Training of pilots, tugmasters/ferrymasters, coastguard patrol boat and inland watercraft operators

George Lovelace Yao Darkey
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THE TRAINING OF PILOTS, TUGMASTERS/FERRYMASTERS, COASTGUARD PATROL BOAT AND INLAND WATERCRAFT OPERATORS

by

George Lovelace Yao Darkey
Ghana

A paper submitted to the Faculty of the World Maritime University in partial satisfaction of the requirements for the award of a MASTER OF SCIENCE DEGREE in MARITIME EDUCATION AND TRAINING (NAUTICAL).

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

Signature:  
Date:  7 September 1989

Supervised and assessed by:

Stephen J. Cross
Lecturer
World Maritime University

Co-assessed by:

Ernst G. Stender
Harbour Master Bremen Port
Visiting Professor World Maritime University
DEDICATION

TO MUM AND DAD.
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May the Almighty God grant you all his peace and blessings in our Lord and saviour Jesus Christ.
ABSTRACT

THE TRAINING OF PILOTS, TUGMASTERS/FERRYMASTERS, COASTGUARD PATROL BOAT AND INLAND WATERCRAFT OPERATORS.

The Ghana Nautical College which was set up in 1959 was regionalised on 26th May 1983. The participating countries being, Cameroon, The Gambia, Ghana, Liberia and Sierra Leone. One of its objectives was to train personnel to man Port and inland watercraft.

Although the Academy presently offers some short courses for some categories of such personnel, these are done on ad-hoc basis upon request by Port Authorities and Inland water Authorities.

Presently there is no course for Coastguard Patrol boat operators although participating countries have indicated their desire to train such personnel.

Recent development in Port operations, Inland water transportation and the development of sophisticated boats has rendered the current curriculum obsolete.

In my paper, I have therefore outlined the present curriculum and its deficiencies and then made proposals for updating these courses. I have also made proposals for courses which are not available.

I hope the proposals if implemented will improve the overall efficiency of the personnel concerned and thereby improve the operations of the Ports and Inland waters.
CHAPTER 1

1. INTRODUCTION

1.1 HISTORICAL BACKGROUND

The Ghana Nautical College was established in 1958-59 by the assistance of the Israeli Government to train ratings to man the newly established State Shipping Corporation (Black star line).

In 1962, officer cadet training was introduced with the help of the British Government.

In 1966 the training of officers for the fishing industry was introduced as well as training of personnel for coastwise (hometrade) vessels and Inland watercraft.

Between 1969 and 1980 the Norwegian Agency for International Development (NORAD) assisted the college in the development of the fishing courses by providing expertise and equipment.

At the Ministerial Conference of West and Central African states on Maritime Transport (MINCONMAR) in 1976 and 1977, it was decided to establish two Regional Maritime Academies, serving the Anglophone and Francophone countries in Accra and Abidjan respectively. The decision of the Ministerial conference to regionalize the two national institutions met with wide international support, with the United Nations Development Programme (UNDP)
accepting to offer assistance to the Academies with the International Maritime Organisation (IMO) as the executing agency.

In 1978 IMO provided expert assistance and in 1981, this assistance was augmented by a programme of assistance by NORAD, providing fellowship and equipment.

On the first October 1982, the Government of Ghana promulgated the Regional Maritime Law 1982 which was followed by the signature of the Instrument of transfer, handing over the Academy to the Ministerial Conference of West and Central African States on Maritime Transport (MINCONMAR).

The formal inauguration of the Academy took place on Thursday 26th May 1983, the participating countries being: Cameroon, The Gambia, Ghana, Liberia, and Sierra Leone.

On 22nd May 1984 four Egyptians namely the Principal, heads of the nautical, engineering, and radio departments took over the running of the Academy under the UNDP/IMO/NORAD project with the agreement of the Egyptian Government.

The Academy is currently running foreign going courses, Hometrade courses, fishing courses and specialised short courses.

In 1988 the Academy was made a branch of the World Maritime University (WMU) to run specialized short courses developed by IMO with the assistance of the
1.2 THE NEED TO ESTABLISH TRAINING COURSES

1.2.1 Governments in the West African Sub-region are spending huge sums of foreign money to rehabilitate their ports and harbours to meet modern trends. As a result more sophisticated craft are being purchased and more specialized ships are being handled; eg modern fire fighting tugs fitted with modern navigational equipment, but personnel manning these craft remain largely untrained.

In recent years, Governments have shifted emphasis to river transportation rather than road transportation, hence more cargo and passengers are being transported cheaply inland. As a result more sophisticated ferry boats and barges have been purchased at high cost but unfortunately most of the personnel manning such craft have not been given adequate training.

Governments of the participating countries have established their Coast Guards, to protect their Exclusive Economic Zone (EEZ) against exploitation by foreign fishermen, to guard against smuggling and also to assist in search and rescue. They have indicated their interest to train personnel to man such small but sophisticated boats.

1.2.2 INLAND WATER TRANSPORT

Inland water transportation plays a major and important role in the transportation of passengers
and cargo inland.

For example, The Gambian Port Authority operates ferry services inland. At the moment five ferries are being operated. They carry approximately 200,000 tonnes of cargo annually comprising vehicles, general cargo, oil and hazardous cargo. Also 2 million passengers are carried annually.

The answer to a questionnaire sent to the participating countries (see appendix 1) indicates that 52 personnel are employed by the Gambian Port Authorities to operate the five ferries. They include quarter masters and sailors without any adequate training, their qualification and experience being long service on the job.

Accidents have occurred but these have not been thoroughly investigated but human error can be sighted as some of the causes.

In Ghana the first phase of the expansion and development of the Volta Lake Transport has taken place and the second phase has began under a Ghana, German Government joint project.

The completion of the phase which cost about 32 million dollars has partially solved the transportation problem between the south and the north of the country. The project included provision of four new barges each with the carrying capacity of 700 tonnes, also a 1,340 horsepower pusher tug specially designed for Volta lake conditions. Navigational aids and communication systems were
also installed.

The second phase involves the construction of petroleum storage tanks and production of product transfer facilities at the two inland ports. Petroleum product barges, jetty facilities and pusher tugs would also be provided at both ports.

At present the Volta Lake Transport employs 75 personnel as tugmasters, coxswains, and deckhands. The company operates 18 floating units including 4 pusher tugs. The cargo handled per annum is 60,000 freight tonnes plus 900,000 gallons of diesel oil. Also 6000,000 passengers are carried annually.

One grounding incident occurred in 1987 and was attributed to human error.

In the Cameroon 150 craft of 25 gross tonnes and over are operated. Also hundreds of craft less than 25 gross tonnes and 400 pleasure boats ply the inland water. In 1987/88, inland water craft carried 87,000 tonnes of cargo including oil and hazardous cargo. Many passengers were also carried mainly by canoes.

Accidents which occurred were mainly attributed to human error.

Liberia operates only two inland water craft and carries approximately 4000 tonnes of cargo.

It is rather pathetic that personnel handling such volume of cargo and so many lives have not been
1.2.3 VOLUME OF TRAFFIC AND CARGO HANDLED BY PORTS IN THE REGION.

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>YEAR</th>
<th>NO OF SHIPS</th>
<th>CARGO (TONNES)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAMEROON</td>
<td>1987/88</td>
<td>1164</td>
<td>3,716,734</td>
</tr>
<tr>
<td>LIBERIA</td>
<td>1987</td>
<td>600</td>
<td>8,770,281</td>
</tr>
<tr>
<td>GHANA</td>
<td>1987</td>
<td>1054</td>
<td>4,270,170</td>
</tr>
<tr>
<td>SIERRA LEONE</td>
<td>1984/85</td>
<td>47</td>
<td>1,322,364</td>
</tr>
<tr>
<td>GAMBIA</td>
<td>1987/88</td>
<td>253</td>
<td>430,500</td>
</tr>
</tbody>
</table>

The cargoes handled include both imports and exports. Source: IMO manpower survey report No. RAF/86/023 and answers to questionnaire.

1.2.4 IMO REPORT AND RECOMMENDATION.

In 1986 a manpower survey was conducted in the participating countries by two IMO consultants. In the mission report various training programmes were recommended and I hereby make reference to portions of the report.
According to the report, for example, in Cameroon the shipping Directorate intends to train two hundred personnel in the short term for the establishment of Coast Guard services. All the five countries visited have indicated their desire to train personnel for their ports and Inland water.

Suggested areas of training required and estimated annual student numbers as indicated in the man power survey report are as follows:

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>Coastguards</th>
<th>Harbour, River, Mate/Master</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAMEROON</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>GAMBIA</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>GHANA</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>LIBERIA</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>SIERRA LEONE</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>40</strong></td>
<td><strong>26</strong></td>
</tr>
</tbody>
</table>

Also in 1987 two IMO/UNDP consultants made an in depth evaluation of the Academy. In their mission report the following remarks and recommendations were made and I hereby quote portions of the report.

Consultations with Coastguard authorities in Monrovia revealed that most of their established service has received training in the United states.
and some of the staff were trained in Alexandria Maritime Academy. However, they were interested in making full use of courses in the Regional Maritime Academy.

Consultations with Coastguard services in Sierra Leone and the Gambia revealed an urgent need for training to provide crew.

The Coastguard could make use of standard courses for navigation, seamanship, fire fighting and various short courses. Where necessary, special courses could be tailored to suit specific needs.

Crew training and upgrading is required for ferries, tugs, dredgers and lake vessels. The training ranges from that for ratings (on deck and in the engine room, up to master and chief engineer level). Radio courses are required for vessels operators and pilots. Fire fighting, handling of dangerous goods and survival courses are necessary.

1.2.5 CONCLUSION

From the needs expressed above and realising that Governments of the participating countries are spending scarce foreign exchange to develop the above sectors, it will be useful to train the personnel manning these craft so that there will not be any weak link in the system.
It is also my aim to develop these courses so that they will be available locally and Governments will not have to spend huge sums of foreign money to train these men abroad.

Although the Academy presently offers some short courses, these courses are normally run on ad-hoc basis upon request by Port Authorities and Inland Water Authorities.

In the following chapters, I will review the present courses and then develop a curriculum for Pilots, Tugmaters, Tugmates, Ferrymasters, ferrymastes and Coastguard patrol boat operators.

The courses I am proposing will not only be for upgrading but should also be adequate for new intakes as well. My paper will also include recommendations to the Governments of the participating countries on the need to employ younger people with higher educational level for training to meet higher changes in technology. This will in future raise the performance standard and efficiency of the ports, the river transport and the coastguards.

