of cadets for the year 1985 is 15 cadets each for Nautical and Engineering departments.

4.2.8 Minimum Education

Candidates must have passed the Higher Secondary Certificate (HSC) Examination in Science Group or its equivalent with physics and mathematics.

4.2.9 Age Limit

Candidate must not be more than 20 years of age on 31st August of the year of entry.

4.2.10 Physical Fitness

A candidate must be good mentally and in bodily health and free from any physical defect likely to interfere with the training or career at sea.

4.2.11 Written Examinations

Written examinations consist of the following papers:

a) Physics

b) Mathematics

c) English

d) General knowledge.

Each paper carry 100 marks, 40% is the qualifying marks in each paper. The syllabi for written examination is equivalent to H.S.C.

4.2.12 Interview and Viva-voce

Successful candidates in written examinations are required to appear for interview. The interview carry 200 marks and 50% is the qualifying marks.

Following points are assessed during interview:

a) Personality

b) Speech and Expression

c) Intelligence

d) Knowledge

e) Extra-curricular Activities.

4.2.13 Medical Examination

Candidates qualifying in interview are medically examined by a Board as per certain standard.

4.2.14 Final Selection/Eye Test

Pending final eye test, a list of the successful candidates are prepared in order of merit from amongst the candidates declared fit by the medical board.

4.2.15 Indemnity Bond

Every cadet selected for admission into the Academy is required to furnish at the time of admission an indemnity Bond stating:

a) that he will not leave the Academy before completion of his training without prior permission from the commandant.

b) that on completion of his training, her will serve the Bangladesh merchant navy or any other allied organisations as may be required of him by the Government for a minimum of eight years.

4.2.16 Hostel Accommodation and Messing

Academy is a residential type institute. It is compulsory for all cadets to live in the hostel. Hostel accommodation and messing are provided free of charge.

4.2.17 Fees and Other Expenses

a) Tuition Fees

Tuition fees are charged according to annual income of parents. The tuition fee per month varies from US $1.16 to US $4.16

b) Cost of Uniform

All cadets are required to put on approved uniform of merchant navy type. Cost of uniform is to the tune of US $333

c) Stationery Charges

Stationery charges are US $1.38 per month.

4.2.18 Organisation Structure of the Academy

The academy is headed by commandant. Next to him is Duputy commandant. Then there are six heads of departments. Namely,

a) Chief of Nautical Studies

b) Chief Engineer

c) Chief Education Officer

d) Administrative Officer

e) Development Officer

f) Adjutant.

The heads of nautical, engineering and education departments are supported by instructors and teaching staff of various grades. See table -V.

4.2.19 Practical Training Facilities

Academy is furnished with engineering workshop, electronics and seamanship laboratories, fire fighting and survival craft training facilities.

4.2.20 Administration of the Academy

The administration of the Academy is the responisbility of the Department of Shipping under the Ministry of Ports Shipping and IWTA (Inland Water Transport Authority). All policy matters about the academy is the responsibility of the Government. It's policy matters are outside the jurisdiction of Ministry of Education.

4.2.21 Financing of the Academy

The financing of the project is the responsibility of the Government. The Government bears all expenses in connection with the development of the project and all recurring costs to

maintain the project. The annual non-development (recurring cost) for the fiscal year 1984-85 is Taka 4,964,000. Equivalent to US $165,466. See table-VI.

4.3 Marine Fisheries Academy, Chittagong

4.3.1 General

The Marine Fisheries Academy was established in 1973 at Chittagong Fish Harbour with the assistance of the Government of USSR to develop the sea fishing industry of Bangladesh. The project was initially set up under the Ministry Fishing, Government of Bangladesh.

4.3.2 Administration of the Project

The administration, policy decision and financing of the project is the responsibility of the Ministry of Port, Shipping and IWTA, under its department of Shipping, for the last three years. Ministry of Education has got nothing to do with its educational and training activities.

4.3.3 Aims and Objectives

The aims and objectives of the academy can be briefly summarised as follows:

a) Professional Training

To provide professional training to Bangladeshi personnel in deep sea fishing technology

b) Officer Training

To develop officer like quality (OLQ) to be a successful officer in the Fishing fleet

c) Disciplinary Training

To face the difficult life at sea

d) Physical Training

To keep the body and mind fit and healthy.

4.3.4 Courses Available

The following courses are offered

a) Nautical Branch (Navigation)

b) Marine Engineering

c) Gear Technology (Trawl operation)

d) Fish Processing.

4.3.5 Duration of Course

Duration of the course varies from 1 to 2½ years depending on the course.

4.3.6 Selection Procedure

The selection to the academy is made through the following steps

a) Written Examination

b) Interviews

c) Medical Examination.

4.3.7 Written Examination

This examination is conducted on Higher Secondary Certificate (Science) standard. Written examinations are taken in 5 subjects.

a) Physics

b) Mathematics

c) Chemistry

d) Biology

e) English and General Knowledge.

Each subject carry 100 marks, 40% is the qualifying marks.

4.3.8 Interviews

Successful candidates in the written examination are to appear before an interivew for assessment of their following qualities:

a) Personality

b) Power of Expression

c) Intelligence

d) General Knowledge

e) Extra-curricular Activities

4.3.9 Medical Examination

Successful candidates in the interview are medically examined by a board as per prescribed standard.

4.3.10 Final Selection

Final selection of the candidates are made in order of merit from amongst the finally qualified candidates in all tests.

4.3.11 Annual Intake

About 12 cadets are taken for each course.

4.3.12 Educational Qualification

Shall have Higher Secondary Certificate (Science) pass certificate.

4.3.13 Age Limit

Candidate must not be below 16 years and not more than 21 years of age.

4.3.14 Hostel Accommodation

It is a residential type academy. Living in the hostel is compulsory. Messing charge is borne by the cadets.

4.3.15 Discipline

Discipline is a very important part of the academy. The cadets are required to remain in prescribed uniform in classes, parade and in physical training. Parade, physical training, games and

sports are essential part of normal training programme.

4.3.16 Indemnity Bond

Every cadet selected for admission into the academy is required to furnish at the time of admission an indemnity Bond stating

a) that on completion of his training, he shall serve in fishing trawlers of any organisation as may be required of him by the Government for a period of eight years.

b) that he will not leave the Academy before completion of his training without prior permission from the commandant.

4.3.17 Stipends

Stipends are awarded at the rate of Taka 180 only per month. Equivalent US $6. On completion of training course, the cadets shall have to find job opportunities elsewhere. No guarantee for employment is provided by the Government.

4.3.18 Certificates Awarded

The certificates awarded in different courses are purely of a professional nature and are not recognised by education Board. The academic standard achieved is nearly equal to a diploma in equivalent technology.

4.4 Seamen Training Center

4.4.1 General

Seamen Training Center was established in late sixties. It was established by the Government under the Ministry of Labour for training of seamen for different branches of ships requirements.

4.4.2 Administration and Finance

The administration and financing are done by the department of labour. The department formulates policy in all respect. Close coordination is maintained with the department of shipping in this respect.

4.4.3 Aims and Objectives

The principle objective is to train, educate and orient adequate numbers of suitable men towards a sea-going career and to improve efficiency and safety on board ship.

4.4.4 Courses Offered

The training courses offered are as follows:

a) Deck Rating Training

b) Engine Rating Training

c) Saloon Rating Training.

4.4.5 Curricula of Training

The curricula of training is related to the job performed on board by the ratings as a helping hand to the officers.

4.4.6 Duration of Course

The duration of the course in the training center is of 3 months.

4.4.7 Intake of the Center

Training is given to seamen in grouping system. In each group there are 60 trainees, 20 for each department.

4.4.8 Selection Procedure

The candidates are selected through:

a) Written Examination

b) Interview

c) Medical Examination.

4.4.9 Age

Candidates for training must be between 16 and 22 years. In case of saloon crew the age must be between 17 and 23 years.

4.4.10 Tuition Fee

Tuition fee is free.

4.4.11 Present Condition and Future Plan

No further training of new entries are done now due to shortage of seagoing jobs. Only refresher courses are sometimes going on for the older hands.

Government is studying plans to upgrage training standards to fully comply with STCW requirements.

4.5 Marine Diesel Training Center, Naranganj.

4.5.1 General

It was set up by the Government to train and educate the personnel of engine department for services in the vessels of Inland Registry of Shipping of Government of Bangladesh. The center is run by the technical Education Board under the Ministry of Education.

4.5.2 Course Offered

The course offered is Diploma in Marine Engineering. Duration of the course is 3 years.

4.5.3 Educational Qualification

Minimum education required is secondary school certificate pass grade.

4.5.4 Diploma Awarded

Diploma awarded is nationally recognised one on completion of the full course.

4.6 Deck Training Center

The deck training center at Naranganj is run by the Department of Shipping under the Ministry of Ports, Shipping and IWTA. The object of the center is to train and educate personnel for the

deck department of Ships under the Inland Registry of Shipping of Government of Bangladesh. The candidate passing out from this center ultimately becomes master of home trade vessels.

4.7 Radio Officer Training School

The school is set up by Telegraph and Telephone Board, under the Ministry of Telecommunication for its own use. The facilities available there are also available for training of Radio Officers in the Merchant Navy.

The certificate offered there is called "Radio communication operators (General) certificate".

Duration of the course is 1 year.

Academic qualification is required for seating in the examination is H.S.C. (Science).

4.8 Bangladesh University of Engineering and Technology (BUET)

The university at Dhaka offers fullfledged 4 years degree course in Naval Architecture and Marine Engineering. The basic education required is H.S.C. (Science) of 1st division grade. The university is financed by the Ministry of Education. A complete autonomous body. Degrees offered here are purely academic ones.

4.9 Problem of Maritime Training Establishments

4.9.1 Marine Academy, Chittagong

The biggest problems are the lack of qualified teaching staff and lack of laboratory facilities.

The reasons for lack of teaching staff are the following:

.1 Poor salary for the qualified personnel

.2 Key positions in teaching and administration are occupied by seafaring personnel and academic people do not find any interest to join for lack of progress in their career.

.3 Remote location of Academy causes transportation problem to city. School for children, shopping centre, hospital and recreation centres are not available there.

.4 Academy is counted as a kind of vocational training centre. Academic people are not interested due to social status.

The reason for lack of laboratory facilities are due to:

.1 Lack of funds for the project

.2 Lack of coordination among the Government departments for implementation of the project.

4.9.2 Marine Fisheries Academy

The main problems are:

.1 Lack of teaching staff due to poor salary;

.2 Lack of vessel for sea training due to shortage of funds;

.3 Cadets are not interested in the service in small fishing vessels for their social and educational background is good and their expectations are high.

4.9.3 Seamen Training School

The main problems are:

.1 Lack of teaching staff. Seafaring instructors are not interested for poor salary

.2 Lack of facilities for training according to the requirement of STCW convention.

CHAPTER V

PRESENT SYSTEM OF EDUCATION AND TRAINING OF SEAFARERS IN BANGLADESH

5.1 The Principles and Objectives of Seafarers Education and Training in Bangladesh

Bangladesh has not got any set national policy on the principles and objectives for seafarers education and training but in practice it is found that she follows the basic principles and guidelines provided by the concerned International Organisations on the training and education of seafarers.

The principles and objectives generally followed can be summarised as follows:

A. The training given to the seafarers is of a standard equal to that provided for personnel in other industries

B. That the authorities responsible for seafarers education and training programme, in carrying out these responsibilities, take into account such matters as the need:

i) to improve the efficiency of shipping industry and to secure general recognition of the economic and social significance of the merchant marine to the nation;

ii) to improve the standard of safety on board merchant vessels;

iii) to encourage the entry into seafaring profession of a sufficient number of suitable persons;

iv) to provide training and re-training facilities commensurate with the current and projected manpower needs of the shipping industry for all the various categories and grades of seafarers;

v) to put into practice the technical progress which has been developed in connection with the operation, navigation and safety of ships;

vi) to ensure, where possible, that pre-sea training is provided to all persons wishing to go to sea;

vii) to ensure, where possible, that training is made available leading to the promotion of ratings and upgrading of officers;

viii) to ensure that the training provided both for officers and for ratings is comprehensive and in line with recent technological developments on board;

ix) to institute permanent maritime training establishments or programmes for officers and ratings, and to create a body of highly qualified instructors for these establishments. Where training programmes are not yet established or

qualified instructors are not available, arrangements are made to obtain the services of non-nationals in setting up programme and providing instructors;

x) to provide suitable practical training for the various categories and grades of officers and ratings as per the international conventions and recommendations;

xi) to assist the entry into employment of all trainees after completion of their courses;

xii) to assist trainees in reaching their highest productive and earning capacity.

5.2 Education and Training of Deck Officers

Training for deck officer in the merchant navy starts as a cadet. There are two methods available for entry to deck cadetship.

A. Pre Sea Cadet Training Scheme

B. Direct Cadet Entry Scheme

5.2.1 Pre-Sea Cadet Training Scheme

This scheme is followed in Marine Academy,Chittagong. Here the cadets undergo two years of intensive training. It includes academic and professional subjects. The professional subjects covered are those covered in the examination of Class 3 (Deck

Officer) in the United Kingdom's (UK) department of transport (D O Tp). On successful completion of training the cadets join the merchant ships as cadet for the required sea service of 39 months to appear for their class 3, deck certificate of competency. Cadets get a remission of 9 months sea service for the two years of pre-sea training.

Majority of deck officers in the merchant navy come through this scheme. BSC is the main beneficiary of this scheme.

5.2.2 Direct Cadet Entry Scheme

Direct entry of cadets to merchant ships are possible. The minimum educational qualification is H.S.C. pass grade. Here the cadets have to undergo an approved sea training for a period of 4 years relevant to the duties of a watch keeping officer before eligible to sit for class 3 certificate competency in the Deck Department. This is not a very popular method. Only the private shipping companies utilise this method.

5.2.3 Post-Sea Training of Deck Officer

Marine Academy, Chittagong, runs a number of mandatory and non-mandatory short courses for endorsement and preparation of officers in their various grades of certificate of competency examination. See

5.2.4 Examination System and Certificate Structure

Bangladesh has not got an examination system of its own. The

cadets and the officers appear for their certificate of competency of different grades in the U.K. However, under a special arrangement the U.K. Government is holding examinations of its own in Bangladesh from time to time.

The certificate structure followed in Bangladesh is exactly the same as in the U.K. for unlimited trade. Ref. Table-VII.

5.3 Education and Training of Engineer Officers

There are two methods available for entry into merchant navy as Engineer Officer. The methods are following:

A. Engineer Cadet Training Scheme

B. Engineering Craftsman Training Scheme.

5.3.1 Engineer Cadet Training Scheme

This scheme is followed in the Marine Academy, Chittagong. In fact it is a copy of U.K. Alternative Cadet Training Scheme. The format of the scheme is the same as U.K. Technical Education Councils (TEC) Ordinary National Diploma (OND) in marine engineering.

The duration of the scheme is 4 years and divided into 3 Phases.

Phase I

Phase II

Phase III.

5.3.1.1 Phase I

Phase I is of two years duration and it is a full time course in Academy. On week days cadets follow lectures in applied science and engineering subjects and work in the workshop, by a planned programme and under guidance. Cadets work with tools and machinery ranging from hammer to milling machine.

The objectives are for induction and acquisition of basic skills and development of special skills. During three months annual summer vacation cadets spend two months in recognised marine workshop where repair of seagoing ships are carried out. This is a way of introduction to ship and ships power plant repair. At the end of this phase cadets take an examination.