In Ghana for example, according to IMO In-depth report RAF/84/023 on the Academy, quote "Average age of port staff at Tema is 46, that at Takoradi 49. Thus the training programmes would have a much larger intake than visualised in the manpower survey report because of the need for introduction of new
(younger) staff as replacements. Training will be vital to the newer staff to reduce learning time for the work. The high average age of the present work force will probably mean that large gaps would need to be filled by younger personnel as retirement of the older people occurs." unquote.

I hope that these proposals, if implemented, will improve the efficiency of the personnel concerned and in the end will also save Governments some foreign currency.
CHAPTER 2

2. REVIEW OF PRESENT TRAINING COURSES.

2.1 JOB DESCRIPTION.

Before I make a critical analysis of the present training courses, I will first touch on the job requirements of the various categories of these personnel. They are as follows:

2.1.1 Pilots

2.1.2 Tugmaster

2.1.3 Tugmate

2.1.4 Ferry master

2.1.5 Ferry mate

2.1.6 Coastguard patrol boat operator

2.1.1 PILOTS

Normally in the developed world the requirements for a pilot is class 1 certificate (deck) of competency and therefore the pilot has ample shipboard experience.

In the developing countries, especially in the West African sub-region this is not so. There are only few pilots holding master mariners certificates.
because either they are not available or the few available tend to take jobs in the administration, the academies or other marine establishment. In some of the participating countries most of the few pilots holding master mariners certificates are expatriates.

As a result most of the pilots are recruited locally and trained on the job with little or no deep sea experience. Normally they join the tugs as coxswain and they are promoted to tugmate, tugmaster, pilot trainee and then pilot over the years.

2 Answers to questionnaires sent out to the various participating countries indicates that, for example in Ghana there are 12 pilots all together, in both the Tema and and Takoradi ports and none of them hold master mariners certificate. Only one holds a 2nd mate certificate of competency and four of them had presea training years ago. The other five were trained on the job and later on had three months training in the regional maritime academy in basic navigation, chartwork and collision regulations. Refering to Table 1.1 you will see that these pilots handled a total of 1054 ships in 1987 of various sizes and types, eg. General cargo ships, Roro, Container ships, Bulk carriers and Tankers.

3 Looking at the number of ships handled and the number of accidents in the port in the last five years, one will say that the pilots are doing a good job especially if you take into account the difficulties and constraints they have to face. eg., lack of communication systems between ship and shore.
and frequent break down of pilot boats and mooring launches.

There were two major accidents in Ghana ports one in the Takoradi port and one in the Tema port. In 1983 a Nigerian coaster sunk in coastal waters off the port. The immediate cause of the accident was due to bad stowage but the report of inquiry revealed that the pilot never sailed the vessel. He only signed the pilotage card and allowed the master to sail the vessel. If the pilot were to board the vessel he would have discovered that the vessel was over loaded. The pilot was dismissed due to negligence of duty.

The second accident occurred in the Takoradi port in 1987 when a vessel with pilot on board ran into the bauxite berth. The pilot with 32 years of service was dismissed.

3 The report of inquiry into the above accident states that, the training of tugmasters, pilots, and communication personnel should be updated to suit more modern technological advancement and attention given to handling of emergency situation. The Regional Maritime Academy entry requirement of 5th and 6th formers (O & A level) should apply to new entrants. Those in the system should have 6 monthly eyesight test and periodic refresher courses and when on leave they should be given opportunity to sail on vessels plying the West African coast.

4 In the Gambia, the port authority has five pilots in employment and there is none with master mariners
certificate of competency and none with any sort of
depth sea experience. Looking at Table 1.1 these
pilots handled 253 ships in 1987/88. Only minor
accidents occurred but even that no proper
investigations were carried out.

5 In Sierra Leone 7 pilots are employed by the port
authority but only one has a master mariners
certificate of competency. The authority also
operates 3 ferries on the inland water.

6 From the various points enumerated above it shows
clearly that the pilots in the sub-region are doing
their best in the available circumstances. The
pilots concerned already have enough local knowledge
of their areas, the only thing left is to update
them on technical knowledge. For newer intakes, I
will suggest that their basic qualification be GCE
"A" level. They can then be trained to class 3
certificate of competency level and then they can
come back to the Academy to train as Pilots.

7 I therefore agree on the assertions made in the
manpower survey report on pilot trainee that: Quote,
"While the consultants welcome the assertion that
marine pilots should hold the master mariners
certificate they at the same time wish to emphasize
that while the master mariners certificate may be
preferred by a number of pilotage authorities, it
need not be a pre-requisite for entry into pilotage
training. This is manifested by the existing pilots
in most of the countries visited, Ghana, Sierra
Leone, the Gambia, and partly in Liberia, where most
of the pilots hold only the class 3 certificate or no certificate at all.

Pilotage requirements depend on local conditions which differ from place to place, and training requirements vary with the type of pilotage and local conditions. It must, however, be recognised that a pilots' function is to combine technical ship operations with the local knowledge on special conditions existing in the port area with which the visiting ship's master is not expected to be conversant.

Pilots must therefore have reasonable sea-going experience, wide technical knowledge on ship operations and how ships work, be technically capable of piloting all types of ships, and well versed and able to keep themselves abreast of the latest technical developments in ships equipment, navigational aids, ship design as well as a good knowledge of existing local regulations and conditions in the port area.

It is felt that depending on the type of pilotage, local conditions and system of training, a class 3 certificate of competency may be adequate as a practical minimum qualification for entry into pilot training.

However, the assessment of experience, qualification and suitability of an applicant for pilotage training and certification may remain the responsibility of each pilotage authority." Unquote.
IMO resolution A.485(X11) Annex 1 titled Recommendations on minimum standards for training and qualification of maritime Pilots other than deep sea Pilots, does not set any specific standards of qualification but recommends that every pilot should satisfy the competent authority that he is medically fit, particularly regarding eyesight and hearing, meets standards required for certification of masters, chief mates and officers in charge of a navigational watch under the international convention on standards of training certification and watchkeeping for seafarers 1978. In this context and in view of the syllabus for pilotage certification or licensing as stated by sub-paragraph 2 of the appendix to IMO resolution A.485(X11), it is felt that depending on the type of pilotage, local conditions, and system of training a class 3 certification of competency may be adequate as a practical minimum qualification for entry into pilotage training.

Job requirements for Pilots are as follows:
- To pilot ship from sea to port.
- To pilot ship in coastal waters.
- To be able to berth a ship.
- To be able to establish good communication with tug.
- To operate navigational and communication equipment on board.

### TUGMASTER

The tugmaster is in command of the tug and his job requirements are:
- To be able to manoeuvre the tug and assist ships in
berthing or unberthing.
To be able to interpret pilots' instructions when berthing or unberthing.
To tow ships in port and also in coastal waters.
To be able to navigate the tug in coastal waters.
To operate navigational and communication equipment on board.
To operate all fire and safety appliances on board.

2.1.3 TUGMATE.

The tugmate is to assist the tugmaster in the safe operation of the tugs. His job requirements are therefore the same as the tugmaster's but to a lesser depth.

2.1.4 FERRY MASTER.

The ferry master is in charge of the safe navigation of the ferry boat from port to port.
He should be able to read simple navigational charts so as to navigate the ferry safely.
To berth and unberth the ferry.
To operate navigational and communication equipment.
To be able to operate fire and all safety equipment.
To be able to effect search and rescue in case of emergency.
To supervise loading and unloading of cargo and passengers.

2.1.5 FERRY MATE.

To assist the ferry master in the safe navigation of the ferry boat so his job requirements are the same
as the ferry master's but to a lesser depth.

2.1.6 COAST GUARD PATROL BOAT OPERATOR.

To provide fisheries protection in coastal waters.
To provide search and rescue services.
To police coastal waters against smuggling, piracy and pollution.

2.2 OUTLINE OF PRESENT COURSES.

The Academy presently runs the following courses for both tugmates and ferrymates. Although there is no special syllabus for pilots they also tend to follow the syllabus for tugmates when they undertake refresher courses in the Academy. The subjects are as follows.

2.2.1 Seamanship.
2.2.2 Practical navigation.
2.2.3 Chartwork
2.2.4 Elementary ship knowledge.
2.2.5 Communication and signalling.
2.2.6 Life saving.
2.2.7 Medical Aid.
2.2.8 Fire preventing and fire fighting.

The detailed syllabus is as follows:

2.2.1 Seamanship Duration 72 Hours.

Compass, hand leadline, knots and splices, purchases, safe working load, breaking strength, derricks schermuly rocket, anchors and anchor work.
lifeboats and liferafts, buoyage system, rules and regulations for prevention of collision at sea, use of barometer, thermometer, pelorus, azimuth mirror, mooring, ship handling, towing, drydocking. Appliances for hometrad ships, use, care and maintenance of fire appliances for home trade ships.

2.2.2 Practical Navigation  
Duration 48 Hours

To obtain a compass error by means of: Transit bearing, azimuth, amplitude. Days work calculations, involving the use of traverse tables. To use and understand Admiralty tide tables.

2.2.3 Chartwork  
Duration 48 Hours

To use a plan or chart and understand the symbols portrayed, to be able to lay off and pick off courses and distances, to understand leeway and how to lay it off, to find the course to steer to counteract a current, to obtain the vessels position by following methods:

- cross bearing
- running fix
- running fix with current
- horizontal angles

To understand the use of tables of deviation and how to apply both deviation and variation to true and compass courses and vice versa.

2.2.4 Elementary ship knowledge  
Duration 48 Hours
Ship construction, framing, shell plating, decks, bulkheads, sounding pipes, air pipes, stability definitions, effect of loading a weight, effects of free surface, displacement/deadweight scales.

2.2.5 Communication and signalling Duration 48 Hours.

To be able to send and receive morse flashing at six words per minute.

International code of signals, calling and answering substitute and numerals, distress and life saving signals, procedure of communication by radio.

2.2.6 Fire prevention and fire fighting Duration 30 Hours

Triangle of fire, ignition temperature, self ignition, methods of fire extinguishing, causes of fire accidents on board ships, methods of fire prevention, portable fire extinguishers, fire hoses their uses and maintenance, breathing and alerting apparatus, fixed installations of fire fighting, control centres of fire, damage control, organisation of fire teams.

2.2.7 Life saving Duration 30 Hours

Different emergency cases liable to occur to ships, such as collision, fire, drowning, types of life saving appliances available on board, importance of safeguard against emergency cases, Necessary procedure during emergencies and before abandoning ship, Abandoning ship, man overboard, uprighting a capsized raft. Dangers encountered by survivors,
Practical training on the use of all life saving appliances on board ships, lifeboats or rafts.