5.3.1.2 Phase II

Immediately after completion of Phase I training, cadets are employed on board seagoing ships for one year of operational and maintenance experience in ship board situation. During this period, they go through guided sea training programme.

5.3.1.3 Phase III

Cadets return from the sea to academy for one more year of full time course.

The first half of this phase is spent on heavy workshop training. This is designed and conducted to consolidate training and experience gained in Phases I and II.

During the second half of the phase they mostly attend lectures on advanced applied science subjects and work in laboratory. At the end they sit for an examination conducted by the academy and proceed to sea as Junior Engineer. The prospective engineer then obtains 18 - 21 months approved sea service to sit for U.K. Department of Transports Class 2 Engineers' Certificate.

At present candidates do not get any exemption from any examination conducted by U.K. Department of Transport due to the fact that Marine Academy is unable to fulfill the course of TEC's OND Course due to shortage of teaching staff.

5.3.2 Engineering Craftsman Training Scheme

Minimum educational qualification for this Scheme is H.S.C. pass grade. Each trainee must go through 4 years of training in engineering craft practice in some recognised marine workshop as an apprentice.

After serving 4 years as an apprentice ashore, the trainee can join the ship as Junior Engineer.

After completing 18 - 21 months of approved sea service the prospective engineer may appear for his Class 2 Engineers Certificate of Competency.

This method is not a popular one and only used by private ship owners.

5.3.3 Post-Sea Training of Engineer Officers

Marine Academy runs a number of mandatory and non-mandatory short courses for the engineers for their endorsement and preparation of various grades of certificate of competency examination.

5.3.4 Examination System and Certificate Structure

Bangladesh has not got an examination system of its own. All the candidates for various grades of certificate appear at U.K. Department of Transports examinations.

The certificate structure followed is that of U.K. type. See Table-IX.

5.4 Education and Training of Radio Officers

The education and training of Radio Officer is done through Training School of Telegraph and Telephone Board, of the Government of Bangladesh. The school is located in Dhaka.

The certificate of competency is called "Radio Communication Operator's (General) Certificate".

The duration of the course is one year. Academic qualification required is H.S.C. (Science). The training course is normally sponsored by the shipping companies.

5.4.2 Examinations

Examination is divided into two parts.

i) Part I : Fundamentals of Electricity and Radio Communication.

ii) Part II : Marine Radio Communication.

Candidates must qualify for Part I of the examination before Part II is taken.

5.5 Education and Training of Ratings

5.5.1 General

The training of ratings are carried out in Seamen's Training School, Chittagong. The training of rating is divided into 3 groups.

i) Deck

ii) Engine

iii) Saloon.

The duration of training is three months. Physical training is given in general but educational training is given to particular group by the respective instructors. Training consists of lecture and visit to ships. All deck, engine and saloon seamen have to get training on

i) Physical training

ii) Ships organisation and command

iii) Types and parts of ship

iv) Nautical terms and ship's customs

v) Seamen's articles of agreement conduct and discipline

vi) Health and hygiene

vii) Fire fighting and first aid

viii) Types of life boats, parts and equipment

ix) Life saving appliances.

5.5.2 Training of Deck Ratings

The deck seamen are trained as such that it enables them to do better cargo handling, deck management, driving the ship, rope treatment etc.

The topics included in deck seamen's training are:

i) Types of ships and nautical terms

ii) Ships equipments

iii) Types of ropes and wires and their uses

iv) Deck stores and other gears

v) Boatwork

vi) Cleaning gear

vii) Painting

viii) Navigational duties

ix) Sailoring jobs

x) Flag signalling.

5.5.3 Training of Engine Ratings

The engine ratings get themselves trained in various types of engine, piping system, distinguish different kinds of pumps and systems.

The topics included in the training are as such as:

i) Elementary knowledge Engine room safety practice

ii) Cleaning, painting and greasing

iii) Elementary knowledge of steam engines boilers and diesel engines.

5.5.4 Refresher Course

Refresher course is given to upgrade the knowledge of seamen in service.

The topics included are:

i) Physical training

ii) Brushing up the knowledge of respective department

iii) Full course of life boat training leading to the granting of life boat certificate.

5.5.5 Standard Achieved

The training provided does not fully cover the requirements of STCW Convention due to lack of facilities. In general the trainings provided are not thorough going and lacks practical basis.

5.5.6 Present Condition of School

The school is at present temporarily closed due to overflow of

passed out seamen and many of them are not getting employed.

5.6 Training of Fishing Vessel Personnel

5.6.1 General

The only place where organised training is given to Fishing vessel personnel in Bangladesh is the Marine Fisheries Academy, Chittagong, where courses are run on the following discipline.

5.6.2 Navigation Department

1. Basic qualification required for the course is H.S.C. (Sc) with Physics and Mathematics.
2. The duration of the course is 30 months
3. The theoretical content of the course is 15 months
4. The sea practice required is 15 months.

The main subjects taught are the following:

1. Seamanship
2. Navigation and Pilotage
3. Nautical Astronomy
4. Maritime Law & Rules of the Road

Auxiliary Subjects

5. Technical Means of Navigation
6. Ships Regulation

7. Fundamentals of the Ship Theory
8. Fundamentals of Radio Engineering & Electronics
9. Fundamentals of Safety Precaution and Fire Fighting
10. Ships Power Plant
11. Fundamentals of Commercial Fishing
12. Fish Processing
13. Oceanography & Meteorology
14. Electrical Engineering & Electrical Equipment of the Ship
15. Ichtheology
16. Fundamentals of Technical Drawing
17. Fundamentals of Technical Mechanics
18. Fundamentals of Economics of Fishing Fleet and Commercial correspondence.

5.6.3 Marine Engineering Department

1. Basic qualification required is H.S.C. (Sc) with Mathematics and Physics
2. Duration of course 30 months
3. Theoretical lecture and work shop 15 months
4. Sea practice 15 months.

The main subjects taught are the following:

1) Internal Combustion Engine
2) Ship's Refrigeration Plant
3) Ship's Auxiliaries and Fishing Gears

4) Technology of Repair

Auxiliary Subject

5. Safety Precaution and Fire Fighting
6. Ship's Regulation
7. Fundamentals of Electrical Engineering
8. Technology of Model
9. Workshop Practice
10. Ship's Auxiliary Boiler
11. Ship Construction
12. Fundamentals of Thermodynamics and Heat Transfer
13. Ships Electrical Equipment
14. Technical Drawing
15. Technical Mechanics
16. Fundamentals of Electro Navigation System.

5.6.4 Examination System

1. Examination Authority

The examination are conducted by a Board so constituted

2. Qualifying Attendance

The cadets are required to attend at least 75% of the classes of every subject to sit for each semester examination as well as final examination.

3. Examination System

a) The examination of each course are conducted in semester system. The semester examination are held every six months of the Academic session.

b) The minimum pass marks for every subject would be 40% individually and 45% in aggregate.

5.6.5 Grading of Results

The marks of all the semester examination and final examinations are tabulated for grading the results as follows:

Excellent	marks	75% and above
Good	marks	60% and above
Satisfactory	marks	45% and above.

5.6.7 Certificate of Competency Examination

The cadets trained in Nautical and Marine Engineering Courses may sit for the examination of Certificate of Competency for Fishing Vessel as and when conducted by the Department of Shipping after acquiring requisite sea service. The certificate holders of this Academy may be allowed some remission of requisite sea service as approved by the authority.

CHAPTER VI

A STUDY OF EDUCATION, TRAINING METHODS EXISTING IN CERTAIN FOREIGN COUNTRIES

6.1 Education Training and Certification of Seafarers In United States of America (USA)

6.1.1 General

In the United States, the training of seafarers is a product of the efforts of the Federal and State Governments, the shipping industry and private schools. Prospective officers are trained either at merchant marine academies or by means of special short term schemes carried out at schools operated by seafarers' organisations or private interests.

The most important requirements for obtaining an original or higher grade officer's certificate of competency are possession of a stipulated amount of sea service and the passing of both physical and written professional examinations administered by the US Coast Guard..

Except in the case of radio officers, candidates for certificates are not required to have completed training courses intended to prepare them for these examinations.

Special courses dealing with aids to navigation and safety at sea, and for ships engineers are conducted for experienced officers by the Government and the shipping industry.

The training of ratings is accomplished by seafarers' organisations and public or private bodies. They offer a variety of short-term courses for the various grades and categories of ratings which are intended to improve their skills and knowledge so that they may qualify for greater responsibilities on board ship. Pre-sea training is not required for new ratings signing on board for the first time. Tuition-free courses in lifeboat handling, fire-fighting and duties of engine room ratings on new types of vessels are also included in the training available to ratings.

6.1.2 Education and Training of Navigating and Engineer Officers

There are two schemes available for education and training of officers. The schemes are described below:

.1 'Haws Pipe' Scheme

In the United States it is possible for anybody to start a seafaring career as a rating and eventually by means of self-study or completion of short-term preparatory courses offered by seafarers' organisations or private schools to qualify as a certificated navigating or engineer officer.

.2 Front End Loaded

The great majority of persons who receive certificates of competency have completed three or four years of comprehensive and specialised training directed towards

making them ships' officers. This type of training is carried out by one maritime academy operated by the Federal Government, the US Merchant Marine Academy, Kings Point, New York. Currently there are six states participating in the maritime programme: California, Maine, Massachusetts, Michigan, New York, and Texas. All of these Academies except Michigan have a four year undergraduate programme leading to a Bachelor of Science degree and a Coast Guard licence as third mate or third engineer.

6.1.3 Training Scheme

The federal institution has a training scheme composed of one year of basic studies at the Academy followed by a year at sea on merchant ships operating on regular commercial trade, and a final two years of advanced studies back at the Academy. The state institutions have either three or four year courses which include practical training and summer cruises on board School ships maintained by them.

6.1.4 Eligibility

Applicants for admission to the academies must be between the ages of 17 and 21 and graduates of a Secondary School and must pass a competitive entrance examination.

6.1.5 Choice of Course

At the time of starting their training students have a choice between a course of study for future navigating officers or for prospective marine engineers.

6.1.6 Radio Officers

To qualify as a ship's radio operator it is necessary to complete a course of instruction given by a specialised radio school and to have certificates issued by both Federal Communications Commission and the US Coast Guard. The radio operator must then obtain six months of sea time as an assistant radio operator before he can sail on a freighter as the only operator.

The curriculum of each school includes courses in the fundamentals of electronics and radio receivers, radio transmitters and direction finders and radars.

6.1.7 Examination and Certification of Seafarers

This activity is carried out by the Licensing and Documentation Branches of the Marine Inspection Offices of the U.S. Coast Guard. These same officials are responsible for evaluating both the curriculum and the operation of all the training schools for seafarers.

6.1.8 Certificates of Competency

The following are the principal licences issued to officers of mechanically propelled Great Lakes and Ocean-going merchant vessels:

.1 Officers' Licences

Master, Ocean steam or motor vessels

Master, Coastwise steam or motor vessels

Master, Great Lakes steam or motor vessels

Chief Mate, Ocean steam or motor vessels

Chief Mate, Coastwise steam or motor vessels

Second Mate, Ocean steam or motor vessels

Second Mate, Coastwise steam or motor vessels

Third Mate, Ocean steam or motor vessels

Third Mate, Coastwise steam or motor vessels

Chief Engineer, Steam or motor vessels

First Assistant Engineer, Steam or motor vessels

Second Assistant Engineer, Steam or motor vessels

Third Assistant Engineer, Steam or motor vessels.

.2 Radio Officers Licence.

6.1.9 Sea Service Requirement

For a licence as master, chief mate or second mate, the candidate must have one year's sea service on ocean going vessels of 1,000 gross tons or over in the officer grade immediately preceding the licence for which applying while holding that subordinate licence. Prospective chief engineers, first assistant engineers and second assistant engineer must also have at least one year's sea service in the immediate subordinate engineer officer's grade while holding the lower grade licence. This sea service must have been on ocean-going merchant vessels having propulsion engines of at least 4,000 h.p. Three years sea service as deck or engine-room rating on vessels of at least 1,000 gross tons or 4,000 h.p., or completion of an approved officers' training scheme comprised of the practical

experience necessary for a licence as third mate or third assistant engineer.

6.1.10 Age Requirement

The minimum age for all licences is 21 years, with the exception of those of third mate and third assistant engineer for which the minimum age is 19 years.

6.2 Education, Training and Certification of Seafarers' in United Kingdom (UK)

6.2.1 General

Selection, recruitment and training of seafarers' is centrally organized by the British Shipping Federation. A national register of Seamen was set up which facilitates forecasting and making of more detailed studies of manning structures. This register includes rank, function, certificates and training courses of each seafarers'.

In 1975 a committee was formed by the British Government to study the organisation and structure of the shipping industry and to make recommendations.

With regard to education of seafarers the following recommendations were made:

.1 The new training schemes should be flexible in order to meet changing requirements;

.2 An integrated system of education, training and

qualifications of the seafarer to be more related to existing national educational patterns, thus preparing them better for work at sea as well as ashore;

.3 The improved level of education for shore employment should also apply to the education of seafarers;

.4 The future educational system should be considered in terms of cost-efficiency relating to society as a whole and not only to the Shipping industry.

UK Department of Transport is planning to hand over its examination and certification system to education authorities in order to cut down the cost of examination by the year 1987. However, it will continue to examine the marine personnels on safety aspects of shipping.

6.2.2 Education, Training and Certification of Deck Officers

6.2.3 Grades of Certificate of Competency

.1 Certificate of competency Class 1 (Master Mariner)

.2 Certificate of competency Class 2 (1st Mate)

.3 Certificate of competency Class 3 (2nd Mate)

.4 Certificate of competency Class 4 (3rd Mate)

.5 Certificate of competency Class 5.

The certificates 2 to 4 qualify the holder to command ships of certain size within certain limits as specified in the respective regulations, provided he holds an endorsement to that effect.

See Table-VII.

The masters and 'second-in-commands' in ships carrying dangerous cargoes must have received special training and fulfill special service demands.

6.2.4 Education and Training Schemes

Cadets or trainee deck officers may qualify for a certificate of competency at either class 3, 4 or 5 upon satisfactory completion of minimum training period approved by the Department of Transport. The department's approved courses consists of sandwich type courses where students spend alternate periods under training at sea, where emphasis is upon practical training and at a nautical college where the emphasis is upon theoretical studies.

6.2.5 Some of the Approved Courses of Training

.1 Business and Technical Education Councils (BTEC) Diploma in Nautical Science

.2 G.C.E. 'A' Level Entry

.3 Class 5 Certificate Scheme for Ratings.

6.2.6 BTEC Diploma In Nautical Science

.1 Entry Qualification

Applicants should hold or expect to obtain GCE 'O' levels (or equivalent) in mathematics and physics, together with two other academic subjects all at a minimum level of Grade 'C' GCE (or equivalents).

.2 Format of Training

The standard scheme provides for five phases:

Phase I - Induction Period

It is of one month duration covering safety matters at a residential nautical college

Phase II - Initial Sea Period

Two voyages at sea gaining practical experience of the running of ship, and totalling eight to ten months service

Phase III - First College Period

It consists of 9 months in a nautical college leading to the BTEC diploma examination in Nautical Science

Phase IV - Intermediate Sea Period

This phase consists of about 12 months of sea service during which the cadets will be involved in bridge and cargo watch-keeping and will attend a Bridge watch keeping preparatory course as well as undertaking further guided studies

Phase V - Final College Phase

The final college phase of approximately 15 weeks, leads to the Department of Transport Class 4 examination and

award of Higher Diploma (stage 1). A final sea phase of not more than four months, completes the sea time required to convert the Class 4 certificate to Class 3, during which full bridge and cargo watchkeeping duties are taken.

After completion of 18 months sea service as Class 3 certificated officer and 6 months college course the candidates can qualify for Class 2 certificate of competency and award of Higher Diploma (stage 2). Ref. Table-X.

6.2.7 GCE 'A' Level Entry

.1 General - This scheme is for those students whose academic qualifications are high and wish to obtain Class 3 certificate in the shortest possible time.

.2 Entry Requirements - Applicant should hold or expect to obtain at least five academic GCE 'O' level passes which must include mathematics, a physical science subject and an English subject. Maths and physics based subjects must have been studied at advanced level.

.3 The pattern of training is similar to that in the Diploma Entry with reduction in the length of college phases taking into account the remission of sea service offered by the Department of Transport for entrants with advanced level qualifications.

6.2.8 Class 5 Certificate Scheme for Ratings

This scheme provides a course of training for ratings which leads directly to the Class 5 certificate. Training is based on a rating entry through the National Sea Training College at Gravesend.

6.2.9 Degree-Scheme (Approval on an adoc basis)

This scheme offers the possibility of obtaining a University or polytechnic degree. Candidate may follow a three years full time course to obtain a degree. A minimum sea time of one year as watch keeping officer is required. Minimum education GCE 'A' level or equivalent.

6.2.10 Graduate Scheme

This scheme has been designed for older candidates with a university or polytechnic degree other than nautical science. It is meant to be a quicker way to obtain mates certificates.

6.2.11 Education, Training and Certification of Engineer Officer

6.2.12 Grades of Certificate of Competency

.1 Certificate of competency Class 1

.2 Certificate of competency Class 2

.3 Certificate of competency Class 3

.4 Certificate of competency Class 4

Certificates of competency, Class 2, Class 3 and Class 4 may carry a service endorsement. A service endorsement entitles the engineer officer to act as Chief Engineer officer.

Certificates of competency, Class 1, Class 2 and Class 4, are issued in motor, steam or combined (motor and steam) categories.

Certificates of competency, Class 3, are issued in the motor category only. See Table-IX.

The Department of Transport also conducts voluntary examinations for non-statutory Extra First Class Certificate.

Certificated officers in ships carrying dangerous cargoes must have received special training and fulfill special service demands.

6.2.13 Education and Training Scheme

.1 Higher National Certificate Entry

Applicants should hold or expect to obtain a minimum of four GCE 'O' Levels (or equivalent) to Grade 'C' or above, including mathematics, physics (or a suitable physical science subject), English or a subject involving the use of written English and one other subject.

.2 Higher National Diploma Entry

Applicants for HND entry are required to have GCE 'O' level qualifications similar to those required for HNC entry. In addition, they should have studied mathematics

and physics at Advanced level and passed in at least one subject at this level.

Training Programmes

Phase 1

Phase 1 for both entries is a 49 week college course involving both academic and practical work.

Phase 2

It is the first period of sea service, generally of about three and a half months duration, during which the cadets follow a programme of guided technical studies.

Phase 3

The phase consists of a 49 week college based course including academic and practical work.

Phase 4

The final practical phase is spent at sea and of six and a half months duration to bring total sea service as cadet to not less than nine months.

At the end of the training scheme cadets sit an oral examination for the Department of Transport examination for a Class 4 certificate of competency. Successful completion of the cadet training scheme gives exemption

from various parts of Department of Transport Class 1 and Class 2 certificate of competency.

Qualifications on Completion of Training

BTEC HNC in Marine Engineering)
) Depending on entry
or BTEC HND in Marine Engineering) qualifications

Ref. Table-XI.

.3 Engineering Craftsman

One starts as an apprentice engineer after training for a trade or other technical training for at least four years. Dependent on previous educational and age six months remission may be granted.

.4 Engineer Graduate

Candidate possessing at least a HND or a university degree must complete a minimum eighteen months workshop service.

.5 Engine Room Rating

An engine room rating may after selection and with sufficient experience follow a two years practical and theoretical course.

After completion he may sit for Part 'A' and after further sea service as an engineer officer he may sit for Part 'B' which puts him in possession of the Class 2 certificate of competency.

6.2.14 Examination

The examination consists of Part 'A' and 'B'. Part A consists of basic subjects and Part B of the more practical ones. Exemption from the examination for engineering knowledge is not possible. The minimum sea service required for taking Part B of the examination is 21 months or when exemption is granted, 18 months.

This period applies to Class 2 as well as Class 1 Certificate.

Except Extra First Class engineers' certificate, the academic content of the examination are low. The certificate is basically an industrial certificate and examines the candidate for the safety aspect of shipping.

6.2.15 Education, Training and Certification of Radio Officer

6.2.16 Radio/Electronic Cadets

.1 Entry Requirements - Applicants should hold or expect to obtain GCE 'O' levels (or equivalent) in mathematics and physics at Grade 'A' or 'B' together with two other academic subjects at a minimum of Grade 'C'. One of these subjects should be English. Passes in mechanics, physics with chemistry, engineering science or general science will be accepted in lieu of physics.

.2 Format of Training

Phase 1 - This phase consists of a two year course in

Electronics and Communication Engineering at the end of which successful cadets will obtain the Home Office Maritime Radio Communications General Certificate and a BTEC National Diploma. During college summer holidays practical workshop training is arranged within the college workshops or at a suitable industrial location.

Phase 2 - It consists of approximately four and a half months at sea during which the cadets work with the ships Radio/Electronic officer and follow a programme of guided technical studies and planned practical experience. Sea time gained during this phase will count towards the six months qualifying time required to validate the MRGC attained at the end of Phase 1.

Phase 3 - In this phase cadets return to college for approximately six months to prepare for BTEC Higher Certificate examinations. Concurrently they obtain the Department of Transport Radar maintenance certificate and prepare for the Electronic Navigational Equipment Maintenance certificate. At the end of this phase the cadetship is completed.

As part of the continuous programme of training and development it is the company's practice to appoint Radio officers to the BTEC Higher Diploma course as soon as possible after completion of 12 months qualifying service as a Radio officer.

6.3 Education, Training and Certification of Seafarers in West Germany

6.3.1 General

The training is of a broader base and is linked up with the general educational system of the country. The state bears the financial responsibility of the education. In 1970 the so-called Fachoberschule (FOS) and the Fachhochschule (FHS) were introduced, which provide trade and professional training up to university level.

The FOS gives two years of basic training, which may serve as a stepping stone for further study at the FHS.

Courses for deck and engineer officers have been started at both the FOS and FHS. This has broadened the professional training which, now, apart from a professional qualification, also yields a degree after the completion of FHS. Ref.Table-XII

6.3.2 Grades of Certificate Deck Officer

.1 AG = Master Foreign Going;

.2 AGW = Nautical Officer Foreign Going;

.3 AM = Master Intermediate Waters;

.4 AMW = Nautical Officer Intermediate Waters;

.5 AK = Master Home Trade;

.6 AKW = Nautical Officer Home Trade;

.7 AKu = Skipper Coast Wise Trade.

6.3.3 General Educational Requirements for Various Grades of Deck Officers

AG and AGW - School-leaving diploma after 12 years at school;

AM and AMW - School-leaving diploma after 10 years at school;

AK, AKW and AKu - Primary school leaving certificate after 8 years at school.

6.3.4 Training Programme of Deck Officer

AG - Master foreign going must have served 24 months as nautical officer in foreign going ships following the date of issue of certificate as Nautical officer foreign going.

AGW - Nautical officer foreign going must have:

1) a two-weeks safety of life at sea course at a training school.

2) (a) for candidates with 12 years school leaving certificate:

6 months service as cadet in an approved training ship;

12 months service as apprentice in foreign going ships;

6 semesters (3 years) attending a full course at a nautical university or high school (AGW).

(b) for candidates who hold a 10-years' school leaving certificate;

12 months service as cadet in an approved ship;

12 months attending one school-year at a shore training school in general educational level;

12 months service as apprentice in foreign going vessel;

6 semesters attending a full course at a nautical university or high school (AGW).

AM - Master intermediate waters must have served 24 months as officer while in possession of certificate as Nautical officer intermediate water (AMW).

AMW - Nautical officer intermediate waters:

3 months shore training;

21 months service under training at sea in the deck department winding up with an able-bodied seaman's examination;

12 months service as an apprentice in a cargo vessel;

4 semesters attending full course at a navigation school.

AK - Master Home Trade must have served 24 months as an officer while in possession of a certificate as nautical officer home trade (AKW).

AKW - Nautical officer home trade:

3 months shore training;

33 months service under training at sea, winding up as AB Seaman;

12 months service as AB Seaman;

3 semesters attending full course at a navigation school (AKW).

6.3.5 Grades of Certificate (Engineer Officer)

There are five different certificates:

.1	Marine Engineer	- CI and CIW;
.2	Marine Technician Engineer	- CT and CTW;
.3	Marine Mechanic	- CMa and CMaW;
.4	Coast wise Mechanic	- CKu;
.5	Marine Motor Driver	- C Mot.

The first three certificates are divided into two different certificates of competency: One for the Chief engineer and one for the watch keeping engineer. The watch keeping certificates are handed to the engineer officers - after they have just finished their education and passed their examinations with a positive result - during a period of 2 years sea service, so that they can gain more practical experience in marine engineering before they can serve as Chief Engineer.

All these three certificates are valid for both steam and motor ship.

6.3.6 General Educational Requirement for Grades of Engineer Officers

CI and CIW - School leaving diploma after 12 years of school;

CT and CTW - School leaving diploma after 10 years of school;

CMa and CMaW - Primary school leaving certificate after 9 years at school;

CKu - Primary school leaving certificate after 9 years at school;

CMoT - Primary school leaving certificate after 9 years at school.

6.3.7 Training Programme of Engineer Officers

CI - Marine Engineer

24 months service as watch keeping engineer since holding CIW certificate aboard ships in which the Chief Engineer is holding CI certificate;

CIW - Marine Engineer (watch keeping)

1) Workshop training as metal machine and engine fitter
and
a two-week safety of life at sea course in a marine school.

2) Seagoing experience of 11 months as engine room

apprentice in a foreign going ship, in which chief engineer is holding a CI certificate.

3) Education at Technical College - a minimum of 3 years studies as marine engineer.

CT - Marine Technician Engineer

1) Seagoing experience - 24 months as watch keeping officer in ships since holding the CTW certificate on board ships in which Chief engineer is holding a CT certificate.

CTW - Marine Technician Engineer (Watch keeping)

1) Workshop training as metal, machine and engine fitter. 3 years.

2) Seagoing Experience of 24 months as engine room apprentice; 12 months on motor ship and 6 months on steam ships.

3) Education - minimum 2 years at a Marine technical school.

CMa - Marine Technican

1) Sea Service - 24 months as watch keeping officer in ships requiring CMaW certificates in such ship where Chief engineer is holding CMa certificate.

CMaW - Marine Technician (Watch keeping)

1) Workshop Training in metal, machine and engine fitting. (3½ years);

2) Seagoing experience - 24 months as engine room apprentice; 12 months motor ship and 6 months in steam ships;

3) Education - Minimum 1 year studies at Marine School.

CKu - Coastwise Mechanic (motor or steam)

1) Workshop Training - 12 months minimum in engine building industry;

2) Seagoing experience - 24 months minimum as wiper or greaser etc. thereof 12 months on board motor or steam vessel. Workshop and sea training must be 48 months;

3) Theoretical training - no school course required. Oral examination only.

CHAPTER VII

MERCHANT SHIPPING LEGISLATION ON EDUCATION, TRAINING, EXAMINATION AND CERTIFICATION (AS PROPOSED)

7.1 General

Bangladesh has not got any merchant shipping act on examination and certification of marine personnel. The country has drafted the examination rules which are in their final shape. The rules for the examinations will be ready by the middle of 1986. The rules will in essence meet the requirements of STCW Convention and are very similar to UK rules.

7.2 Examination and Certification of Deck Officers

7.2.1 Grades of Certificate of Compentency and Functions Qualified to Discharge on a F.G. Vessel

Deck Officer Class 1 (Master)

Deck Officer Class 2 (Chief Officer)

Deck Officer Class 3 (Second Officer)

Deck Officer Class 4 (Third Officer)

7.2.2 Service on Oil, Chemical and Gas Tankers

Special qualification is required for service on the types of vessel as per STCW Convention.

7.2.3 Minimum Requirement of Certificated Deck Officers

See Table-XIII.

7.2.4 Existing Arrangement

The existing arrangement of First Class inland masters taking command of ships under 1000 tons shall continue to be in operation until such ships shall be brought under the purview of these rules.

7.2.5 Vessels Under 200 Gross Registered Tons

Vessels under these categories shall be exempted from the requirements of manning by certificated hands under these rules. However, such ships shall not be allowed to proceed to sea.

7.2.6 Ancilliary Courses, Examinations, Certificates

The following ancilliary certificates will be required for appearing in Class 4 examination.

1. Sea Service Assessment Certificate;
2. Sight Test;
3. Proficiency in Survival Craft;
4. Fire Fighting;
5. First Aid;
6. Efficient Deck Hand (E.D.H);
7. Radio Telephony;
8. Electro Navigation System (ENS);

For appearing in Class 2 examination the following certificates

will be required:

1. Navigation Control Course (N.C.C.)
2. Ship Captains Medical Course (SCMC).

7.2.7 Requirements For Deck Officers Examinations

In addition to the requirement of ancilliary courses and certificates, the candidates are required to meet the requirements against each grade of certificates. A candidate who has not been to sea for a period of 3 years prior to the submission of the application shall not be accepted for the examination unless the examiner is satisfied on the matter.

.1 Exemption of Sea Service

The Chief Examiner may exempt a candidate of the requirement of sea service for any grade of examination in lieu of any specialised training or service that the candidate may have.

.2 Deck Officers Class 4 Examination

The candidate must be at least 20 years of age and must have served at sea in the capacity of a deck rating for at least 5 years or served at sea as deck cadet for at least two and a half years or served Bangladesh Navy in the Seamen Branch for at least 10 years or served inland vessels for at least 8 years of which at least 3 years after obtaining inland masters First Class certificate or served on sea-going fishing vessels for at least 6 years of which at least 2 years after obtaining fishing skipper certificate.

.3 Deck Officers' Class 3 Examination

The candidate must have served at sea after obtaining Class 4 certificate for at least 18 months of which 12 months in the capacity of a watch keeping officer or served Bangladesh Navy for at least 7 years and attained the rank of a Lieutenant in the executive branch or served on sea-going fishing vessels for at least 24 months after obtaining deck officers Class 4 certificate.

.4 Deck Officers' Class 2 Examination

The candidate must have served at sea for at least 2 years after obtaining deck officers' Class 3 certificate or served Bangladesh Navy for at least 10 years and attained the rank of a Lieutenant Commander in the executive branch.

.5 Deck Officers' Class 1 Examination

Must have served at sea for at least 18 months after obtaining deck officers Class 2 certificate.

.6 Command Endorsement

There are provisions for command endorsement with Class 4 and Class 3 certificate of competency. The examination will consist of an oral examination.

7.2.8 Syllabus

The syllabusfor the written papers, oral and practical examinations of different grades of certificate are almost the same as the UK

examination syllabusfor the class of certificate.

7.2.9 Recruitment of Deck Cadet

Minimum qualification required are a pass in HSC examination with Physics and Mathematics. Age - between 17 and 22 years. Height 5' 2"; weight 50kgs. Must be medically fit to perform duties at sea.