2.2.8 Medical Aid

Duration 16 Hours.

General idea of the structure of the human body and the function of its different organs, practical training in the use of bandages, general treatment of injuries, fractures, and disjunctions, head and vertebral injuries. Treatment of emergency cases of unconsciousness and paralysis, treatment of cuts and burns, drowning and asphyxia, artificial respiration.

2.2.9 Table 2.1 Course programme for tugmates.

Duration 1 Term (12 weeks)

<table>
<thead>
<tr>
<th>Subjects</th>
<th>No. of hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seamanship</td>
<td>72</td>
</tr>
<tr>
<td>Practical navigation</td>
<td>48</td>
</tr>
<tr>
<td>Chartwork</td>
<td>48</td>
</tr>
<tr>
<td>Elementary ship knowledge</td>
<td>48</td>
</tr>
<tr>
<td>Communication and signalling</td>
<td>48</td>
</tr>
<tr>
<td>Fire prevention and firefighting</td>
<td>30</td>
</tr>
<tr>
<td>Life saving</td>
<td>30</td>
</tr>
<tr>
<td>Medical Aid</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>340</td>
</tr>
</tbody>
</table>

NB. Duration of one hour is 50 minutes. The academy runs a 30-hour per week programme.
2.3. REVIEW OF PRESENT COURSES.

2.3.1 Strengths.

The contents of present courses on fire prevention and fire fighting, life saving (survival) and medical aid which are termed mandatory/specialised courses are adequate and does not differ very much from IMO developed special courses. Since IMO developed special courses have laid down clearly the duration of each course and topics, I will suggest a direct adoption of the IMO developed courses which I have included in my proposals in chapter 3.

2.3.2 Weaknesses

1. With the current development in technology in shipping and the fact that the present syllabus is for both tugmates and ferrymates, the contents do not meet adequately their job requirements.

2. As I indicated in my introductory chapter, more goods are being carried on inland water and these include dangerous and hazardous cargo, for example in the Gambia 200,000 tonnes of cargo are carried annually comprising vehicles, general cargo, oil and dangerous goods, but no aspect of the syllabus covers cargo work and carriage of dangerous goods. It is also very essential that these personnel handling this volume of cargoes should have a minimum knowledge of ship Business, Management and Commercial knowledge.
Having an in-depth look at the navigation and chartwork syllabus, one can find out that no aspect of electronic navigation has been included, but all these craft have been fitted with sophisticated electronic navigational systems. The syllabus as it stands now does not reflect modern trends and present course objectives.

The seamanship syllabus contains repetition of certain topics which are already included in life saving and fire prevention and fire fighting syllabuses. For example topics as lifeboats, and liferafts, use and care and maintenance of fire appliances are included in the seamanship syllabus as well as life saving and fire fighting syllabuses.

The Elementary Ship Knowledge syllabus is also obsolete and does not meet current course objectives. The "Elementary" should be replaced with the word "General" so as to make the subject not to loose its value. Aspects of ship maintenance should be included to meet current requirements.

The communication and signalling syllabus is also inadequate and and I will propose a Restricted Radiotelephony course in addition to the present syllabus.

The syllabus does not reflect any aspects of Meteorology which in my opinion is very important and students should have a minimum knowledge especially of local weather conditions.
2.4. OUTLINE OF COURSES NOT AVAILABLE.

2.4.1 As I have already indicated in the previous paragraphs, the present courses are for Tugmates and ferrymates and there are no separate courses presently for Ferrymasters, Tugmasters, Pilots and Coastguard patrol boat operators. Tugmates who come back for upgrading are only given refresher courses on the same Tugmate syllabus. There is no doubt that requirements of these courses are somewhat similar and could be held jointly but nevertheless, these must be clearly defined.

My proposals are in chapter 3 but I wish to emphasise that owing to the importance of the jobs of these categories of personnel, they now require higher standards of training that means higher entry qualifications so that course objectives could be met.
CHAPTER 3

3. PROPOSED COURSES

3.1 OUTLINE OF PROPOSED COURSES

3.1.1 As I have already indicated in the previous chapters the requirements of the various category of courses are almost the same and could be held jointly. It also gives the advantage that fewer lectures can be used, which will be able to give the students maximum knowledge. It will give the student the added advantage to be able to work in the port, inland water or as a coastguard patrol boat operator. Governments will also have the flexibility of using the student in any of these three areas.

Since these courses are not deep-sea courses nor rating training courses, I am not going to use the IMO recommended short courses nor the STCW as a blue print but I am going to use vital information from these sources, together with my own experience as a lecturer of these courses to come up with a syllabus which is relevant ie. neither too high nor too low for their standard.

3.1.2 LEVELS

I wish to depart from the old situation where they have only one system and propose a three level scheme as follows:
3.1.3 Level 1. Programme for Tugmates, Ferrymates, class 2 Coastguard patrol boat officer.

3.1.4 Level 2. Programme for Tugmasters, Ferrymasters, class 1 Coastguard patrol boat officer.

3.1.5 Level 3. Programme for Pilots.

3.1.6 Programme for level 1. and level 2.

The minimum entry qualification into the programme will be General Certificate of Education Ordinary or Advanced level (GCE "O" or "A" level). See figure 3A. The student will then have to do on the job training for two years on the tugs, ferries or coastguard patrol boats as trainee. The on the job training should be drawn by the employers with consultations with the Academy so that the trainee would have adequate deck knowledge by the end of the two years.

The student will then enter the Academy where he will do one semester of academic work duration 18 weeks. After passing the examination at the end of the semester, he will be certificated as a tugmate, ferrymate or class two coastguard patrol officer.

He will then have to do a further 2 years on the job training and re-enter the academy for another one semester school time. On completion of the course and after passing his examinations he will be awarded a certificate as tugmaster, ferrymaster or as class 1 coastguard patrol boat officer.
FIGURE 3A. TRAINING PROGRAMME FOR TUGMATE/FERRYMATE, TUGMASTER/FERRYMASTER, COASTGUARD PATROL BOAT OFFICERS AND PILOTS.
Table 3A Summary of scheme

<table>
<thead>
<tr>
<th>Scheme</th>
<th>Job training</th>
<th>Schooltime</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferrymate/Tugmate/class 2 off</td>
<td>24 months</td>
<td>18 weeks</td>
</tr>
<tr>
<td>Tugmaster/Ferrymaster/class 1</td>
<td>24 &quot;</td>
<td>18 weeks</td>
</tr>
<tr>
<td>Total</td>
<td>48 months</td>
<td>36 weeks</td>
</tr>
<tr>
<td>Grand Total</td>
<td>57 months</td>
<td></td>
</tr>
</tbody>
</table>

3.1.7 Level 3 Programme for Pilots

I have divided the pilot training programme into three categories see figure 3A.

1 Category 1

This is for those students who have passed the tugmasters and will like to continue as pilots. After obtaining their tugmasters certificate they have to do 12 months on the job training as tugmaster and then 12 months as pilot trainee and then enter the Academy for one semester of academic work. After successfully passing the examination they will be certificated as pilots, subject to the approval of their various Governments or administrations. I will address this matter fully latter on in chapter 4.
2 Category

This category is for students who go directly to sea after obtaining their ordinary level (O level) or advanced level (A level). They have to obtain 36 months of seafaring and then enter the Academy for one semester of academic work. After completing and successfully passing the examinations they will be certificated as class 3 watch keeping officer. They will then do 12 months on the job training as pilot trainee and then return to the Academy for a further one semester of academic training. After passing of the examinations they will be certificated as pilots subject to endorsement by their various administrations.

3 Category 3

These are students who enter the Academy directly after their advance level (A level). They will be given 18 months of pre sea-cadet training then they will have to do 12 months at sea. The students will then return to the academy where they will have one semester of academic work and then sit for the class 3 certificate of competency examinations. After passing these examinations they can now do 12 months on the job training as pilot trainee and then re-enter the Academy for a further one semester of academic work. After passing the examinations at the end of the course they will be certificated as pilots subject to the endorsement by their various administrations.
I will suggest that categories 1 and 2 should be gradually phased out leaving category 3 as the only scheme for the training of pilots.

Table 3B Summary of Pilot Training Scheme

<table>
<thead>
<tr>
<th>Category</th>
<th>Job Training</th>
<th>Seatime</th>
<th>School time</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>72 months</td>
<td>-</td>
<td>13 months</td>
<td>85m</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2wks</td>
<td>2wks</td>
</tr>
<tr>
<td>2</td>
<td>12 months</td>
<td>36 months</td>
<td>9 months</td>
<td>57 months</td>
</tr>
<tr>
<td>3</td>
<td>12 months</td>
<td>12 months</td>
<td>27 months</td>
<td>51 months</td>
</tr>
</tbody>
</table>

* On the job training up to tugmasters included.

3.1.8 Outline of Syllabii

Find below the syllabii for the various levels of courses.

Table 3C Course Programme for Tugmates, Ferrymate, and Coastguard Patrol Officer Class 2

Duration 18 weeks

<table>
<thead>
<tr>
<th>Subject</th>
<th>No of Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire prevention and fire fighting</td>
<td>30</td>
</tr>
<tr>
<td>Survival at sea</td>
<td>30</td>
</tr>
<tr>
<td>First Aid</td>
<td>30</td>
</tr>
<tr>
<td>Chartwork and Pilotage</td>
<td>78</td>
</tr>
<tr>
<td>Electronic Navigational systems</td>
<td>90</td>
</tr>
<tr>
<td>Meteorology</td>
<td>16</td>
</tr>
</tbody>
</table>

30
<table>
<thead>
<tr>
<th>Subject</th>
<th>No of hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chartwork and Pilotage</td>
<td>30</td>
</tr>
<tr>
<td>Electronic Navigational Systems</td>
<td>90</td>
</tr>
<tr>
<td>Meteorology</td>
<td>45</td>
</tr>
<tr>
<td>Ship Construction and Stability</td>
<td>60</td>
</tr>
<tr>
<td>Cargo Work and Pollution Prevention</td>
<td>60</td>
</tr>
<tr>
<td>Search and Rescue</td>
<td>30</td>
</tr>
<tr>
<td>Seamanship and Ship Handling</td>
<td>75</td>
</tr>
<tr>
<td>Ship Business and Commercial Law</td>
<td>60</td>
</tr>
<tr>
<td>Total</td>
<td>480</td>
</tr>
</tbody>
</table>

**Table 3E Course Programme for Pilots**

Duration 18 weeks

<table>
<thead>
<tr>
<th>Subject</th>
<th>No of Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chartwork and Pilotage</td>
<td>60</td>
</tr>
<tr>
<td>Electronic Navigational systems</td>
<td>90</td>
</tr>
<tr>
<td>Meteorology</td>
<td>60</td>
</tr>
<tr>
<td>Seamanship and Ship Handling</td>
<td>120</td>
</tr>
<tr>
<td>Ship Business and commercial law</td>
<td>60</td>
</tr>
<tr>
<td>Search and Rescue</td>
<td>15</td>
</tr>
<tr>
<td>Ship construction and Stability</td>
<td>60</td>
</tr>
</tbody>
</table>
3.2 DETAILED SYLLABI

3.2.1 Find below the detailed syllabi and course description for Tugmates, Ferrymates and Coastguard Patrol boat Officer Class 2.