7.2.10 Comparison with UK System

The certificate structure, examination requirement, syllabus etc. are almost the same as in U.K. with the exception of a few minor points.

7.3 Examination and Certificate of Engineer Officers

7.3.1 Grades of Certificates of Competency

.1 Marine Engineer Officer Class 1

.2 Marine Engineer Officer Class 2

.3 Marine Engineer Officer Class 3

.4 Marine Engineer Officer Class 4.

The certificates of competency, Class 2, Class 3 and Class 4 may carry endorsement to act as Chief Engineer Officer in the ship to which the endorsement relates. The certificates of compentancy, Class 1, Class 2 and Class 4 are issued in motor, steam or combined categories. Class 3 are issued in the motor category only.

7.3.2 Applicability of Certificates of Competency

These certificates of competency apply to ships registered in Bangladesh and engaged on foreign going or short international voyages or home water voyage, being ships of not less than 350 kilowat registered power. This is not applicable to fishing vessel; pleasure craft sailing vessels.

7.3.3 Service on Oil, Chemical and Gas Tankers

In addition to the appropriate rank Certificate, special qualification is required for service on these types of vessels as per STCW convention.

7.3.4 Minimum Requirement of Certificated Engineer Officer

See Table-XIV.

7.3.5 Initial Training

Each candidate must meet any one of the following initial training requirements:

.1 Complete 4 years engineer cadet training scheme (ECTS) approved by the Department, at the Marine Academy, Chittagong.

.2 Hold a Higher Secondary Certificate from any Bangladesh Examination Board or its equivalent with pass marks in mathematics and physics plus 48 months service relevant to marine engineering in a workshop approved by the Department, in a learning capacity such as an apprentice.

.3 Hold an Inland Engineer Certificate granted under the Inland Shipping ordinance 1976 plus 24 months ship board service performed after obtaining the said certificate.

.4 A candidate who does not meet any of the requirement described above when these rules come into force but who has been employed in the merchant navy as an engineer prior to these rules coming into force will meet the initial training requirements as laid down under old residual rule and practice.

7.3.6 Ancilliary Courses, Examination and Certificates

In order to be eligible to take initial certificate of competency examination of any class in Bangladesh, each candidate must have

.1 Have attended an approved four day 'Fire Fighting' course

.2 Have attended an approved 'First Aid' course

.3 Have passed an approved 'Eye sight' test.

7.3.7 Break of Sea Service

A candidate who has not been to sea for a period of 3 years prior to the submission of the application shall not be accepted for the examination unless the Chief Examiner is satisfied on the matter.

7.3.8 Bangladesh Navy Personnel

Arrangement has been made for the Bangladesh Navy personnel to sit for the competency examination of various grade and award of certificate of service.

7.3.9 Comparison with UK System

The syllabus for the examination and other requirements are the same with the exception of a few minor points.

7.4 Qualification For Radio Officer or Operator

No person can be engaged on a ship of 1,600 GRT or over as a Radio officer or operator unless he has:

.1 Maritime Radio Communication General Certificate

.2 At least six months sea-service as a trainee Radio officer or operator

.3 Successfully completed proficiency in survival craft, Fire Fighting and First Aid course.

Radio officers or operators already having more than 3 years of service before the commencement of this rule shall not fall within the purview of this section.

7.5 Examination and Certification of Fishing Vessel Personnel

7.5.1 Deck Department

The rules for the fishing vessel apply to sea-going power driven fishing vessels of 75 tons or more.

7.5.2 Eligibility and Requirements

The candidates will be required to fulfill the following conditions:

.1 Second Hand Examination

The candidate must be 20 years of age and must have at least 3 years of sea-going service in fishing vessel. Pre-sea training in an institute recognised by the Department will be counted at half the rate of sea-service subject to a maximum of 9 months. The candidate will be required to produce the following certificates:

a) Eye-sight 'A' standard

b) Proficiency in survival craft

c) Efficient Deck Hand

d) First Aid

e) Radio Telephony Certificate.

.2 Fishing Skipper Certificate

The candidate must be 22 years of age and must have served at least 2 years on sea-going vessels after obtaining Fishing vessel second Hand certificate. The candidate will also be required to produce certificates in respect of the following ancilliary courses:

a) Electro Navigation System

b) Fire-Fighting

c) Eye-Sight 'B' Standard.

7.5.3 Syllabus

.1 Fishing Second Hand

The examination shall consist of orals and practical. The syllabus gives a number of items which deal mostly with safety.

.2 Fishing Skipper

The examination consists of two parts

a) Written

b) Orals and Practical

The syllabus for written papers are equivalent to Class 4 deck officers examination.

7.5.4 Engine Department

The rules for this department has not yet been prepared.

7.6 Recruitment, Training and Certification of Deck Ratings

7.6.1 General

The draft regulation spells out the minimum education, age and health condition. Educational qualification - A pass grade in Secondary School Certificate (S.S.C). Age between 16 and 22 years. Medical fitness - Should be free from any diseases that can hamper duties at sea.

7.6.2 Training Requirement

The training of deck ratings fulfills the requirement under STCW convention. Ratings will be trained in all aspects of deck and bridge duties.

Depending upon the requirement carpenters, plumbers, pump man, and fitters having diploma or trade licence may be recruited for training as deck ratings.

On completion of one year of sea service and on production of steering certificate from the master of the ship the ratings will qualify as Rating forming part of a Navigational Watch in accordance with Reg II/6 of STCW Convention.

On completion of 2 years of sea-service and production of proficiency on survival craft and EDH certificate the deck ratings may be certificated as ABLE SEAMAN.

Ex-Navy personnel may qualify as deck ratings of various grades following the pattern described above.

Deck Bosun - Any deck rating who has served at sea for at least 5 years after obtaining a certificate as able seamen may apply for promotion as Deck Bosun.

7.7 Recruitment, Training and Certification of Engine Ratings

7.7.1 General

The recruitment, training and certification of engine ratings are

very similar in form to deck ratings. The training of ratings are carried out as per STCW requirement. The draft regulation proposes following categories of engine ratings

.1 Ordinary Engine Ratings

An ordinary engine ratings will have to undergo a course of training in Fire fighting, basic first aid, personal survival technique, health hazards and personal safety - before joining a vessel.

.2 Engine Rating Forming Part of an Engine Room Watch

Required criteria for qualifying in this category are two years of satisfactory sea-service as an ordinary engine room rating and the recommendations under STCW convention.

.3 Special Category Engine Ratings

Fitters, Diesel mechanics, Welders, Turners, Refer mechanics, Drivers for cargo pumps, Wiremen or Electricians having a diploma in respective branch may be recruited in this category and may be given the same basic safety training as ordinary engine rating and will have to complete two years of satisfactory sea-service as a 'special category engine rating on probation'.

.4 Engine Bosun

Any engine rating who has served satisfactorily at sea for 5 years or 'special category engine rating' who has served at sea for two years are eligible for promotion as Engine Bosun.

.5 Ratings of other categories

Ships may be allowed to employ repair-squad etc. for which specific approval will be required.

.6 Existing Engine Ratings

All existing ratings will be allowed to continue in the service until their retirement.

.7 Special Training of Engine Ratings for Tank Vessels

Engine ratings required to serve on Oil, Chemical and Gas tankers must undergo a special training as per the Chapter V of STCW Convention.

CHAPTER VIII

CONCLUSIONS AND RECOMMENDATIONS

8.1 Conclusions

8.1.1 On Maritime Industries

A maritime infrastructure exists in Bangladesh and she can be termed a maritime nation insofar as the inland shipping is concerned. The ocean shipping and fisheries industry can flourish much beyond its present size if right initiatives are taken.

8.1.2 On STCW Convention

The convention requirements are bare minimum. It emphasises on the safety of life and pollution prevention. Convention does not specify the academic content of education. It stops by giving a general outline. Much has been left to the interpretation of individual administration. Administrations may decide what level of education they want to give to their seafarers.

8.1.3 On Maritime Training Establishments

All the seafarers training establishments are outside the national educational system and do not offer any nationally recognised education. They are badly lacking in suitable teaching staff and laboratory facilities for offering higher education.

There are separate schools for training officers, Fishing vessel personnel and ratings. This is an expensive process for a country

like Bangladesh. Training of seafarers of all grades could be effectively done from a single institution like Marine Academy.

The entry qualification is high and selection procedure is tough compared to the type of education provided in Marine Academy and Fisheries Academy. There are good responses from the youths of good social and educational background to serve at sea.

The time of training is long and the process is costing a lot to the Government. Devoting so much time in cadet training scheme without offering anything substantial is really a waste of time, money and energy. Within the same time, it is possible to offer a higher education to a degree level or diploma. Students in Bangladesh qualify for entry into degree level education with the same qualification and get a degree within the same time at much less cost to the Government.

Selections for training of seafarers are done much in excess of the requirement of the industry. It is becoming an increasing problem to accommodate them in a job.

Generally all shore based maritime organisations are run by the former seafarers'. These seafarers (now managers) find themselves ill-prepared to do the shore job.

Seamen training school is having problem of qualified teaching staff and adequate facilities for training up to STCW standard. This problem can be temporarily solved by utilising the facilities of Marine Academy.

Training of Radio Officers do not pose much problem because no separate institution is run for them. They take advantage of training in Telephone and Telegraph Board's School.

8.1.4 Present Arrangement of Training and Certification of Seafarers

In the absence of national legislation on maritime training, Bangladesh is following United Kingdom's traditional method of training. U.K. has upgraded its training system and a variety of arrangements exist there for a broad based education leading to a degree or its equivalent. Unfortunately, Bangladesh has not been able to follow them.

8.1.5 Trend of Training in Developed Countries

The trend in the developed countries are to offer a higher standard of education. In Federal Republic of Germany, officers of the foreign going ship have to pass a degree level education. In the United States of America, the dual system exists. The Federal and State maritime academies are offering degree level education along with the licence. In the United Kingdom the able and ambitious seafarers' can persue a degree as well as Department of Transports Extra Master and Extra 1st Class Engineers' examinations. Under the existing arrangement Bangladeshi seafarers' do not have these opportunities.

8.1.6 Proposed Merchant Shipping Regulation of Bangladesh on Training and Certification of Seafarers

The proposed regulation will do nothing to upgrade their education.

It will only fulfill the basic requirement of STCW convention and will be a follow up of U.K. Department of Transports statutory certification requirement for seagoing personnel. The proposed regulation is expected to come into force in the year 1986. It has not taken into account the real need of the merchant navy. There is no merchant navy training board.

8.1.7 Summary of the Conclusions

Finally in conclusion it is found that the seafarers education in Bangladesh is expensive and wasteful and hampered due to the following factors:

.1 Lack of national legislation on examination and certification;

.2 Lack of qualified teaching staff in the training institutes;

.3 Lack of a nationally recognised education in the training institutes;

.4 Lack of organisations like Merchant navy training board (MNTB) to represent the interest of all parties especially the seafarers';

.5 Lack of laboratory facilities.

8.2 Recommendation

8.2.1 Need for National Legislation

There is an urgent need for legislation on training, examination

and certification of seafarers' taking into account the need for their higher education and fulfilling the requirement of STCW convention.

8.2.2 Need for Merchant Navy Training Board

A merchant navy training board (MNTB) should be formed with representation from all the involved parties in this field, especially the Department education and shipping, Maritime training institutes, shipowners associations, seafarers' association, Professional Societies to asses the recruitment in the merchant navy and to develop relevant course of education.

8.2.3 Need for One Centralised Institution

All education of seafarers' should be conducted from one central institution like marine academy.

8.2.4 Need for Bringing the Educational Centres under the Department of Education

All seafarers' educational centres should be part of Department of Education.

8.2.5 Need for Nationally Recognised Education

All education and training provided to the seafarers (officers, fishing vessel personnel, ratings) should have nationally recognised education.

8.2.6 Award of Degree Education

Marine Academy should award degrees, diplomas and certificates in

relation to the passing of examinations or otherwise in relation to the education and training provided by the Academy. IMO model courses in this respect will be a very good guide. Degree should be awarded to seagoing officers of F.G. Vessel and a diploma for Fishing Vessels personnels.

8.2.7 Award of Safety Orientated Course

Marine Academy should incorporate the 'safety orientated' certificate competency requirements within systematic courses of education and training.

8.2.8 Examination by Educational Institutes

The Department of Shipping should hand over the examining authority for certificate of competency and accept Marine Academy passes in their place. Proposed merchant shipping legislation needs to be changed in this respect.

8.2.9 Immediate Need for Teachers

To solve the immediate need for teachers, early and energetic steps should be taken to employ qualified teachers and to change the structure of teaching staff by academic people. Better pay and service conditions will attract qualified teachers. Cooperation with the engineering colleges should be started to have visiting lecturers and use the facilities of local engineering colleges until such time as right facilities are built up. It will cost little more money than before but will solve the educational requirements of seafarers.

8.2.10 Need for Gradual Change

The change for higher education should start immediately but cautiously and gradually to avoid any pitfull. Engineering Department will be more fortunate in this respect as there are more engineers than nautical people for teaching in higher education.

TABLE-I

VOLUME OF EXPORT/IMPORT CARGO HANDLED BY SEA-PORTS OF BANGLADESH AND THAT LIFTED BY BSC'S OWN VESSELS FROM 1972-73 TO 1979-80 (JULY-JUNE).

Year	No of Vessels.	Export Cargo (Tons) Percentage			Imports Cargo (Tons)		
		Total volume handled by home ports.	Lifted by BSC Vessels.	Lifted by BSC.	Total Volume	Lifted by BSC Vessels.	Percentage Lifted by BSC.
1972-73 Bench-mark of FYP.	7	980769	56229	5.73%	5667773	115673	2.04%
1973-74	13	970893	144216	14.85%	3995833	291657	7.30%
1974-75	14	688238	82865	12.04%	5021433	268495	5.35%
1975-76	16	960648	78493	8.17%	4829172	94988	1.97%
1976-77	19	1213866	90260	7.44%	3339661	172236	5.15%
1977-78	21	1109036	97614	8.80%	5807686	574973	9.90%
1978-79	22	1026224	109153	10.64%	5243846	1219978	23.26%
1979-80	26	1005119	187311	18.63%	7375526	1245415	16.88%

Note : Performance of BSC's own vessels as shown above does not include the volume of Trade handled through chartering of own vessels.

DECK OFFICER TRAINING AND CERTIFICATION AS REQUIRED BY THE STCW CONVENTION

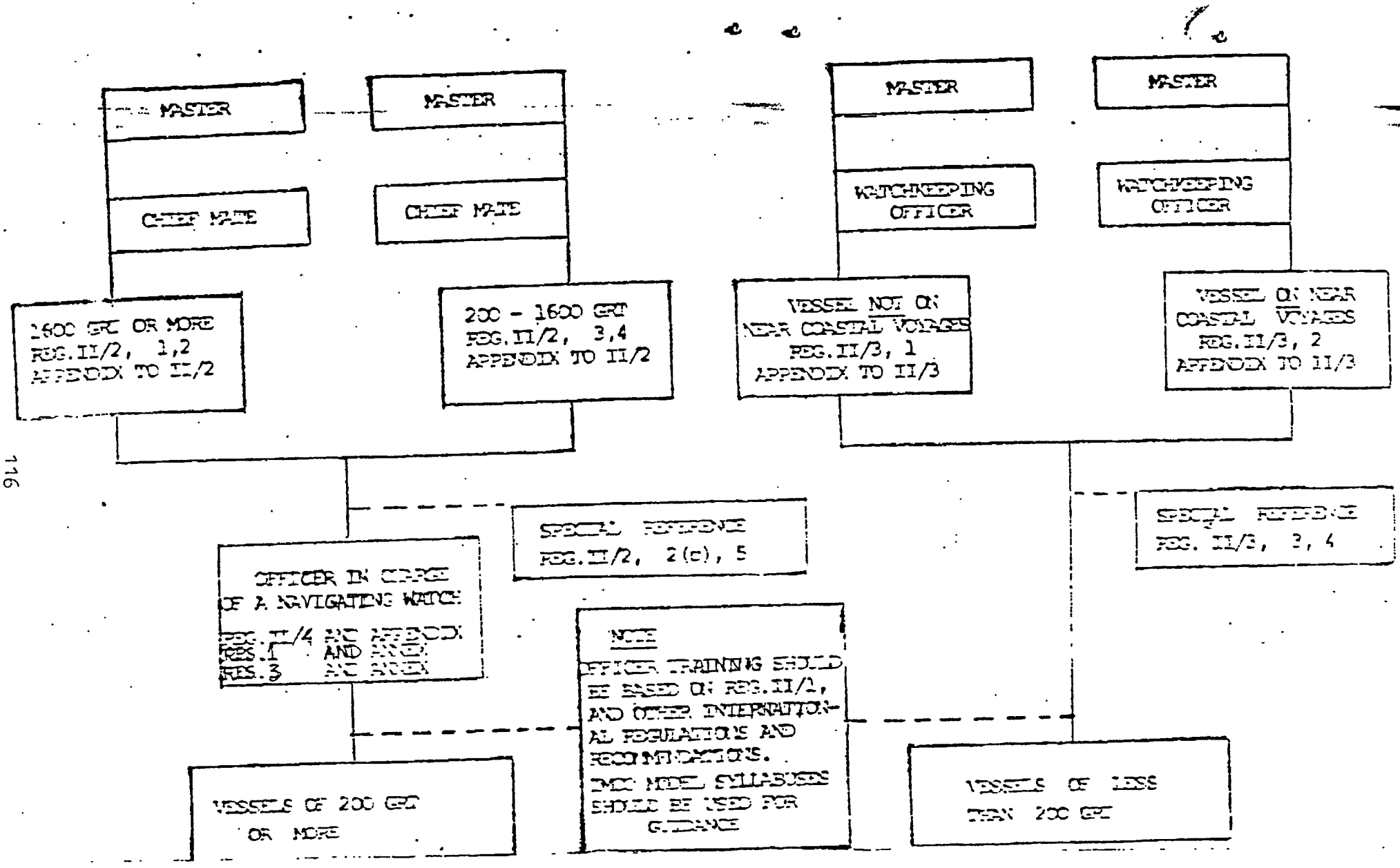


TABLE - II

TABLE-III

ENGINEER OFFICER TRAINING AND CERTIFICATION AS REQUIRED BY IMO STCW CONVENTION

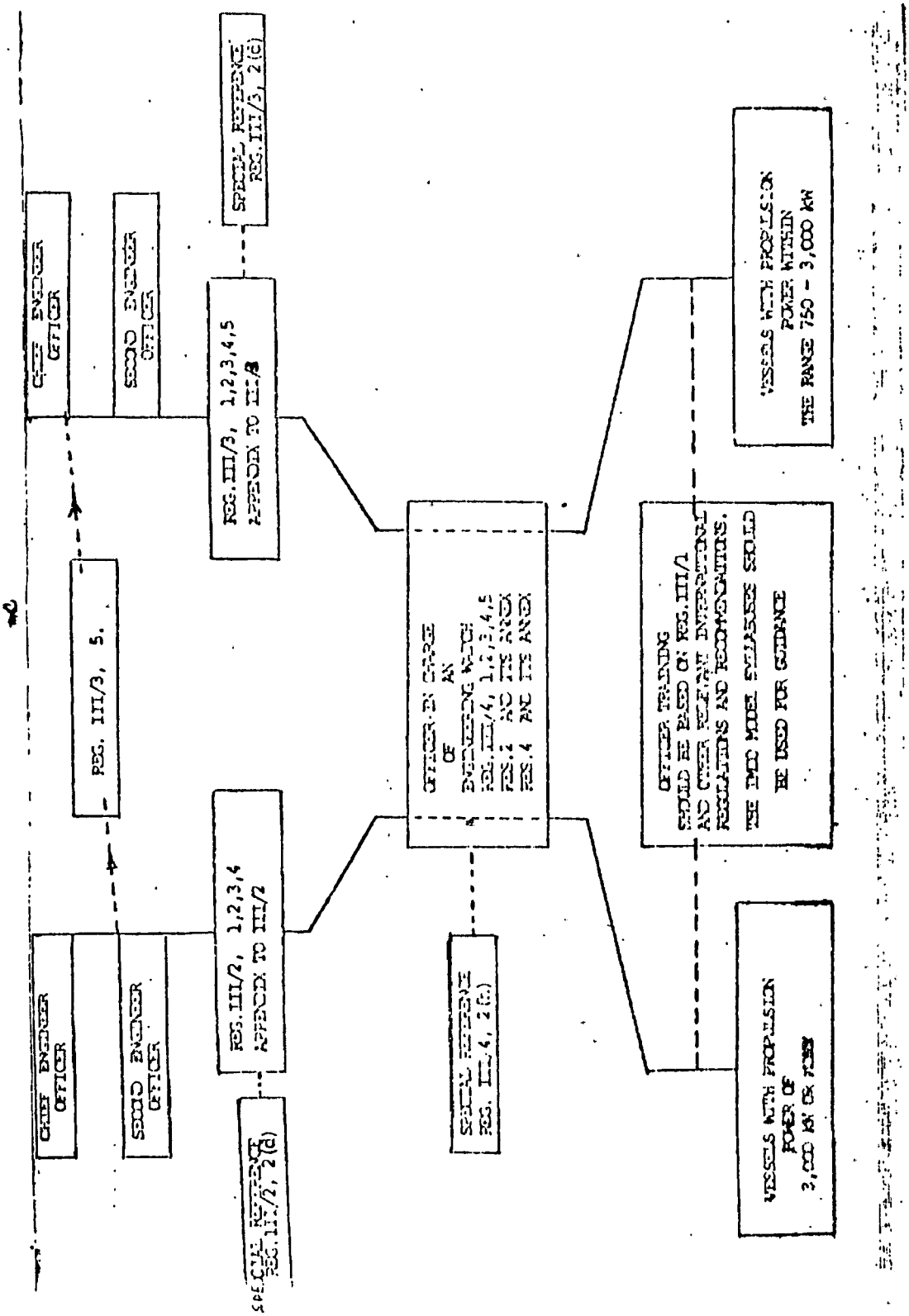


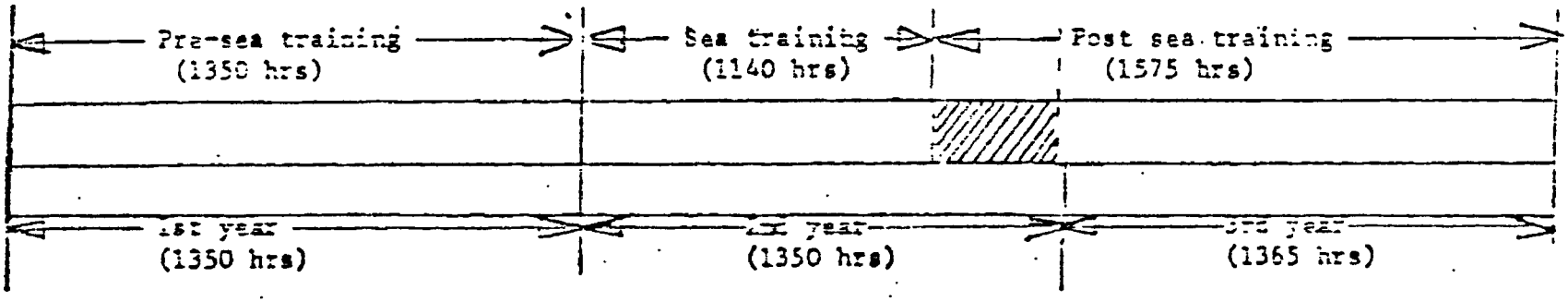
TABLE-IV

THREE YEAR IMO MODEL COURSE OUTLINE FOR TRAINEE OFFICERS

Pre-sea training phase (College)		
Training Component		hrs
Practical Basic Engineering	Handtools	120
	Machine tools	180
	Welding/Cutt.	90
	Plant Maint. (1)	240
Basic theoretical studies (part 1)		690
Special Courses	V.B. Pers.Surv.	15
	V.B. Firefighting	15
(V.B. = very basic)		
		1350

Sea training phase (aboard ship)		
Training Component		hrs
Operational Experience	Procedure	240
	Professional	900
" Personal experience log " compiled during this phase		
		1140

Post-sea training phase (College)		
Training Component		hrs
Basic theoretical studies (Part 2)		630
Operational experience "Professional studies"		630
Practical basic Engineering	Plant Maint./Oper (2)	270
Special Courses	First aid	15
	Firefighting	30
		1575



It is suggested that in order to develop a calendar year balance that professional studies relating to propulsion plant (90 hrs.), auxiliary machinery (90 hrs.) and electrical systems (30 hrs.) be undertaken on completion of sea training. (Shown shaded in diagram).

TABLE-V

REVISED ORGANISATION

MARINE ACADEMY
CHITTAGONG

COMMANDANT

Personnel-3

1 x Commandant
1 x Stenographer
1 x MLSS

DEPUTY COMMANDANT

Personnel-3

1 x Dy.Commandant
1 x Stenographer
1 x MLSS

TABLE-V (Continued)

1 x D
1 x S
1 x M

CHIEF OF NAUTICAL STUDIES

Pers-3

1 x Chief Nautical Studies
1 x Steno-typist
1 x MLSS

DEPARTMENTAL STAFF

2 x Sr. Nautical Instructor
3 x Nautical Instructor
1 x Radio Officer
1 x Electronic Instructor
1 x Medical Instructor
1 x Fire Instructor
1 x Jr.Radio Instructor
1 x Instrument Operator
1 x Radio Mechanic
1 x C.P.O. (SS)
1 x C.P.O. (Signal)
1 x Fire Assistant
1 x Medical Assistant
1 x Telephone Supervisor
1 x Master
2 x Coxwain
1 x Wairless Operator
1 x S.B.A.
1 x Seceunny
1 x Wood Machinist
1 x Boat Builders
1 x Bendari
10 x Lascar
2 x Gresser
5 x Boat Crew
1 x Topass
2 x Swimming Pool Attandant

CHIEF ENGINEER

Pers-3

1 x Chief Engineer
1 x Steno-typist
1 x MLSS

DEPARTMENTAL STAFF

1 x Sr. Mech. Eng. Instructor
2 x Sr. Eng. Instructor
1 x Sr. Elec. Instructor
1 x Sr. Naval Architect
2 x Engineering Instructor
1 x Elec. Mech. Eng.
1 x Mech. Eng. Instructor
1 x Naval Architect
1 x Electrical Instructor
1 x Demonstrator
1 x Foreman
3 x Engg. Mechanic
1 x Elec. Mechanic
1 x Draftsman
1 x Head Mechanic
1 x Motor Cum Launch Mechanic
1 x C.P.O. (Shipwright)
1 x Instrument Mech.
1 x Refrigerator Mech.
1 x Electric Fitter
1 x Moulder/Patern Maker
1 x Tracer
1 x Heat Treatment/Welder/Smith
2 x Lunch Driver
1 x Fitter
1 x Firemen
1 x Mechanic
1 x Mechinist
1 x Coppersmith
1 x Turner

CHIEF EDUCATION OFFICER

Pers-3

1 x Chief Education Officer
1 x Steno-typist
1 x MLSS

DEPARTMENTAL STAFF

5 x Education Officer
1 x Demonstrator
1 x Librarian
1 x Asstt. Librarian
1 x Library Attendant

el-3
Commandant
nographer
SS

DMINISTRATIVE OFFICER

Pers-

1 x Administrative Officer
1 x Accounts Officer
1 x Cashier
4 x UDA
1 x Imam
1 x Steno-typist
1 x Muazin
4 x LDA
2 x LDA cum Typist
1 x Telephone Supervisor
3 x Telephone Operator
5 x Driver
3 x Store Keeper
1 x Chief Steward
1 x Chief Cook
10 x Steward
6 x Cook
6 x Scullion
3 x MLSS
1 x Head Mali
2 x Gardener
3 x Khakrob
3 x Groundman

DEVELOPMENT OFFICER

Pers-2

1 x Development Officer
1 x Steno-typist

ADJUTANT

Pers-

1 x Adjutant
1 x C.P.O. (PT)
1 x P.T.I.
1 x Guard-in-charge
15 x Night Chowkidar

OFFICERS— 38
STAFF—152
TOTAL— 190

TABLE-VI

RECURRING COST OF TRAINING ACADEMY FOR THE YEAR 1984 to 1985

(All Figuers In Thousand of Taka.)

১—প্রধান খরচসমূহ ১(১)—বাণিজ্যিক নৌ-একাডেমী, চট্টগ্রাম	পদের সংখ্যা ৮৪-৮৫	পদের সংখ্যা ৮৫-৮৬	বাজেট ১৯৮৫-৮৬	সংশোধিত ১৯৮৪-৮৫	বাজেট ১৯৮৪-৮৫	হিসাব ১৯৮৩-৮৪
ক-অফিসারদের বেতন—						
স্কেল ১—৯	২০	২১	৩,৩০	২,৬৯	৩,৩৬	৩,১০
স্কেল ১০	৩	৩				
মোট—ক ..	২৩	২৪	৩,৩০	২,৬৯	৩,৩৬	৩,১০
খ -প্রতিষ্ঠান কর্মচারীদের বেতন—						
স্কেল ১১—১৬	৫৫	৫৫	৭,০০	৬,৮০	৬,২৫	৭,৮০
স্কেল ১৭—২০	৮৬	৮৬				
মোট—খ ..	১৪১	১৪১	৭,০০	৬,৮০	৬,২৫	৭,৮০
গ-ভাতা, সম্মানী, ইত্যাদি—						
ভ্রমণ ভাতা			৭০	৭০	৭০	৬৮
বহার্য ভাতা			৪,৭০	৪,৫০	৫,২০	২,৬১
বাড়ী ভাড়া ভাতা			২,৮০	২,৬০	২,৭৮	২,২৬
চিকিৎসা ভাতা			৯০	৮০	১,০০	১,০২
যাতায়াত ভাতা			৩০	৩০	৪০	৪০
শ্রান্তি-বিনোদন ও উৎসব ভাতা			১,১০	১,০০	৫০	২৮
ক্ষতিপূরণ ভাতা			৫০	৫০	৫০	৫০
ওভার টাইম ও অন্যান্য ভাতা			১,০০	৭৫	১,৮০	৯৭
মোট—গ ..			১২,০০	১১,১৫	১২,৮৮	৮,৭২
ঘ-আনুষঙ্গিক ব্যয়—						
আনুষঙ্গিক প্রতিষ্ঠান— (১৭)			..	..	..	৭৫
ডাক, তার ও টেলিফোন			১,৩০	১,৩০	১,৩০	১,১৪
বইপত্র ও সাময়িকী			২৫	২৫	২৫	২২
অফিস ভাড়া			১২	১২	১২	৩
পৌর কর			৪	৪	৪	১১
ওয়াসা			৪	৪	৪	১
বিদ্যুৎ			৮,০০	৮,০০	৮,০০	৭,৪১
অন্যান্য আনুষঙ্গিক			১৯,২৫	১৯,২৫	১৯,২৫	১৭,৪০
মোট—ঘ ..			২৯,০০	২৯,০০	২৯,০০	২৭,০৭
মোট—বাণিজ্যিক নৌ-একাডেমী, চট্টগ্রাম			৫১,৩০	৪৯,৬৪	৫১,৪৯	৪৬.৬৯

TABLE-VII

CERTIFICATION AND MANNING REQUIREMENT OF DECK OFFICER OF U.K. CARGO SHIPS OF 80 GRT AND OVER.