3.3. FIRE PREVENTION AND FIRE FIGHTING DURATION 30HOURS

3.3.1 Introduction, Safety and Principles
   .1 Theory of fire
   .2 Conditions for fire
   .3 Properties of flammable materials
   .4 Fire hazards and spread of fire
   .5 Classification of fires and appropriate extinguishing agents.

3.3.2 Fire Prevention
   .1 Fire prevention principles
   .2 Ship construction arrangements
   .3 Safe practices

3.3.3 Fire detection
   .1 Fire and smoke detection systems
   .2 Automatic fire alarms

3.3.4 Fixed fire extinguishing systems
   .1 General
   .2 Smothering effect systems, carbon dioxide, foam
   .3 Inhibitor effect systems, halogenated hydrocarbons and powders.
4 Cooling effect systems, sprinklers, pressure spray.
5 Emergency fire pump
6 Chemical powder applicants

3.3.5 Miscellaneous fire fighting equipment
1 Fire hoses and nozzles
2 Mobile Apparatus
3 Portable fire extinguishers
4 Fireman's outfit
5 Breathing apparatus
6 Resuscitation apparatus
7 Fire blankets
8 Care and maintenance of fire appliances.

3.3.6 Ship fire fighting organization
1 General emergency alarm
2 Fire control plans and muster list
3 Communications
4 Personnel safety procedures
5 Periodic shipboard drills
6 Patrol systems

3.3.7 Fire fighting methods
1 Knowledge of fire safety arrangements
2 Fire alarms and first actions
3 Fire fighting

3.3.8 Fire fighting drills
1 Small fires
2 Extensive fires
3 Drills in smoke-filled spaces
3.4. SURVIVAL AT SEA  DURATION 30 HOURS

3.4.1 Introduction, safety and survival
   .1 Safety guidance
   .2 Principle of survival at sea
   .3 Definitions, survival craft and appliances

3.4.2 Emergency situation
   .1 Types of emergencies
   .2 Precautions
   .3 Fire provisions
   .4 Foundering
   .5 Crew expertise
   .6 Muster list and emergency signals
   .7 Crew and emergency instructions
   .8 Extra equipment and survival
   .9 Abandoning ship, complications

3.4.3 Evacuation
   .1 Abandoning ship, last resort
   .2 Personal preparation for abandoning ship
   .3 Need to prevent panic
   .4 Crew duties to passengers
   .5 Crew duties, launching survival craft
   .6 Master’s orders to abandon ship
   .7 Means of survival

3.4.4 Survival craft and rescue boats
   .1 Lifeboats
   .2 Liferafts
   .3 Rescue boats

3.4.5 Personal Life-saving appliances
   .1 Lifebuoys
   .2 Lifejackets
3.4.6 Personal life saving appliances (demonstrations)
   .1 Lifebuoys
   .2 Lifejackets
   .3 Inflatable liferafts
   .4 Immersion suits
   .5 Thermal protective aids
   .6 Personal survival without lifejacket
   .7 Boarding survival craft

3.4.7 Survival at sea
   .1 Dangers to survivors
   .2 Best use of survival craft facilities

3.4.8 Helicopter assistance
   .1 Communicating with the helicopter
   .2 Evacuation from ship and survival craft
   .3 Helicopter pick-up
   .4 Correct use of helicopter harness

3.4.9 Emergency Radio equipment
   .1 Radiotelegraph installation for lifeboats
   .2 Portable radio apparatus for survival craft
   .3 Emergency position-indicating radio beacons

3.5. FIRST AID
      Duration 30 hours

3.5.1 General Principles in cases of emergency
   .1 Assessment of accident situation
   .2 Assessment of own hazard
   .3 Unconsciousness
   .4 Respiratory arrest
3.5.2 Body structure and function
   .1 The skeletal system
   .2 The muscular system
   .3 The cardiovascular system
   .4 The respiratory system
   .5 The digestive system and abdomen

3.5.3 Positioning of casualty
   .1 Recovery position
   .2 Resuscitation position

3.5.4 The unconscious casualty
   .1 Signs and hazards of unconsciousness
   .2 Keeping air passage clear
   .3 Positioning of unconscious casualty
   .4 Action in the case of respiratory or cardiac arrest
   .5 No food, liquid or other substance by mouth

3.5.5 Resuscitation
   .1 Control of respiration
   .2 Function of reclined position of head
   .3 Mouth to mouth respiration
   .4 Mouth to nose respiration
   .5 Cardiac arrest, methods and limiting factors
      relating to cardiac massage including
      cardiopulmonary resuscitation (CPR)

3.5.6 Bleeding
.1 Hazards of bleeding
.2 Internal/external bleeding
.3 Shock
.4 External pad and pressure to sight
.5 Positioning of patient
.6 Application and dangers of tourniquet

3.5.7 Management of shock
.1 Main reasons and signs of shock
.2 Recognition: colour of face, pulse rate, and character
.3 Most essential measures of shock management

3.5.8 Burns and scalds, accidents caused by electric current.
.1 Definitions, complications and therapy of general condition of burns.
.2 Difference between burns and scalds
.3 Effects of heat
.3 Treatment of burns and scalds
.4 Hypothermia and frostbite
.5 Chemical burns
.6 Chemical burns of eyes
.8 Electric current accidents

3.5.9 Poisoning
.1 Symptoms and clinical aspects of poisoning
.2 Plosiong by ingestion, inhalation or skin contact
.3 Therapy in the case of acid and caustic solutions swallowed

3.5.10 Fractures, dislocations and muscular injuries
.1 Types of fracture
.2 Treatment and immobilization of injured part
.3 Special requirements for treating pelvic and spinal
injuries
.4 Symptoms and therapy of sprains, strains and dislocations

3.5.11 Rescue and transportation of casualty
.1 Temporary and ad-hoc aids for transport
.2 Stretcher transport
.3 Transport on chair
.4 Transport with a triangular cloth
.5 Transport as illustrated in international medical guide for ships
.6 Hazards of transport in cases of injury of pelvis and spine

3.5.12 Other Topics
.1 Use of first aid kit
.2 Use of medical first aid guide (MFAG) in accidents involving dangerous goods
.3 Dangers of entering an enclosed space
.4 Medical advise by radio

3.6. COMMUNICATIONS Duration 30 hours

3.6.1 To be able to send and receive morse flashing at six words per minute

3.6.2 International code of signals
.1 Knowledge of how to use publication
.2 Knowledge of single letter flags, substitute, and numerals
.3 Calling and answering
3.6.3 Restricted Radiotelephony

3.6.4 Practical training in the following

.1 Operational of shipborne radiotelephone and communication equipment
.2 Operation of portable radio apparatus for survival craft
.3 Sending and receiving spoken messages by radiotelephone
.4 Maintenance of accumulator batteries.

3.6.5 Communication procedures

.1 Radiotelephone watch-keeping, including log-keeping
.2 Procedures concerning sending and receiving radiotelephone messages, particularly those concerning distress, urgency and safety.
.3 The use of the international code of signals and the IMO standard marine navigational vocabulary.
.4 The use of international phonetic alphabet and figure code
.5 Ship position reporting systems and procedures
.6 Communication procedure of the IMO merchant ship search and rescue manual (MERSAR) using radiotelephone
.7 Radio medical system procedures

3.6.6 Requirements of Radio Regulations

.1 Distress, urgency and safety radiotelephone
communications.

.2 Avoidance of causing harmful interference, particularly with distress traffic.

.3 Documents to be carried by radiotelephone ship stations and their use.

3.7. TERRESTRIAL AND COASTAL NAVIGATION DURATION 78HOURS

3.7.1 Thorough knowledge of a chart or plan

.1 To understand the use of a chart or plan

.2 To understand all marks, signs and abbreviations

3.7.2 Ability to determine the ship's position by use of:

.1 Landmarks

.2 Aids to navigation, including lighthouses, beacons and buoys.

.3 Dead reckoning, taking into account winds, tides, currents and speed by propeller revolutions per minute and by log.

3.7.3 Conversion of courses into magnetic and compass courses and vice versa.

3.7.4 To find compass error by transit bearings

3.7.5 The use of sextant

.1 The principle of a sextant

.2 To read a sextant

.3 To take vertical and horizontal angles

3.7.6 The use of instruments

.1 Azimuth mirror

.2 Station pointer

.3 Patent log
3.7.7 Use of publications
   .1 Tide tables, to find height of tide
   .2 Sailing directions
   .3 Light list
   .4 Notices to mariners
   .5 Traverse tables, to find dead reckoning of a ship.