Trading Area	Descriptions of ships	Minimum numbers of certificated officers to be carried				
		Class 1 Cert	Class 2 Cert	Class 3 Cert	Class 4 Cert	Class 5 Cert
UNLIMITED	1600 GRT & OVER	1	1	1	1	—
	80 GRT BUT UNDER 1600 GRT	1	1	1	—	—
MIDDLE TRADE	5000 GRT & OVER	1	1	1	1	—
	1600 GRT BUT UNDER 5000 GRT	—	—	1(A)	1	1
	UNDER 1600 GRT	—	—	—	2(A)	1
NEAR CONTINEN-TAL	10,000 GRT & OVER	1	1	1	—	—
	5000 GRT BUT UNDER 10,000 GRT	1	—	1	1	—
	1600 GRT BUT UNDER 5000 GRT	—	—	—	2(B)	1
	800 GRT BUT UNDER 1600 GRT	—	—	—	—	3(B)
	200 GRT BUT UNDER 800 GRT	—	—	—	—	2(B) (C)
	80 GRT BUT UNDER 200 GRT	—	—	—	—	1(D)

(A) = The certificate or one of the certificates requires the Master (Middle Trade) endorsement.

(B) = One of the certificates must have the Master (Near Continental) endorsement.

(C) = Vessels engaged in supplying or serving offshore installations in the Near Continental Area are required to carry 3 persons with Class 5 certificates unless exempted by the Department from so doing.

(D) = This certificate must have the Master (Near Continental) endorsement.

TABLE-VIII

CERTIFICATION AND MANNING REQUIREMENT OF DECK OFFICER OF U.K. PASSENGER SHIPS.

Ships carrying more than 12 passengers but excluding those in respect of which there is or should be the following certificates:—

(1) Passenger Certificate Class IV or Class V engaged only on voyages in smooth waters, in partially smooth waters, or in smooth and partially smooth waters as the case may be.

(2) Passenger Certificate Class VI engaged only on voyages with not more than 250 passengers on board, to sea, in smooth or in partially smooth waters, in all cases in fine weather during restricted periods, in the course of which the ships are at no time more than 15 miles, exclusive of any smooth water, from their point of departure nor more than 3 miles from land.

(3) Passenger Certificate Class VIA carrying not more than 50 passengers for a distance of not more than 6 miles on voyages to or from isolated communities on the islands or coast of Scotland, and which do not proceed for a distance of more than 3 miles from land.

Trading Area	Description of passenger ships	Minimum number of certificated officers to be carried				
		Class 1 Cert	Class 2 Cert	Class 3 Cert	Class 4 Cert	Class 5 Cert
Unlimited or Middle Trade	Any tonnage	1	1	1	1	—
Near Continental	2000 GRT and over	1	1	—	1	—
	1000 GRT but under 2000 GRT	1	—	—	1	—
	200 GRT but under 1000 GRT	—	—	—	1(x)	1
	Under 200 GRT	—	—	—	—	1(x)

(x) This certificate requires the Master (Near Continental) endorsement.

TABLE-IX.

MINIMUM CERTIFICATION REQUIREMENT OF ENGINEER OFFICER OF U.K.SHIPS OF 350 KW POWER OR MORE.

Minimum certification requirements

Column 1	Column 2	Column 3	
Trading area	*Registered power (kilowatt) of ships including sail training ships*	*Required classes of certification*	
		Chief Engineer Officer	*Second Engineer Officer*
Unlimited and Middle trade	3,000 and over	1	2
	750 or more but under 3,000	2*(e)*	3
	350 or more but under 750	3*(e)*	4
Near Continental	6,000 and over	1	2
	3,000 or more but under 6,000	2*(e)*	3
	750 or more but under 3,000	3*(e)*	–
	350 or more but under 750	4*(e)*	–

(e) denotes Chief Engineer Service Endorsement.

Note: In addition to the officers specified in column 3 above, ships of 750 kilowatt registered power or more may be required to carry other certificated engineer officers, who being in charge of an engineering watch, shall hold an appropriate (motor or steam) Class 4 Certificate of Competency or Service.

TABLE-X.

SCHEMATIC DIAGRAM OF THE BTEC/SCOTEC DECK CADET SCHEME

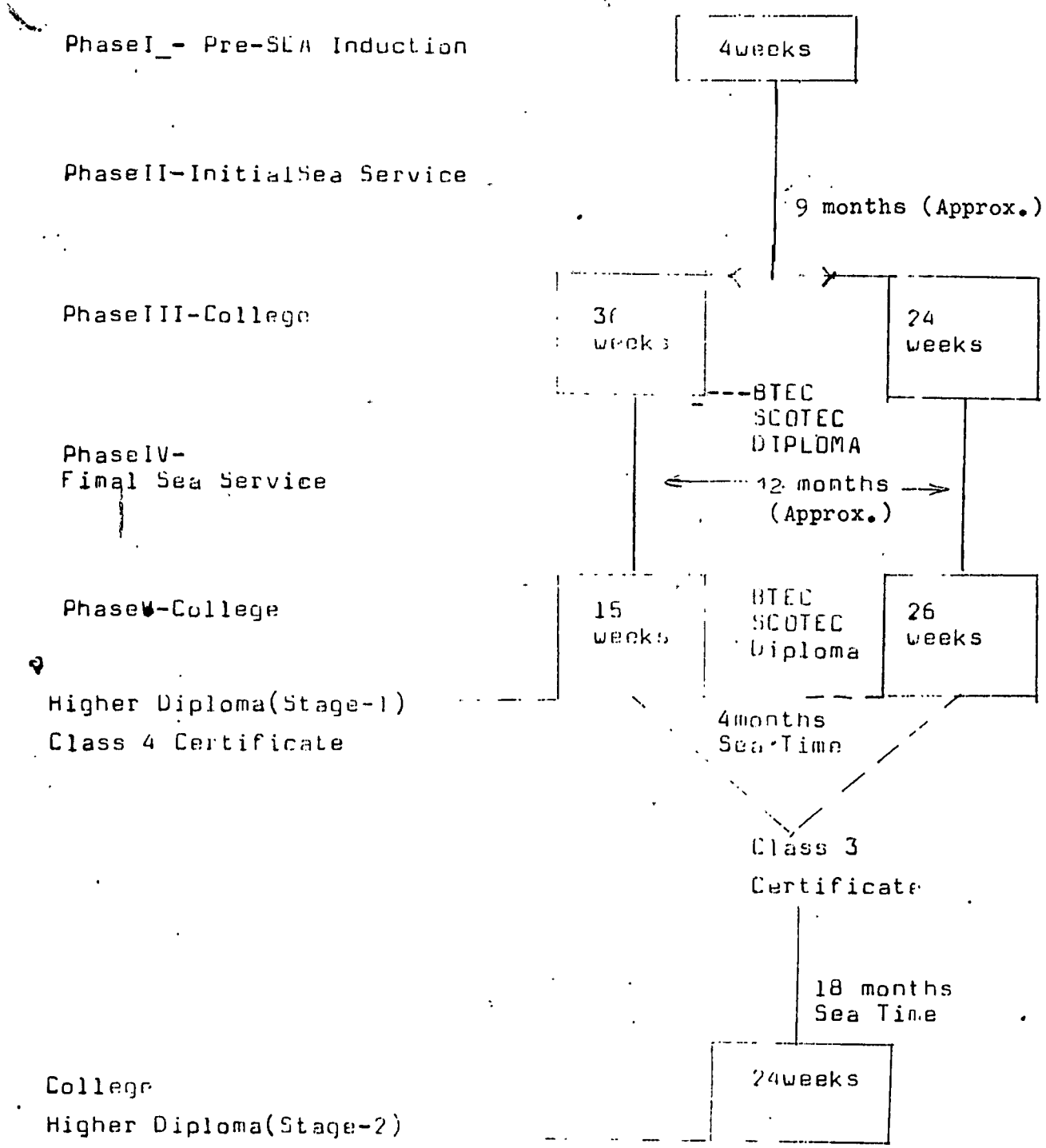


TABLE -XI

BTEC/SCOTEC 3 year Engineer Cadet Training Scheme

For HNC Minimum 4 - 'O' Levels, Grade 'C' or above, Maths, suitable Physical Science subject, English or subject including English subject usage, and at least one other academic subject.

For HND Same as HNC with 'A' Level Maths and/or Physics, preferably both.

Phase I 49 Weeks	3 day x 7 hrs/day x 36 weeks = 756 hrs Academic 1 day x 7 hrs/day x 12 weeks = 84 hrs Academic 2 day x 7 hrs/day x 24 weeks = 336 hrs Practical 1 day x 7 hrs/day x 12 weeks = 84 hrs Practical 5 day x 7 hrs/day x 6 weeks = 210 hrs Practical Totals: Academic 840 hrs Practical 630 hrs (Including 2 day Fire + Survival) 7 weeks Holidays (Minimum)	Sept O N D J F M A M J J A
Phase II 3 1/2 Months	Sea Service + Voyage Leave (3½ months + 25 days)	Sept O N D J F M A M J J A
Phase III 49 weeks	5 day x 7 hrs/day x 36 weeks = 1260 hrs Academic 5 day x 8 hrs/day x 6 weeks = 240 hrs Practical Totals: Academic 1260 hrs Practical 240 hrs (Including 4 day Fire, First Aid, C.P.S.C.) 7 weeks Holidays (Minimum)	Sept O N D J F M A M J J A
Phase IV 6 1/2 Months	Sea Service + Voyage Leave (6½ months + 1½ months)	
	DTp Class 4 Certificate of Competency	Sept

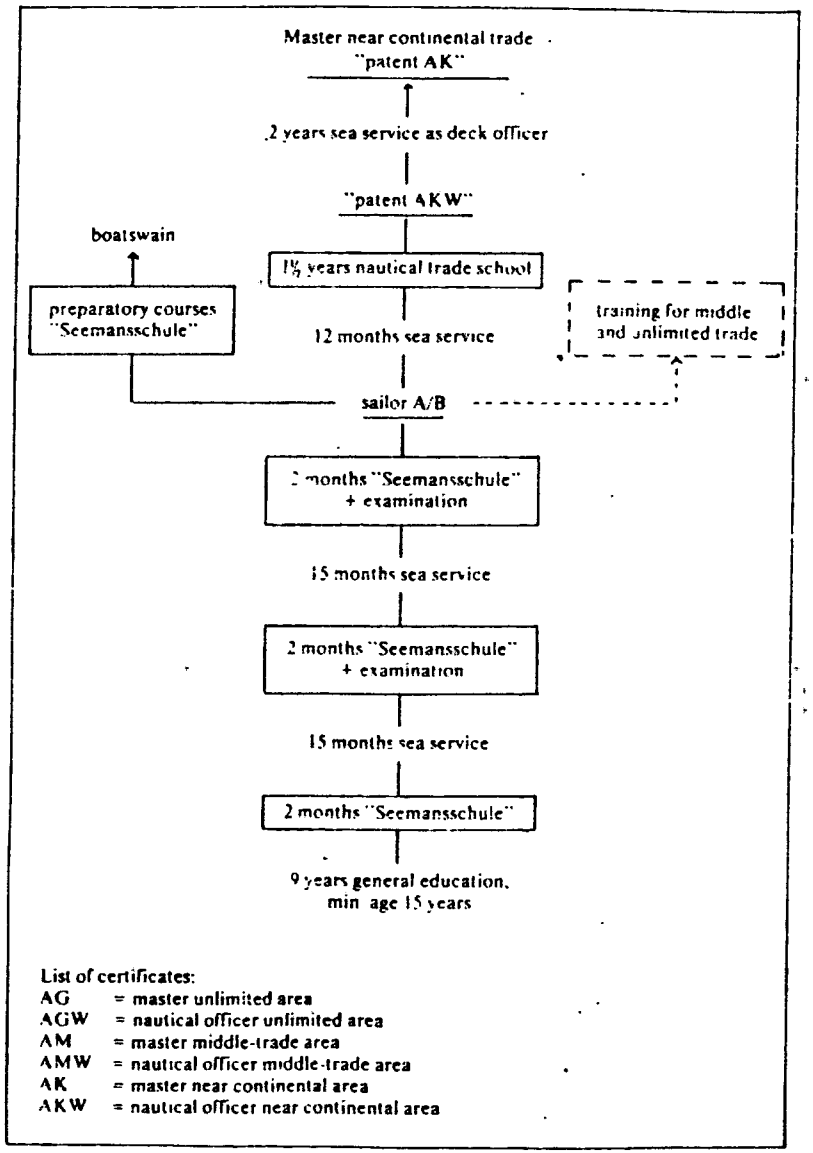
Qualifications on Completion of Training

BTEC HNC in Marine Engineering) Depending on entry qualifications
or BTEC HND in Marine Engineering)

Exemptions in DTp Class 2 Part A
Class 2 Part B (i) Electrotechnology, Naval Architecture
Class 1 Part A

Training schemes for masters: unlimited area, middle-trade area, near continental area

Training scheme for master near continental area



List of certificates:

AG	= master unlimited area
AGW	= nautical officer unlimited area
AM	= master middle-trade area
AMW	= nautical officer middle-trade area
AK	= master near continental area
AKW	= nautical officer near continental area

Training scheme for master unlimited area and middle-trade area

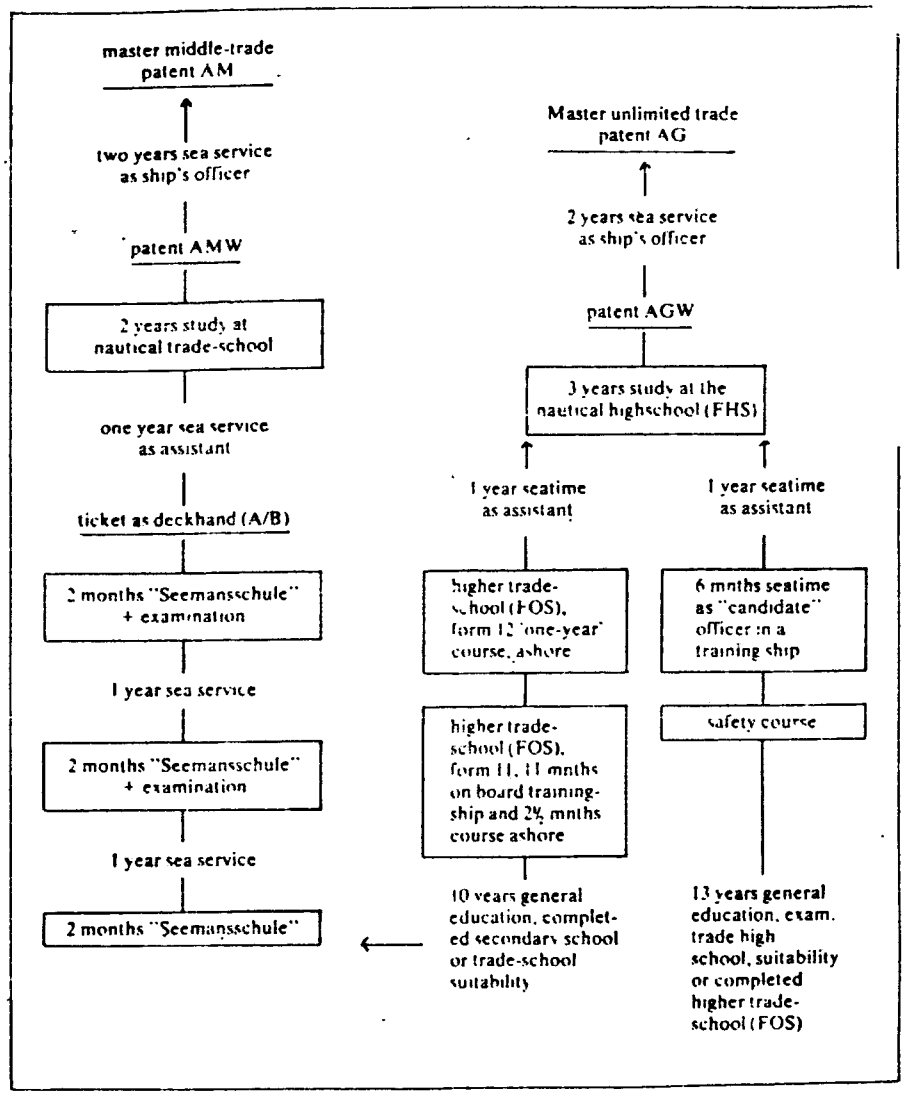


TABLE-XII

TRAINING SCHEME OF DECK OFFICER IN THE FEDERAL REPUBLIC OF GERMANY.

TABLE-XIII.

MINIMUM REQUIREMENT OF CERTIFICATED DECK OFFICER AS PER DRAFT CERTIFICATE REGULATION OF BANGLADESH.

	HWV of 200 - 1600 tons	HWV of 1600 - 3000 tons	NC of 200 - 1600 tons	NC of 1600 - 3000 tons	P.G. vessels
Class 1	-	-	-	-	1
Class 2	-	-	-	1	1
Class 3 & Command endorsement	-	-	1	-	-
Class 3	-	-	1 OR 1	1	1
Class 4 & Command endorsement	1	-		-	-
Class 4	1	1	1	1	1
Radio Telephony Operator	1*	1*	1*	-	-
MRCG	-	-	-	1	1

* Separate Radio Telephony Operator shall not be required if one of the persons on the ship has already got such certificate.

TABLE-XIV.

MINIMUM REQUIREMENT OF CERTIFICATED ENGINEER OFFICERAS PER DRAFT CERTIFICATE REGULATION OF BANGLADESH.

Column 1	Column 2	Column 3	
Trading area	Registered power (kilowatt) of Ships including sail training ships	Required classes of certification	
		Chief Engineer Officer	Second Engineer Officer
Foreign-going and Near Coastal	3,500 and over	1	2
	750 or more but under 3,000	2(e)	3
	350 or more but under 750	3(e)	4
Home Water	6,000 and over	1	2
	3,000 or more but under 6,000	2(e)	3
	750 or more but under 3,000	3(e)	-
	350 or more but under 750	4(e)	-

(e) denotes Chief Engineer Endorsement.

Note: In addition to the officers specified in column 3 above, ships of 750 kilowatt registered power or more may be required to carry other certificated engineer officers, who being in charge of an engineering watch, shall hold an appropriate (motor or steam) Class 4 Certificate of Competency or Service.

"FG" means sea-voyage of any distance.

"NC" means sea voyages between ports and places located between Singapore on the South-East and Colombo on the South-West and shall include all ports and places in the Bay of Bengal. The Department may by notice declare short voyage anywhere else as "NC" if so deemed reasonable.

"HWV" means voyages between ports and places in Bangladesh,

FIGURE- 1

MAP OF BANGLADESH

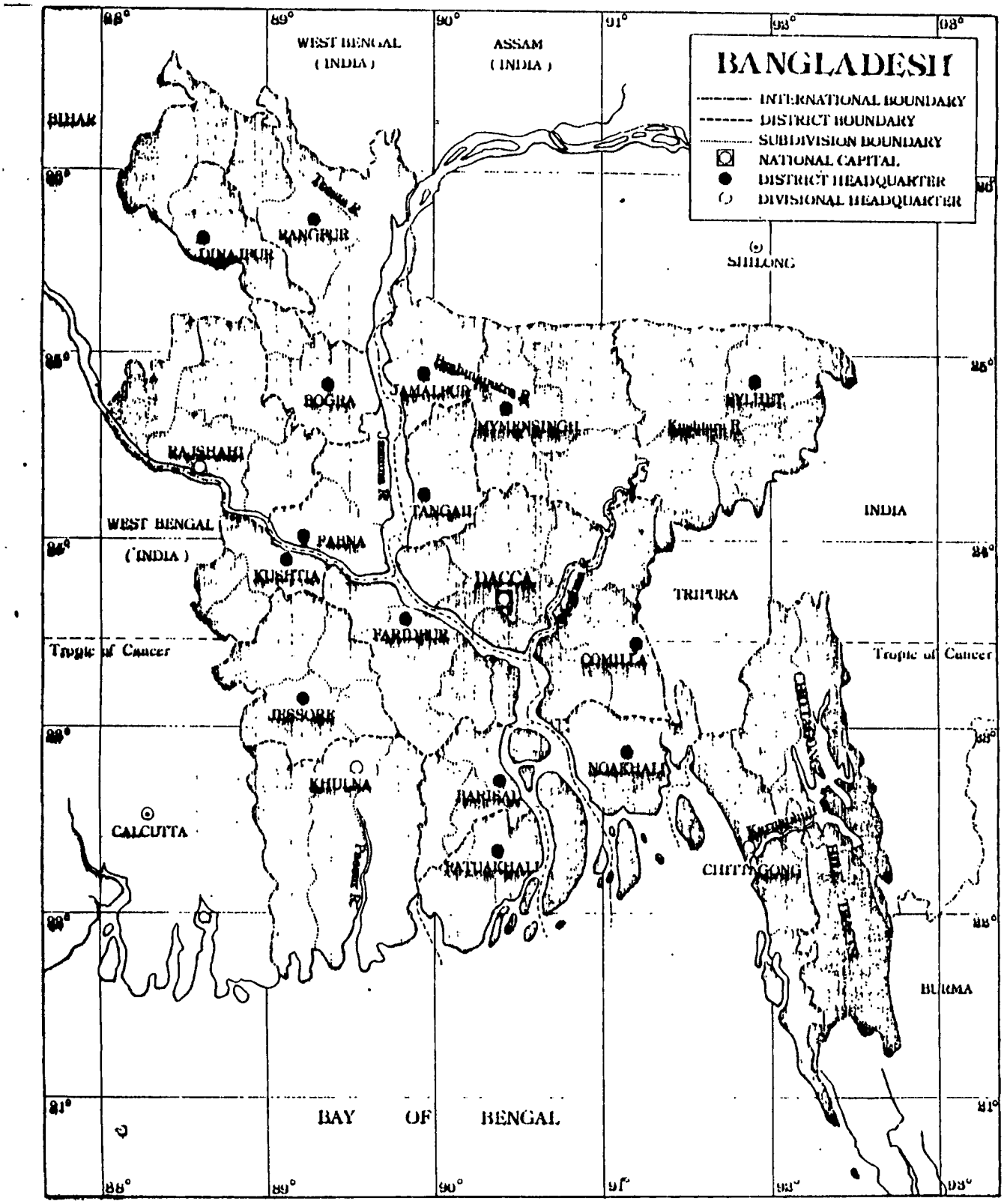


FIGURE - 2

RIVERS OF BANGLADESH

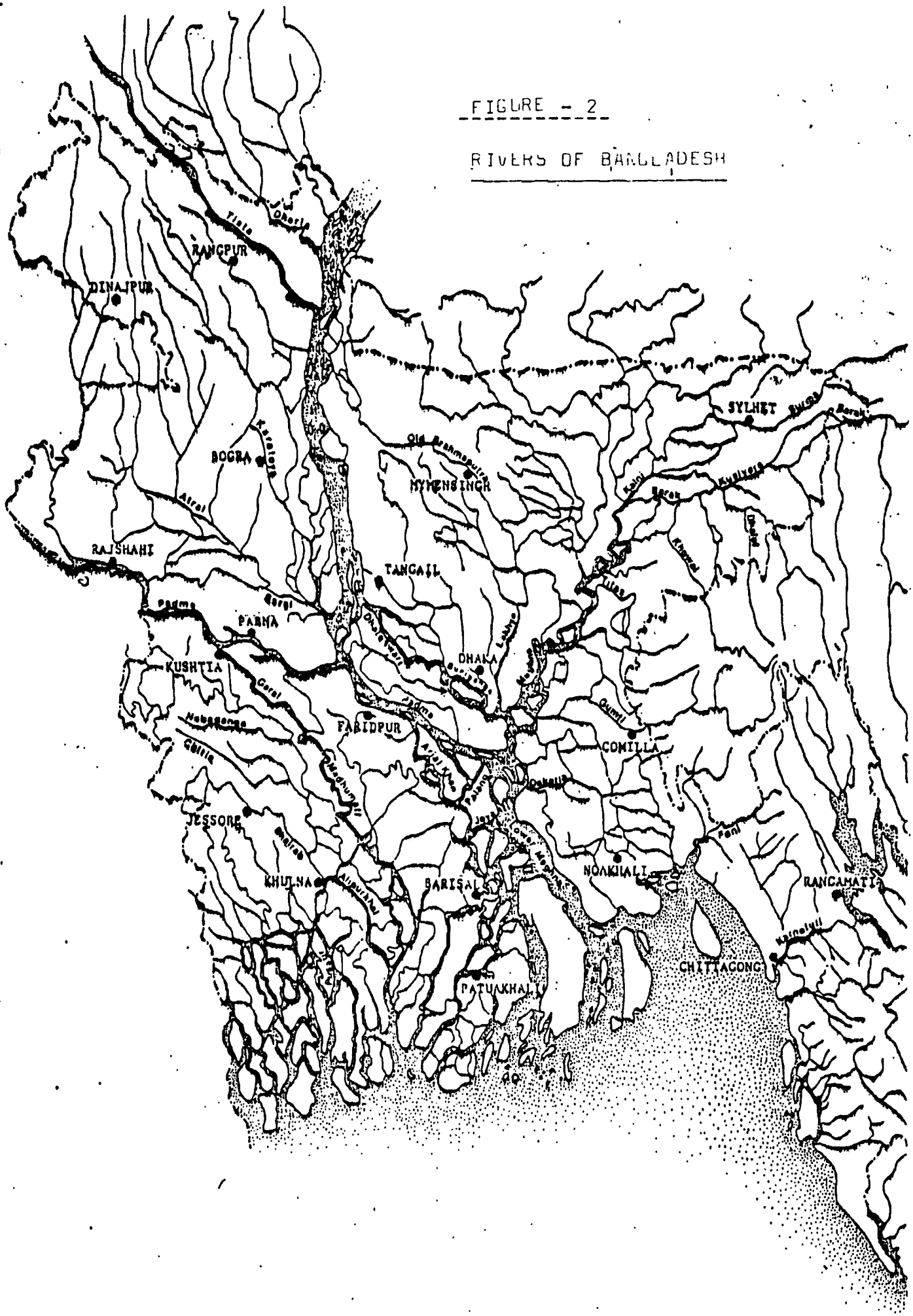
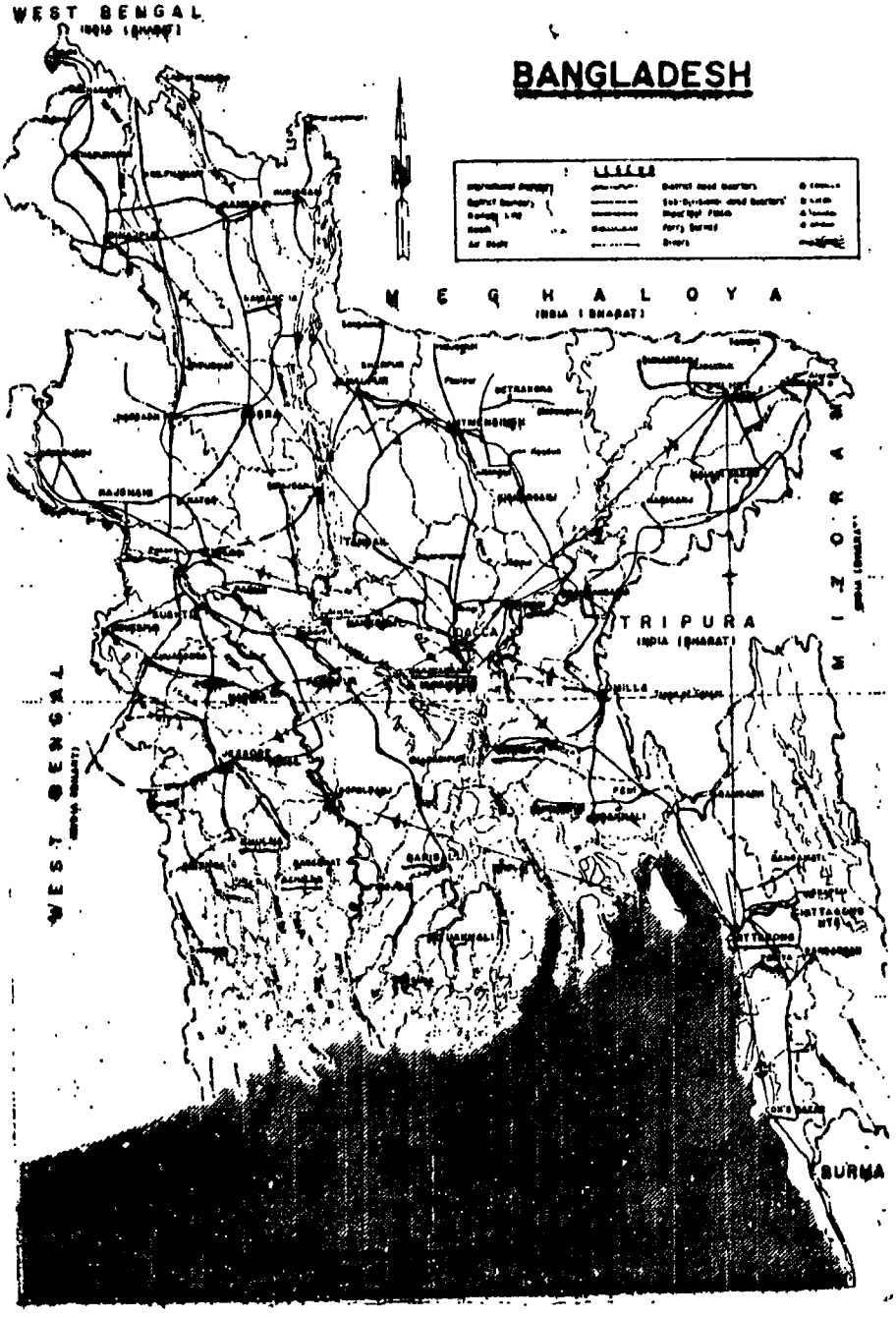


FIGURE-3

RIVER &SEA PORTS OF BANGLADESH.