3.8. ELECTRONIC NAVIGATIONAL SYSTEMS DURATION 90HOURS

3.8.1 Echo Sounders
   .1 Basic principle of echo sounders
   .3 Types of echo sounders
   .3 Accuracy and precautions when in use

3.8.2 Compasses
   .1 The care and maintenance of Magnetic and gyro compass
   .2 Steering by magnetic and gyro compass
   .3 Automatic pilot, and the understanding of the change over procedure from automatic to manual steering and vice versa

3.8.3 Radio direction finders
   .1 Basic principles of radio direction finders
   .2 Types of direction finders in use
   .3 Taking bearings and fixing position on the chart

3.8.4 Radar
   .1 Fundamental principles of radar
   .2 Magnetic compass safe distances
   .3 Radiation hazards and precautions
   .4 The characteristics of radar sets
   .5 Factors external to the radar set affecting radar
3.6 Factors which might cause faulty interpretation

3.6.5 Setting up and maintaining display
   .1 Functions and adjustment of controls
   .2 Measurement of range and bearing

3.6.6 Plotting
   .1 The relative motion plot
   .2 Plotting devices
   .3 Course, speed and aspect of other ships
   .4 CPA and TCPA
   .5 The effect of course and speed changes on display
   .6 Standardized report format and reporting procedures

3.6.7 Use of radar in navigation
   .1 The use of radar for position fixing
   .2 Aids to radar navigation

3.9. METEOROLOGY DURATION 18HOURS

3.9.1 Meteorological terms and definition

3.9.2 Meteorological Instruments
   .1 Mecurial barometer
   .2 Aneroid barometer
   .3 Barograph

3.9.3 Storms which affect the West African sub-region
   .1 Season which storms occur
   .2 Local storm signals
   .3 Precautions to be taken

3.9.4 A knowledge of weather messages to shipping
3.9.5 A knowledge of principal currents, winds affecting the water circulation off the West African coast

3.10. **GENERAL SHIP KNOWLEDGE** DURATION 60HOURS

3.10.1 General knowledge
   ... .1 Types of ships
   .2 Names of principal parts of ships
   .3 Definition of main dimensions
   .4 Plans available on ships

3.10.2 Framing systems
   .1 Transverse framing
   .2 Longitudinal framing
   .3 Combined framing

3.10.3 Construction of various sections
   .1 Beams and beam knees
   .2 Watertight bulkheads
   .3 Shell and deck plating
   .4 Sounding pipes and air pipes
   .5 Hatchways and closing appliances

3.10.4 Stresses on a ship
   .1 Stresses acting in still water
   .2 Stresses acting in seaway
   .3 Methods to combat stresses

3.10.5 General ideas on the following;
   .1 Welding
   .2 Riveting
3 Burning

4 Precautions to be taken when such processes are carried out.

3.10.6 General understanding of the following
   1 Displacement
   2 Deadweight
   3 Buoyancy
   4 Reserve buoyancy
   5 Centre of gravity
   6 Centre of buoyancy
   7 Metacentric height
   8 Stable neutral and unstable equilibrium
   9 Righting lever
   10 Righting moment

3.10.7 Calculate the movement of the centre of gravity due to:
   1 Adding mass
   2 Removing mass
   3 Moving mass already on board
   4 Suspending masses

3.10.8 General understanding of the following
   1 Displacement and TPC scales
   2 Loadline marks
   3 Effects of density on draught and freeboard
   4 Fresh water allowance

3.10.9 General understanding of the following:
   1 Ship rigging
   2 Methods of stowage and securing of cargoes
3.11. SEAMANSHIP AND SHIP HANDLING  DURATION 90 HOURS

3.11.1 Ropework
   .1 Knots, hitches, bends and splices
   .2 Synthetic fibre and wire ropes
   .3 Care and maintenance
   .4 Safe working loads of rope and wire
   .5 Rigging of purchases and power gained

3.11.2 Boat Management
   .1 The care and maintenance of life saving equipment
   .2 Management of boat under oars, sail and power
   .3 Beaching and landing
   .4 Care and maintenance of lifeboat engines

3.11.3 Anchor work
   .1 Types of anchors
   .2 Care and maintenance of anchors and cables
   .3 Anchoring and working of anchors and cables

3.11.4 A full knowledge of the contents and application of the 1972 collision regulations and of those annexes concerned with safety of navigation

3.11.5 IALA and local system of buoyage

3.11.6 Marking and use of handlead line
3.11.7 Ship handling

.1 Getting underway, berthing and unberthing
.2 Manoeuvring in port and enclosed waters
.3 Effects of wind, shallows on manoeuvring
.4 Effects of screws on steering of a vessel
.5 Assisting a disabled ship, towing and being towed
.6 Man overboard

3.11.8 Maintenance procedures

.1 Organization of crew for routine maintenance
.2 Inspection and maintenance of ship equipment
.3 Care of steering gear, tanks and bilges
.4 Drydock routine
3.12. **DETAILED SYLLABUS FOR TUGMASTERS, FERRYMASTERS AND COASTGUARD PATROL BOAT OPERATOR CLASS 1**

3.12.1 Find below the detailed syllabus and course description of the above named officers

3.13. **CHARTWORK AND PILOTAGE**  
**DURATION 600 HOURS**

3.13.1 Ability to fix the ships position on the chart by the following methods:
   1. Simultaneous cross bearings
   2. Horizontal sextant angles by station pointer
   3. Bearing of one or more objects with run between allowing for current and wind.
   4. Radio bearings
   5. Line of soundings

3.13.2 To obtain the course and distance from one position to another by means of plane and mercator sailings.

3.13.3 A general understanding of the following:
   1. Traverse tables
   2. Nautical Almanac
   3. Sailing directions
   4. Current atlases
   5. Light list
   6. West African pilot
3.13.4 To have a general knowledge of the following:
   .1 Mercator charts
   .2 Reliability of charts
   .3 The direction and rate of local tides and currents.
   .4 corrections to apply to soundings
   .5 To find height of tide
   .6 Theory of tides and tide tables
   .7 Chart abbreviations

3.13.5 To obtain compass error by the following methods;
   .1 Transit bearings
   .2 By the sun during sunrise and sunset

3.13.6 To have a knowledge of the following:
   .1 Sextant errors and how to correct them
   .2 Terrestrial refraction
   .3 Dip and distance of sea and shore horizon
   .4 Time, Greenwich and other standard times.

3.14. ELECTRONIC NAVIGATIONAL SYSTEMS DURATION 90HOURS

3.14.1 Echo sounders
   .1 Reliability and errors
   .2 The danger of exclusive reliance on sonndings
   .3 Methods of recording or displaying depth information

3.14.2 Radio direction finder
   .1 Various errors of DF
   .2 Use of DF for search and rescue

3.14.3 A simple Knowledge of compasses
   .1 Magnetic compass siting and correction
   .2 General principle of a gyro compass.
3.14.4 To obtain the ships' position using hyperbolic navigational systems.
   .1 General principle of hyperbolic navigation
   .2 Fundamental difference between various systems.
   .3 Capabilities, limitations and possible errors and methods of applying corrections.
   .4 Position fixing by Loran C, Decca and Omega.

3.14.5 Satellite navigational equipment
   .1 Basic description and principles
   .2 Sources and courses of error
   .3 Corrections and expected accuracy
   .4 Coverage areas

3.14.6 Radar
   .1 Common errors of radars
   .2 Performance standard of equipment
   .3 Radar plotting
   .4 The use of radar for position fixing
   .5 Aids to radar navigation
   .6 Use of parallel indexing techniques
   .7 Radar and collision regulation

3.14.7 Aids to Navigation
   .1 Buoys
   .2 Navigational marks
   .3 Light vessels
3.15. **METEOROLOGY**

3.15.1 The principle and use of the following;

.1 Thermometer, maximum and minimum thermometer
.2 Hygrometer

3.15.2 A knowledge of the following;

.1 Relative humidity, dew point
.2 Water vapour in the atmosphere
.3 Evaporation
.4 Condensation
.5 Precipitation
.6 Formation and classification of clouds
.7 Formation of fog, mist and dew

3.15.3 The beaufort wind scale and weather notation in use at sea

3.15.4 A knowledge of the following;

.1 Mean Pressure distribution
.2 Daily and seasonal changes in atmospheric pressure
.3 Prevailing winds in West Africa
.4 Local and regional effects of heating and cooling
.5 Land and sea breezes
.6 Monsoons
.7 Anabatic and Katabatic winds

3.15.5 A knowledge of the general structure of weather reporting.

.1 Weather messages
.2 Coding and decoding of messages
3.16. SHIP CONSTRUCTION AND STABILITY  DURATION 60HOURS

3.16.1 A knowledge of the following
   .1 Double bottom tanks and deep tanks
   .2 Watertight bulkheads
   .3 Rudders and steering gear
   .4 Tanks and pumping arrangement

3.16.2 A general knowledge of the following
   .1 Ship classification and surveys
   .2 Gross and net tonnages
   .3 Tonnage certificates
   .4 Loadlines and seasonal use

3.16.3 Curves of statical stability
   .1 Effect of freeboard and effect of beam

3.16.4 Understanding of the following
   .1 Angle of lol1
   .2 The effect of free surface
   .3 List and its correction
   .4 Trim and effects of shifting cargo or ballast

3.16.5 A knowledge of stability and hydrostatic data supplied to small ships.

3.17. CARGO WORK  DURATION 60HOURS

3.17.1 A general knowledge and understanding of the following:
   .1 Methods of cargo handling using ships and shore gear
   .2 Handling and stowage of heavy weights
3.17.2 Preparation of cargo compartments, bilges, strums, etc before receiving cargo.

3.17.3 Methods and safeguards when fumigating holds

3.17.4 Practical knowledge of the calculation and maintenance of stability during:
   1. Loading and discharging
   2. Bunkering and ballasting operations
   3. Sea passage
   4. Effects of free surface

3.17.5 The stowage and securing of cargoes
   1. General cargoes
   2. Bulk cargoes
   3. Stowage factor

3.17.6 The loading and discharging of bulk oil, chemicals, and other dangerous and hazardous cargoes
   1. Safety precautions while loading and discharging
   2. Ventilation of holds
   3. Care of cargo during voyage
   4. Pumping and piping arrangements
   5. Pollution regulations, ballasting, Tank cleaning and gas freeing
   6. Load on top procedure
   7. Precautions before entering enclosed or contaminated spaces.

3.17.7 International regulations and recommendations relating to the carriage of dangerous cargoes in particular IMDG code.
3.18. SEARCH AND RESCUE  DURATION 30HOURS

3.18.1 A knowledge of the content and use of IMO merchant ship search and rescue manual

3.18.2 Administration
   .1 Administration organization of SAR
   .2 Co-ordination of search and rescue operations

3.18.3 Action by ships in distress

3.18.4 Action by assisting ships

3.18.5 Assistance by SAR aircraft

3.18.6 Planning and conducting a search

3.18.7 Conclusion of search

3.18.8 Communications
   .1 Marine radio communication facilities
   .2 Visual communication facilities
   .3 Communication with assisting aircrafts
   .4 Air-surface visual signals

3.19. SEAMANSHIP AND SHIP HANDLING  DURATION 75HOURS

3.19.1 Anchor work
   .1 Anchoring and working of anchors and cables in all conditions
   .2 Tending a vessel at anchor
   .3 Clearing a foul anchor
   .4 Hanging off an anchor
3.19.2 A thorough knowledge of the content of 1972 collision regulations and of the annexes

3.19.3 IALA and local buoyage systems

3.19.4 Ship handling and manoeuvring
   .1 Ship manoeuvring characteristics
   .2 Stopping distances
   .3 Turning circles
   .4 Headreach

3.19.5 Handling a ship in rivers, estuaries and enclosed spaces with wind and current.

3.19.6 Manoeuvring in shallow water
   .1 Shallow water effect
   .2 Squat
   .3 Rolling and pitching
   .4 Interaction between passing ships
   .5 Bank effect

3.19.7 Berthing and unberthing
   .1 Without Tugs
   .2 With Tugs
   .3 To buoys

3.19.8 A full knowledge of accidents and emergency and how to cope with the following:
   .1 Collision
   .2 Grounding and methods of refloating.
.3 Assisting disabled ship
.4 Loss of rudder and jury rudders
.5 Towing and being towed
.6 Faulty windlass

3.19.9 Manoeuvring when approaching pilot vessels
.1 Pilot ladders, care and maintenance
.2 Pilot signals

3.19.10 Maintenance procedures
.1 Maintenance and upkeep of tugs, lighters and barges.
.2 Scaling and painting
.3 Mixing of paints
.4 Treatment of wood and cement work

3.19.11 A knowledge of the following;
.1 Indent and store procedure
.2 Care and maintenance of ropes
.3 Repair list
.4 Drydocking procedures
.5 To write an accident report

3.20. SHIP BUSINESS AND COMMERCIAL LAW DURATION 60HOURS

3.20.1 A knowledge of the following:
.1 The certificate of registry and its significance
.2 Ships procedures, entering and clearing
.3 Ships documents
.4 Quarantine Procedures
.5 The official log book
.6 Customs procedures
.7 Port regulations
.8 Pilotage and towage regulations
.9 The merchant shipping act
3.20.2 The knowledge and understanding of the following:
   1. Assistance of vessels in distress
   2. Salvage
   3. Charter parties, bills of lading, freight

3.20.3 Carriage of goods by sea
   1. Demurrage
   2. Noting protest
   3. Marine insurance procedures
   4. Insurance agents, P and I club

3.20.4 A general knowledge of the following:
   1. Organization of ocean going vessels
   2. Responsibilities and duties of a ship master
   3. The work of a ship surveyor
   4. Trade in port, the work of agents and stevedores
   5. Port sanitation and port health
   6. Pollution damage and prevention liabilities
   7. Administration and working of ports
   8. Use of quays, sheds and warehouses
3.21. **DETAILED SYLLABUS FOR PILOTS**

3.21.1 Find below the detailed syllabus and course description for pilots

3.22. **CHARTWORK AND PILOTAGE**

**DURATION 60HOURS**

3.22.1 Thorough knowledge of local chart and plan

.1 Limits of local pilotage area

.2 Local system of buoyage

.3 Characteristics of lights, angles of visibility, fog signals, racons and radiobeacons in local area.

.4 Names and characteristics of channels, shoals, headlands and points in local area.

.5 True and compass courses and distances in pilotage area.

.6 Traffic separation schemes

.7 Depths of water throughout pilotage area including tidal effects

.8 Anchorages in the area and nature of bottom

.9 Chart abbreviations.

3.22.2 To have adequate knowledge of the following:

.1 Direction, set, rate, rise and duration of tides

.2 To find height of tide using tide tables

3.22.3 Thorough knowledge of the following publications

.1 Sailing directions

.2 Current atlases
3.22.4 Fixing ship's position by the following methods;
.1 Simultaneous cross bearings
.2 Horizontal sextant angles
.3 Radio bearings
.4 Lines of soundings

3.23. BRIDGE EQUIPMENT AND ELECTRONIC NAVIGATIONAL SYSTEMS DURATION 90HOURS

3.23.1 General knowledge and the operation of the following equipment;
.1 Telegraph
.2 Helm, Gyro compass and auto pilot
.3 Rate of turn indicator
.4 Clinometer

3.23.2 General knowledge of the principle and the practical operation of the following equipment for position fixing;
.1 Echo sounder
.2 Direction finder
.3 Radar
.4 Decca
.5 Loran
3.23.3 Radar simulator training
   .1 Familiarization with simulators "Own Ship" characteristic and control
   .2 Review of basic radar plotting
   .3 Open water exercises in the application of 1972 collision regulations
   .4 Exercise in navigation and collision avoidance in confined and congested waters
   .5 Exercise in and near traffic separation schemes

3.23.4 The fundamentals and operation of ARPA

3.24.  METEOROLOGY  DURATION 60HOURS

3.24.1 A general knowledge and the reading of the following meteorological instruments as an aid to weather forecasting;
   .1 Mecurial barometer
   .2 Aneroid barometer
   .3 Barograph
   .4 Hygrometer

3.24.2 A general knowledge of the following phenomena in the West African sub-region;
   .1 Daily and seasonal changes in atmospheric pressure
   .2 Prevailing winds (land and sea breeze, moonsons
   .3 Types of clouds
   .4 Types of storms
   .5 Principal currents
3.24.3 A knowledge of local weather forecast available to shipping.

3.24.4 A knowledge of general structure of weather reporting
   .1 Weather messages
   .2 Local storm signals
   .3 Coding and decoding of weather messages

3.24.5 Methods of wind estimation and direction
   .1 Buy Ballots law
   .2 Beaufort wind scale
   .3 Other methods

3.25. SEAMANSHIP AND SHIP HANDLING DURATION 120HOURS

3.25.1 A full knowledge of the following;
   .1 International regulations for prevention of collisions at sea 1972
   .2 Navigational safety rules for the local area.
   .3 Pollution prevention rules for the area

3.25.2 A full knowledge of IALA buoyage system

3.25.3 Anchor work
   .1 Anchoring and working of anchors in all types of conditions.
   .2 Thorough knowledge of anchorages in locality
   .3 Care and maintenance of anchors and cables
   .4 Working of anchors in adverse weather conditions.
   .5 Procedures during anchor watch
3.25.4 Ship handling and manoeuvring
   .1 Berthing and unberthing with or without wind or current.
   .2 Berthing and unberthing of ship with or without tugs.
   .3 Berthing and unberthing to buoys
   .4 Berthing with anchors

3.25.5 A knowledge of the following;
   .1 Manoeuvring behaviour of various types of ships and limitations imposed by particular propulsion and steering systems.
   .2 Stopping distances, turning circles, rate of turn, and headreach.

3.25.6 A knowledge of factors affecting ships performance such as the following;
   .1 Wind, current and tide
   .2 Channel configuration
   .3 Water depth
   .4 Bottom, bank and ship interaction

3.25.7 Use and limitation of tugs

3.25.8 A knowledge of types of emergencies and how to cope with them including;
   .1 Collisions
   .2 Groundings and methods of refloating
   .3 Assisting a disabled ship
   .4 Anchoring in an emergency
   .5 Loss of rudder
   .6 Failure of engineroom machinery
3.25.9 Manoeuvring when approaching pilot vessels

Training will include practical training with the aid of simulators.

3.26. **SHIP BUSINESS AND COMMERCIAL LAW**  **DURATION 60HOURS**

3.26.1 Ship's certificates

.1 Registration of ships
.2 International and local certificates required to be carried by ships.
.3 Procedure of obtaining certificates including periodical surveys and inspections and periods of validity.
.4 Official logbook
.5 Other ship documents

3.26.2 A knowledge of the following:

.1 Ships procedures, entering and clearing
.2 Quarantine procedures
.3 Custom house procedures
.4 Port regulations
.5 Pilotage and towage regulations
.6 The shipping and port acts

3.26.3 Documentation of cargo

.1 Mate's receipts
.2 Bills of lading
.3 Dangerous cargo lists
.4 Waybills
.5 Cargo plans

3.26.4 A knowledge of loadlines including tonnage mark
3.26.5 Safety of ship, crew, and passengers
   .1 Assistance to vessels in distress
   .2 Duties in the case of stranding
   .3 Collision or other casualty
   .4 Salvage and legal implication
   .5 Reporting dangers to navigation

3.26.6 Pollution and pollution prevention including international and local laws.

3.26.7 Marine insurance and the contract of carriage of goods by sea, protest, cargo surveys, certificates of seaworthiness.

3.26.8 A general knowledge of the following;
   .1 Port sanitation and port health
   .2 Trade in port and work of stevedores
   .3 Administration and working of ports
   .4 Use of quays, sheds and warehouses

3.27.  SEARCH AND RESCUE  DURATION 15HOURS

3.27.1 A knowledge of contents and use of IMO merchant ship search and rescue manual (MERSAR).

3.27.2 Administration and organization of SAR

3.27.3 Coordination of search and rescue procedures

3.27.4 Action by ships in distress

3.27.5 Action by assisting ships

3.27.6 Conducting of search, assistance from aircrafts
3.27.7 Conclusion of search

3.27.8 Communications in SAR

3.28. **SHIP STABILITY**

**DURATION 60 HOURS**

3.28.1 Understanding of the following;

1. Displacement
2. Deadweight
3. Buoyancy
4. Reserve buoyancy
5. Effects of density on draught and freeboard
6. Fresh water allowance

3.28.2 Understanding of the following;

1. The movement of centre of gravity during loading, discharging, and shifting of weights.
2. Deck cargoes and effect of movement of centre of gravity
3. Curves of statical stability
4. Angle of loll
5. Effect of free surface
6. List and how to correct list
7. Trim and effects of shifting cargo or ballast

3.28.3 A knowledge of stability and hydrostatic data supplied to small ships.
3.29. COMMUNICATIONS DURATION 15HOURS

3.29.1 Communication procedures

.1 Radiotelephone watch-keeping, including log-keeping
.2 Procedures concerning sending, and receiving
    radiotelephone messages particularly those
    concerning distress, urgency and safety.
.3 Use of international code of signals and IMO
    standard marine vocabulary.
.4 Ships position reporting systems and procedures
.5 Reporting dangers to navigation
.6 Communication procedures during search and rescue
    using radiotelephone.
.7 Medical advise by radio
4. IMPLEMENTATION AND CONCLUSION

4.1 ENTRY REQUIREMENTS

4.1.1 As I have already stressed in the earlier chapters, inland water transport and port marine operations have become advanced, sophisticated and expensive. It is therefore imperative and important to spend time and money to train the personnel involved in the operation of such craft to a very high standard.

In order to produce highly qualified and competent personnel, the entry qualification must also be high. Gunther Zade in his paper titled "The training of merchant marine officers; what challenges have been and have to be met" put it rightly that "Higher standards are not only the result of an extended and better training and the use of advanced training equipment but also of higher entrance requirements for maritime studies."