APPENDIX-I

MANDATORY REQUIREMENTS OF DECK DEPARTMENT

The mandatory requirements for the deck department are contained in eight regulations, and, where applicable, the appendices to them.

Reg. II/1 Basic principles to be observed in keeping a navigational watch.

Reg. II/2 Mandatory minimum requirements for Certification of Masters and Chief Mates of Ships of 200 gross tons or more.

Reg. II/3 Mandatory minimum requirements for Certification of Officers in charge of a Navigational Watch and of Masters of Ships of less than 200 gross tons or more.

Reg. II/4 Minimum knowledge required for Certification of Officers in charge of a Navigational Watch on ships of 200 gross tons or more.

Reg. II/5 Mandatory minimum requirements to ensure the continued proficiency and updating of knowledge for Masters and Deck Officers.

Reg. II/6 Mandatory minimum requirements for Ratings forming part of a Navigational Watch.

Reg. II/7 Basic principles to be observed in keeping a watch in port.

Reg. II/8 Mandatory minimum requirements for a Watch in Port on Ships carrying Hazardous Cargo.

NOTE:

When considering Reg. II/1, Resolutions 1 and 3 and their annexes relating to officers in charge of a navigational watch should also be taken into account.

APPENDIX-II

MANDATORY REQUIREMENTS OF ENGINE DEPARTMENT

The mandatory requirements for the engine department are contained in six regulations and the appendices to them.

Reg. III/1 Basic principles to be observed in keeping an engineering watch.

Reg. III/2 Mandatory minimum requirements for Certification of Chief and Second Engineer Officers of ships powered by main propulsion machinery of 3000 kW or more.

Reg. III/3 Mandatory minimum requirements for Certification of Chief and Second Engineer Officers of Ships powered by main propulsion machinery between 750 kW and 3000 kW propulsion power.

Reg. III/4 Minimum mandatory requirements for Certification of Engineer Officers in charge of a Watch in a traditionally manned Engine Room or Designated Duty Engineer Officers in a periodically Unmanned Engine Room where the propulsion power is 750 kW or more.

Reg. III/5 Mandatory minimum requirements to ensure the continued proficiency and updating of knowledge for Engineer Officers.

Reg. III/6 Mandatory minimum requirements for Ratings forming part of an Engine Room Watch.

NOTE:

.1 When considering Reg. III/1, Resolutions 2 and 4 and their annexes relating to an Engineer Officer in charge of an engineering watch should also be taken into account.

.2 When considering the training of engine room ratings under Reg. III/6, reference should also be made to Resolution 9 regarding the "Recommendation on the minimum requirements for a rating nominated as the assistant to the Engineer Officer in charge of the Watch."

APPENDIX-III

MANDATORY REQUIREMENTS OF RADIO DEPARTMENT

The mandatory requirements for the radio department are contained in three regulations and the appendices to them.

Reg. IV/1 Mandatory minimum requirements for certification of radio officers.

Reg. IV/2 Mandatory minimum requirements to ensure the continued proficiency and updating of knowledge for radio officers.

Reg. IV/3 Mandatory minimum requirements for certification of radiotelephone operators.

NOTE:

Account should also be taken of Resolutions 5, 6 and 7 and their annexes contained in the 1978 STCW Convention.

The training should also be relevant to the provisions of the Radio Regulations annexed to the International Telecommunications Convention (ITU) and the International Convention for the Safety of Life at Sea (IMO).

APPENDIX-IV

EXTRACTS FROM FOUR YEAR IMO MODEL SYLLABUS DEVELOPED FOR LYBIA

Section 2 - Admission Requirements

The marine officer cadets should satisfy the following criteria :

(a) medically fit with good hearing and eyesight (1978 STCW Convention requirement);
(b) have completed at least twelve (12) years primary and secondary education (including high school);
(c) should normally hold a certificate or diploma which would admit the holder to a university course.

The final selection will be made on the basis of mental ability and alertness, aptitude and motivation. The criteria is aimed at ensuring that the education and training to be provided in the Academy produces a highly skilled officer of high ability and competency.

Course Structure and Organization

A ship is a complete and independent operational unit, and a wide range of engineering and scientific principles are involved in its operation. In fact, a ship can be visualised as a small town with all the appropriate systems and services to maintain and support life and provide safe and efficient transportation with minimum effect on the environment. The course programmes will therefore cover a wide range of disciplines and subject areas.

The total programme to produce a fully qualified and competent master mariner and chief engineer officer is structured to encompass all the academic studies and associated practical laboratory work necessary for the award of a degree in maritime studies, together with the professional studies and its linked practical training required for the mariner professional qualifications.*

* The IMO 1978 STCW Convention requires officers to be trained to international standards (expressed in the Convention) and to hold appropriate certificates of competency for their duties aboard ship.

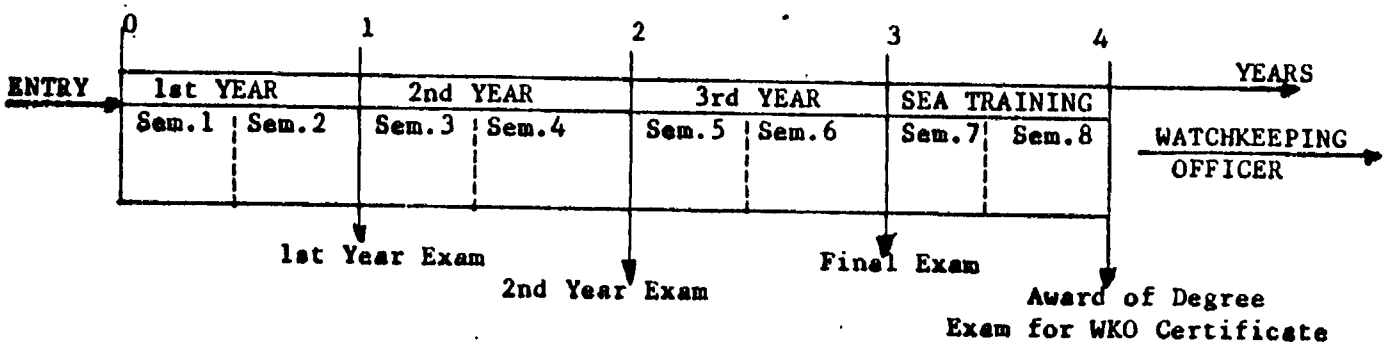
Therefore, in addition to the education and training carried out in the Academy, it is necessary to incorporate into the programme an element of professional and practical training aboard a merchant vessel which is operating commercially.

The academic year in the Academy will consist of two semesters, each of 18 weeks duration. The total hours per week will be 32, of which not more than 26 hours should be devoted to classroom lectures and instruction. The remaining 6 hours should be used for practical training, physical training and sports, private study, etc. .

The sea training period aboard merchant vessels can be expressed nominally in terms of semesters, as this is really an extension of the academy programme and will be carried out under supervision in accordance with a written programme, with the officer trainees validating their assignments and activities in an "experience" or "training" log.

Subsequent sea service as an officer aboard commercial vessels if it is to be used as qualifying service toward a professional certificate of competency will be expressed in 'years', as required by national or international convention requirements.

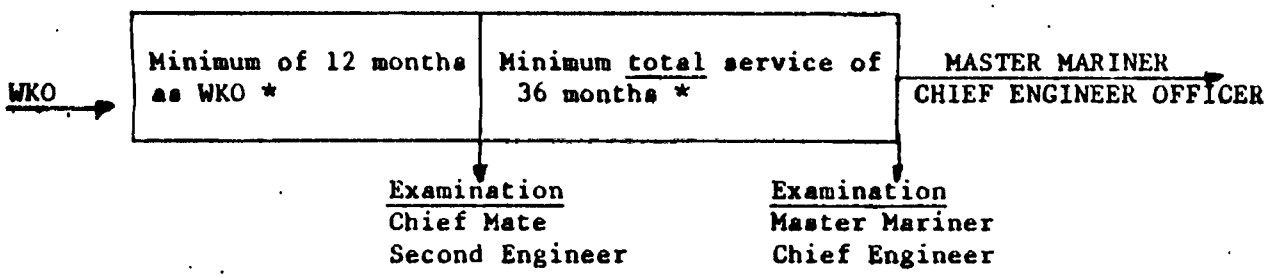
The block diagram shows the structure and organization for the programme of education and training to produce a graduate in maritime studies who is also qualified and holds a certificate of competency as "Officer-in-Charge of the Watch".*



* The IMO 1978 STCW Convention expresses the international standards of education and training required to qualify as an "Officer-in-Charge of the Watch" (navigation, engineering or radio).

The 1978 STCW Convention expresses the international standards of training and qualifying service for progression from 'Officer-in-Charge of the Watch' to senior officer positions as master mariner and chief engineer officer. National regulations governing this progression may, of course, exceed the Convention requirements.

Although not related directly to the graduate award, progression to senior officer position is shown in the following block diagram for information purposes.



* These service periods provide general guidance only. In all specific cases, reference should be made to the 1978 STCW Convention, as follows :
Chapter II, Deck Officers,
Chapter III, Engineer Officers,
Chapter IV, Radio Officers.

Teaching Staff

The academic staff will total 55 comprising :
Principal (or Director),
Heads of Department or Divisions (10),
Senior lecturers (12) and
Lecturers (32).

Supporting staff will consist of :
Senior technicians (11),
Technicians, appropriate to amount of laboratory and other practical work that is to be undertaken.

(a) Nautical Science

The following table shows the subject areas and allocated hours for the 3-year programme of taught academic and professional studies in the Academy.

NOTE : The taught work will be about 26 hours per week.

SUBJECT AREA	1st YEAR		2nd YEAR		3rd YEAR		TOTAL (hours)
	Sem. 1	Sem. 2	Sem. 3	Sem. 4	Sem. 5	Sem. 6	
MATHEMATICS	108	108	90	72	36		414
PHYSICS	72	72	36	36			216
CHEMISTRY	72	54	54				180
NAVAL ARCHITECTURE	54	54	72	72			252
SHIP CONSTRUCTION					54		54
PERSONNEL MANAGEMENT & INDUSTRIAL RELATIONS					36	36	72
SHIP MANAGEMENT						18	18
NAVIGATION	54	54	72	72		54	306
METEOROLOGY			36	54	54		144
OCEANOGRAPHY			18	54	54		126
CHARTWORK	72	54	36			18	180
ELECTRONICS		36	36	54	54	36	216
RADAR TECHNOLOGY					54	72	126
ELECTRONIC NAVAIDS					54	72	126
COMMUNICATIONS	36	36	18			18	108
CARGO HANDLING				54	36		90
MARITIME LAW					36	72	108
SHIPMASTERS BUSINESS						72	72
TOTALS	468	468	468	468	468	468	2808

The following table shows the specialist area and allocated hours for professional and practical training in the Academy.

NOTE : Professional and practical training will be about 6 hours per week.

AREA OF TRAINING	1st YEAR		2nd YEAR		3rd YEAR		TOTALS
	Sem. 1	Sem. 2	Sem. 3	Sem. 4	Sem. 5	Sem. 6	
Personal hygiene	6						6
Medical care	18					18	36
Safeworking practices	18						18
Safety aboard ship					36		36
Signals	18				18		36
Ship operation technology	30	36	54	72	36	18	246
Boat handling	18	36	54	36	18		162
Sea survival		18				36	54
Fire-fighting		18				36	54
TOTALS	108	108	108	108	108	108	648

(b) Marine Engineering

The following table shows the subject areas and allocated hours for the three-year programme of taught academic and professional studies in the Academy.

NOTE : The taught work will be about 26 hours per week.

SUBJECT AREA	1st YEAR		2nd YEAR		3rd YEAR		TOTAL
	Sem. 1	Sem. 2	Sem. 3	Sem. 4	Sem. 5	Sem. 6	
MATHEMATICS	108	108	90	72	36		414
PHYSICS	72	72	72	72			288
CHEMISTRY	72	54	54				180
NAVAL ARCHITECTURE	54	54	54	54			216
SHIP CONSTRUCTION					54		54
PERSONNEL MANAGEMENT & INDUSTRIAL RELATIONS					36	36	72
SHIP MANAGEMENT						18	18
ENGINEERING THERMODYNAMICS	72	54	54				180
ENGINEERING MECHANICS	36	54	36				126
THEORY OF MACHINES					36	72	108
FLUID MECHANICS					54	54	108
MATERIALS TECHNOLOGY			36	72			108
STRENGTH OF MATERIALS				54	54		108
ENGINEERING DRAWING	54	36	36				126
ENGINEERING DESIGN						54	54
MARINE HEAT ENGINES				72	36		108
MARINE POWER PLANT					54	72	126
INSTRUMENTATION		36					36
ELECTROTECHNOLOGY			36	72	54	54	216
CONTROL ENGINEERING					54	72	126
AUTOMATION						36	36
TOTALS	468	468	468	468	468	468	2808

The following table shows the specialist area and allocated hours for professional and practical training in the Academy.

NOTE : The professional and practical training will be about 6 hours per week.

AREA OF TRAINING	1st YEAR		2nd YEAR		3rd YEAR		TOTALS
	Sem. 1	Sem. 2	Sem. 3	Sem. 4	Sem. 5	Sem. 6	
Personal hygiene	6						6
Medical care	18					18	36
Safeworking practices	18						18
Safety aboard ship					36		36
Marine Engineering Technology	48	36	90	108	72	18	372
Boat handling	18	36	18				72
Sea survival		18				36	54
Fire-fighting		18				36	54
TOTALS	108	108	108	108	108	108	648

(c) Communication and Electronic Engineering

The following table shows the subject areas and allocated hours for the three-year programme of taught academic and professional studies in the Academy.

NOTE : The taught work and professional studies will be about 26 hours per week.

SUBJECT AREA	1st YEAR		2nd YEAR		3rd YEAR		TOTAL
	Sem. 1	Sem. 2	Sem. 3	Sem. 4	Sem. 5	Sem. 6	(hours)
MATHEMATICS	108	108	90	72	36		414
PHYSICS	72	72	72	72			288
CHEMISTRY	72	54	54				180
NAVAL ARCHITECTURE	54	54	54	54			216
SHIP CONSTRUCTION					54		54
PERSONNEL MANAGEMENT & INDUSTRIAL RELATIONS					36	36	72
SHIP MANAGEMENT						18	18
INSTRUMENTATION	54	36					90
ELECTROTECHNOLOGY	54	54	72	54	36	18	288
ELECTRONIC ENGRG.		36	36	54	54	54	234
ELECTRONIC SYSTEMS				36	54	72	162
CONTROL TECHNOLOGY				18	72	108	198
COMMUNICATION & RADIO ENGRG.	54	54	54	72	90	108	432
INFORMATION TECHNOLOGY			36	36	36	54	162
TOTALS	468	468	468	468	468	468	2808

The following table shows the specialist area and allocated hours for professional and practical training in the Academy.

NOTE : The professional and practical training will be about 6 hours per week.

AREA OF TRAINING	1st YEAR		2nd YEAR		3rd YEAR		TOTALS
	Sem. 1	Sem. 2	Sem. 3	Sem. 4	Sem. 5	Sem. 6	
Personal hygiene	6						6
Medical care	18					18	36
Safeworking practices	18						18
Safety aboard ship					36		36
Radio & Communication Technology	48	36	90	108	72	18	372
Boat handling	18	36	18				72
Sea survival		18				18	54
Fire-fighting		18				36	54
TOTALS	108	108	108	108	108	108	648

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