It is a fact that with the advancement of technology and consequently the syllabi, persons with basic elementary education could no longer cope with the course. I will therefore suggest a minimum entry qualification of General certificate of education ordinary level. (GCE "O" Level) for persons entering as Tugmates, ferrymates and Coastguard class 2 boat operators.

4.1.2 In chapter 3, I divided the pilot training into
three categories see figure 3A. I suggested that categories 1 and 2 should be phased out gradually leaving only category 3 as the only scheme for the training of pilots. My reason for proposing these three categories is to cater for the people now in the system; although they have only basic elementary education they have been trained for a long time on the job.

It is a fact nowadays that a person with basic elementary education cannot cope with the present syllabii. I have also suggested that a person needs a minimum of class 3 certificate of competency before he can enter pilot training. It therefore implies that a person must possess a GCE "A" level in physics or mathematics which is the present entry qualification for pre-sea entry.

4.1.3 PROPOSED ADMISSION REQUIREMENTS FOR TUGMATES, FERRYMATES AND COASTGUARD CLASS 2 OFFICERS.

.1 A holder of GCE "O" level with passes in four subjects two of which must be mathematics and physics plus a pass in English language.

.2 Must have served two years on the job in deck capacity in tugs, inland watercraft or off-shore vessels.

.3 Age: Not more than 24 years

.4 Must be medically fit

.5 Must have good eyesight
4.1.4 PROPOSED ADMISSION REQUIREMENTS FOR PILOTS

1. A holder of GCE "A" level of which one must be either mathematics or physics and GCE "O" level pass in English language.

2. Age: Not less than 18 years and not more than 24 years

3. Must be medically fit

4. Must have good eyesight.

4.2. EXAMINATION AND CERTIFICATION

4.2.1 The Academy presently conducts examinations for tugmates, inland water boat operators and pilots but only issues them with a certificate of training.

For example in Ghana, inland water boat operators are not issued with any certificates of competency by the administration as done to fishing and coastal ship operators. In my opinion this practice will not produce efficiency since the person does not have anything to loose in case he is negligent. Issuing them with certificates of competency will motivate them to work harder and more efficiently.

Although maritime administrations and port authorities have their own machinery for examination and licensing according to their statutory requirements, I think training in the Academy should be a pre-requisite to issuing of such licences.
At present the Academy is examining candidates for all grades of certificates of competency including hometrade and fishing certificates on behalf of the administration in Ghana and the administration issues the certificates of competency. This same system can be extended to pilots, tugmates, tugmasters, inland boat operators, and coastguard patrol boat operators. This will then call for closer co-operation between port authorities, maritime administrations, inland water authorities and the Academy.

I will suggest that the Academy conducts the examinations and issues successful candidates with certificates and then licensing could be done by various maritime administrations or Governmental authorities according to statutory requirements existing in each participating country.

4.3. EQUIPMENT

4.3.1 In order to achieve the training objectives of f errymates, ferrymasters, tugmates, tugmasters, coastguard boat operators and pilots, adequate training aids must be provided.

Presently the Academy has a two-own ship radar simulator which has not functioned in the past eight years, as a result students are trained only on ship models. This is not adequate and efficiency required cannot be achieved by such obsolete methods.

I will suggest that as a matter of urgency a radar simulator preferably four own-ship with ARPA should
be acquired. Secondly a ship handling simulator should also be acquired to improve the ship handling capabilities of pilots, tugmasters and inland boat operators.

4.3.2 I wish to emphasize that there is nothing prestigious about this equipment. To be able to produce well qualified personnel including ship's officers, it is imperative that this equipment should be provided.

Since the Academy is catering for anglophone countries in the west and central African states, an investment in this equipment will achieve a long time desired result.

The Academy is also a branch of the World Maritime University running short courses on behalf of WMU; providing the above mentioned equipment will help improve the output of these courses.

4.3.3 I agree that the cost of this equipment is very high and participating countries with their present economies cannot afford to purchase such equipment. I will suggest that help should be solicited from international organisations like the UNDP/IMO, NORAD and JICA.

Since the government of Norway has helped to develop these short courses and taking into account the long standing co-operation between NORAD and the Academy and also since Norway is among one of the leading producers of shipboard simulators (NORCONTROL), Governments of those participating should appeal to
the government of Norway for assistance.

4.3.4 In our part of the world there is little or no co-operation between shipping companies, maritime establishments and the Academy. They all stand like different entities as if they don’t have anything in common. These companies and establishments are the ultimate beneficiaries of the training offered in the Academy so they must be made to contribute towards the running of the Academy in the form of training aids.

For example Liberia has the largest tonnage of registry in the world and is also a participating country, so I suggest that the other participating countries should appeal to the Government of Liberia to levy small sums of money on all ships using its flag for the benefit of training in the Academy. Infact not only Liberia but all other countries especially port authorities should create a fund for training by making ships using their port facilities contribute towards such a fund. This money could be used to provide the much needed training equipment.

In Gunther Zade’s paper titled "Short courses their role in maritime education and training", He puts it this way:

"A company operates in a competitive environment and is able to realize at an early stage whether a lack of performance has to be related to deficiency in the qualification of personnel. On the other hand, shipping companies and other maritime enterprises are concerned not only with safety and pollution prevention matters but also with matters of economy."
Training is normally considered from a cost benefit aspect. As it is difficult to quantify in advance a relationship between investment in training and its outcome, training needs are often perhaps too often, realised only after a deficiency has clearly emerged or an accident has occurred. This unsafe "first approach" has normally to be followed by maritime administrations which tend to see new training needs emerging at the end of a time-consuming legal procedure."

I believe that if we start making some efforts on our own, then other international bodies will be more than willing to complement our efforts.

4.4. SHORT TERM IMPLEMENTATION

4.4.1 Although we are aware that the Academy continues to run despite the lack of this training equipment and aids, I think much more could be achieved if local available resources could be utilised properly. For example;

.1 The fibre glass boats now available should be used in the lagoon with outboard motors to instruct basic boat handling.

.2 Recently the port authority in Tema took delivery of new tugs and pilot boats with modern equipment. The Academy could arrange with them so that practical training could be taken on board the tugs and the boats during the times that the port is not busy.

.3 I personally had discussions with the managing
director of the Volta Lake Transport (Inland water transport) and he is willing to allow instructors have short trips on their ferries and give practical onboard training to their students. I suggest the Academy could arrange for this kind of training to cover all students on the course.

In my opinion these local arrangements could be made as we wait for more sophisticated training aids. Even after the arrival of these aids we still need the local practical training.

4.5. CONCLUSION

Before I conclude I will like to refer to a report in the October 1988 issue of "Seaways" titled "Pilot training - A report on the Southampton seminar by P.J. Tebay and G. Wood. Quote "Through almost all of the papers concerning recruitment, training and qualification ran a common thread - and one that extends beyond U.K thinking that (a) within 5-10 years there are unlikely to be enough suitable candidates for pilotage from sea with a Grade 1 (FG master) certificate; (b) it is questionable anyway if this is the most appropriate qualification for pilots (suprise! suprise!) and (c) that there should be a common professional qualification for pilots. One pilot paper from IMPA (International Maritime Pilots Association) did not agree on the grounds that the port requirements were too disparate for a common qualification.

Towards this end, many advocated an academic qualification (HND or degree) that will be pilot
orientated, but will contain such nautical subjects that will allow the holder to diversify within the port and marine industry if required. All could see the necessity of extensive "hands-on training on the job in the eventual pilotage district. Time scales for achieving such qualifications varied considerably, with the colleges tending to give greater emphasis on academic "modules" but the general principle were really remarkably close. What seemed to be being recommended (especially, astonishingly, by Trinity House!) was a form of apprenticeship with academic study taking the place of deck scrubbing time on a pilot boat! Papers by pilots and ex-pilots put emphasis on choosing the right people initially" unquote.

I will again refer to Gunther Zade’s paper; Quote "Shipping has undergone considerable changes during the last two or three decades. The knowledge needed for coping with the job requirements of today’s shipping industry has continually grown and is growing. Part of the previously acquired knowledge cannot be used anymore and new knowledge has taken it’s place." unquote.

I wish to emphasize the following points again,

.1 Our Governments have spent a lot of money on the development of our ports and inland waters, and I suggest that more money should be spent on training in order to protect this huge investment.

.2 Safety of craft, personnel and the marine environment is very important and personnel need
adequate training in order to cope with new trends.

3 The present syllabi and entry qualifications are not adequate to cope with new standards therefore I have proposed new syllabi and entry requirements.

4 The present training facilities are not adequate and so modern training equipment must be provided as a matter of urgency.

Personnel training is the backbone of every country and establishment and any organization which does not train its personnel is due to fail in the long run.

The Regional Maritime Academy represents a whole sub-region and any investment in training will definately benefit so many countries and raise their maritime status. The old order must change and give way to a new one. "We have been doing this for along time" must give way to a better and modern way of doing things. Let us stop living on past glories and strive for higher standards. That means good and adequate training.
APPENDIX 1

QUESTIONNAIRE ON PILOTS, TUGMASTERS/MATES,
FERRYMasters/MATES, COASTGUARD PATROL BOAT OPERATORS

1. PILOT AND TUGMASTER

1.1 How many tugmasters and pilots are employed by the Port Authority.

1.2 What is their present qualification, experience, and categorization.

1.3 How many of the pilots have master mariner's certificate

1.4 How many of them have foreign going watch keeping experience

1.5 Has there been any accidents in your port or coastal waters within the past 5 years? If yes

1.6 What was the immediate cause of such accident. (Attach any reports if available.)

1.7 What is the volume of cargo handled by your port annually

1.8 What is the volume of traffic in the port annually.

1.9 How many craft do you operate.

1.10 How many pilots and tugmasters/tugmates do you expect to train annually for the next 5 years.
1.11 What special areas do you want them to be trained in

2. INLAND WATER OPERATORS

2.1 How many craft do you operate.

2.2 How much personnel are employed for the operation of the craft.

2.3 What is their present qualification and how are they categorized.

2.4 What is the volume of cargo handled annually.

2.5 Do you transport oil or any hazardous cargo.

2.6 How many passengers are handled annually.

2.7 Has there been any accidents? If yes.

2.8 What was the immediate cause (Attach any reports if available).

2.9 How much personnel do you wish to train annually for the next five years.

2.10 What type of training do you require for such personnel.
3. **COAST GUARD PATROL BOAT OPERATORS**

3.1 Do you have a coastguard? If yes

3.2 How many boats are operated.

3.3 What is their qualification and experience

3.4 What is the number of personnel and how are they categorized.

3.5 What is their job description

3.6 Is your establishment part of the Navy or separate

3.7 In what areas do the personnel require training.

3.8 How many do you wish to train annually for the next five years.

3.9 If you don’t have a coast guard do you wish to establish one? If yes then answer questions 3.7 and 3.8.
RESOLUTION A.485(XII)

Adopted on 19 November 1981
Agenda item 10(b)

TRAINING, QUALIFICATIONS AND OPERATIONAL PROCEDURES FOR MARITIME PILOTS OTHER THAN DEEP-SEA PILOTS

THE ASSEMBLY,

RECALLING Article 16(i) of the Convention on the Inter-Governmental Maritime Consultative Organization,

RECOGNIZING that maritime pilots play an important role in promoting maritime safety and protecting the marine environment,

BELIEVING that the maintaining of a proper working relationship between the pilot, the master and, as appropriate, the officer in charge of a navigational watch is important in ensuring the safety of shipping,

NOTING that since each pilotage area needs highly specialized experience and local knowledge on the part of the pilot, IMCO does not intend to become involved with either the certification or licensing of pilots or the systems of pilotage practised in various States,

RECOGNIZING FURTHER the high standards of pilotage services already established in many States and the need for these standards to be maintained,

CONSIDERING that in those States developing pilotage services, the establishment of practical minimum training standards, qualification standards and operational procedures to provide effective co-ordination between pilots and ship personnel, taking due account of ship bridge procedures and ship equipment, would contribute to maritime safety,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its forty-fourth session,

1. ADOPTS the following Recommendations:

(a) The Recommendation on Minimum Standards for Training and Qualification of Maritime Pilots other than Deep-Sea Pilots, given in Annex 1 to the present resolution;

(b) The Recommendation on Operational Procedures for Maritime Pilots other than Deep-Sea Pilots, given in Annex 2 to the present resolution;

2. URGES Governments to give effect to these Recommendations as soon as possible;

3. INVITES the Maritime Safety Committee to keep these Recommendations under review and to bring any future amendments to the attention of Governments.
ANNEX 1

RECOMMENDATION ON MINIMUM STANDARDS FOR TRAINING AND QUALIFICATION OF MARITIME PILOTS OTHER THAN DEEP-SEA PILOTS*

1. The maritime pilots referred to in this recommendation do not include deep-sea pilots or ships' masters or crew who are certificated or licensed to carry out pilotage duties in particular areas. The competent authority** may, as appropriate, exempt persons who only carry out berthing duties.

2. Every pilot should hold an appropriate pilotage certificate or licence issued by the competent authority. In addition to stating the pilotage area for which it is issued, the certificate or licence should also state any requirements or local limitations which the competent authority may specify such as maximum size, draught or tonnage of ships which the holder is qualified to pilot.

3. Every pilot should also:

   .1 satisfy the competent authority that his medical fitness, particularly regarding eyesight and hearing, meets the standards required for certification of masters, chief mates and officers in charge of a navigational watch under the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978;

   .2 meet the standards of the Appendix to this Annex.

4. The specific content of training and certification or licensing standards is the responsibility of the competent authority. However, the standards should be sufficiently high to enable the pilot to carry out his duties safely and efficiently, and the training should include practical experience gained under the close supervision of experienced pilots.

5. In order to ensure the continued proficiency of pilots and updating of their knowledge, the competent authority should satisfy itself, at regular intervals not exceeding five years, that all pilots under its jurisdiction:

   .1 continue to possess recent navigational knowledge of the local area to which the certificate or licence applies;

   .2 continue to meet the medical fitness standards of paragraph 3.1 above; and

   .3 possess knowledge of the current international, national and local laws, regulations and other requirements and provisions relevant to the pilotage area or duties.

Possession of the knowledge required by sub-paragraphs 5.1 and 5.3 may be proved by an appropriate method such as personal service records or by an examination.

6. Where a pilot in cases of absence from duty, for whatever reason, is lacking recent experience in the pilotage area, the competent authority should satisfy itself that the pilot regains familiarity with the area on his return. If the lack of experience has been due to absence on account of serious ill health, there should also be a re-evaluation of the pilot's medical fitness.

* A deep-sea pilot is a person, other than a member of the ship's crew, who performs pilotage duties during the ship's passage outside the seaward limits of local pilotage areas.

** For the purpose of this resolution, competent authority means the Administration or other group or organization which by law or tradition provides a pilotage service.
7 Within the context of this document, and to maintain a safe and efficient pilotage service meeting the special conditions of the pilotage area, a competent authority should have control over pilot training and certification or licensing. The competent authority should:

.1 develop the standards for obtaining a certificate or licence in order to perform pilotage services within the area under its jurisdiction;
.2 administer whatever prerequisites, experience or examination are necessary to ensure that applicants for certification or licensing as pilots are properly trained and qualified;
.3 arrange for investigations of incidents involving pilotage.

APPENDIX

1 The assessment of the experience, qualifications and suitability of an applicant for certification or licensing as a pilot is the responsibility of each competent authority and should be left to their discretion.

2 SYLLABUS FOR PILOTAGE CERTIFICATION OR LICENSING

2.1 In this syllabus, “area” means the waters for which the applicant is to be certificated or licensed.

2.2 Applicants should demonstrate that they have knowledge of the following:

.1 Limits of local pilotage areas.
.2 International Regulations for Preventing Collisions at Sea, 1972, and also such other national and local navigational safety and pollution prevention rules as may apply in the area.
.3 Systems of buoyage used in the area.
.4 Characteristics of the lights and their angles of visibility and the fog signals, racons and radiobeacons in use in the area.
.5 Names, positions and characteristics of the lightvessels, buoys, beacons, structures and other marks in the area.
.6 Names and characteristics of the channels, shoals, headlands and points in the area.
.7 Proper courses and distances in the area.
.8 Traffic separation schemes, ship traffic services and similar ship traffic management systems in the area.
.9 Depths of water throughout the area, including tidal effects and similar factors.
.10 General set, rate, rise and duration of the tides and use of the tide tables for the area.
.11 Anchorages in the area.
.12 Bridge equipment and aids to navigation.
.13 Use and limitations of radar and automatic radar plotting aids (ARPA), and radar plotting.
Communications and availability of navigational information.

Systems of radio navigational warning broadcasts in the area and the type of information likely to be included.

Manoeuvring behaviour of the types of ships expected to be piloted, and the limitations imposed by particular propulsion and steering systems.

Factors affecting ship performance such as wind, current, tide, channel configuration, water depth, bottom, bank and ship interaction.

Use and limitation of tugs.

The English language to a standard adequate to enable the pilot to express himself clearly in his communications.

Any other knowledge that the competent authority considers necessary.

ANNEX 2

RECOMMENDATION ON OPERATIONAL PROCEDURES FOR MARITIME PILOTS OTHER THAN DEEP-SEA PILOTS

1 Efficient pilotage is, among other things, dependent upon the effectiveness of the communications and information exchanges between the pilot, the master, and the bridge personnel and upon the mutual understanding each has for the functions and duties of the other. Establishment of effective co-ordination between the pilot, the master and the bridge personnel, taking due account of the ship's systems and equipment available to the pilot will aid a safe and expeditious passage.

2 Despite the duties and obligations of a pilot, his presence on board does not relieve the master or officer in charge of the navigational watch from their duties and obligations for the safety of the ship. The master and the pilot should exchange information regarding navigational procedures, local conditions and the ship's characteristics. The following should be included in this exchange of information:

   .1 general agreement on plans and procedures for the anticipated passage;
   .2 discussion of any special conditions of weather, depths of water, tidal currents or marine traffic which may be expected during the passage;
   .3 provision of information on the ship's normal propeller revolutions at each speed, fore and aft draughts, length, beam, height of masts, rate of turn at different speeds, turning circle, stopping distance and other appropriate data;
   .4 discussion of any unusual ship handling characteristics, machinery difficulties, or navigational equipment problems which could affect the operation, handling or safe manoeuvring of the ship;
   .5 information on intended methods of tug usage, if this is contemplated.

3 Pilots should be encouraged to understand the IMCO Standard Marine Navigational Vocabulary and to use it in appropriate situations during radio-communications as well as during verbal exchanges on the bridge. This will enable the master and officer in charge of the navigational watch to better understand the communications and their intent.
4 When performing pilotage duties, the pilot should report or cause to be reported to the appropriate authority anything he observes which may affect safety of navigation or pollution prevention. In particular, he should report, as soon as practicable, any accident that may have occurred to the piloted ship and any irregularities with navigational lights and signals.

5 The pilot should have the right to refuse pilotage when the ship to be piloted poses a danger to the safety of navigation or to the environment. Any such refusal together with the reason should be immediately reported to the competent authority for further action.

6 Pilots should be adequately rested and mentally alert in order to provide undivided attention to pilotage duties for the duration of the passage.

RESOLUTION A.486(XII)

Adopted on 19 November 1981
Agenda item 10(b)

RECOMMENDATION ON THE USE OF ADEQUATELY QUALIFIED DEEP-SEA PILOTS IN THE NORTH SEA, ENGLISH CHANNEL AND SKAGERRAK

THE ASSEMBLY,

RECALLING Article 16(i) of the Convention on the Inter-Governmental Maritime Consultative Organization,

RECOGNIZING that navigational safety plays an important part in reducing the risk of incidents at sea likely to cause loss of life, personal injury, marine pollution or damage to property,

RECOGNIZING FURTHER that in appropriate circumstances competent deep-sea pilots can make an effective contribution to the safety of navigation in confined and busy waters such as the North Sea, the English Channel and the Skagerrak,

NOTING the Rules and Regulations for the Good Government of Deep-Sea Pilotage in the North Sea, English Channel and Skagerrak drawn up by the North Sea Pilotage Commission,

HAVING REGARD to the Directive adopted by the Council of the European Communities on 21 December 1978 concerning pilotage of ships by deep-sea pilots in the North Sea and English Channel,

HAVING CONSIDERED the recommendations made by the Maritime Safety Committee at its forty-second session,

1. RECOMMENDS Member Governments to take all necessary and appropriate measures to encourage ships entitled to fly the flag of their State and requiring the assistance of deep-sea pilots in the North Sea, English Channel and Skagerrak, to make use only of the services of deep-sea pilots in possession of a deep-sea pilot’s card in accordance with the Rules and Regulations for the Good Government of Deep-Sea Pilotage in the North Sea, English Channel and Skagerrak in the form shown in Annex 1 to the present recommendation, issued to adequately qualified deep-sea pilots by a competent authority of a country having a coast bordering on the North Sea, the English Channel or the Skagerrak and listed in Annex 2 to the present recommendation;
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