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WORLD MARITIME UNIVERSITY
MALMÖ, SWEDEN

PROPOSALS FOR THE SHORT-TERM AND LONG-TERM UPGRADING
AND MODERNIZING OF THE GREEK MARITIME EDUCATIONAL SYSTEM

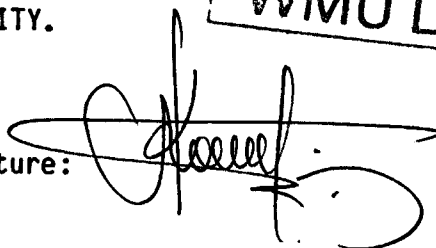
by
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Greece

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
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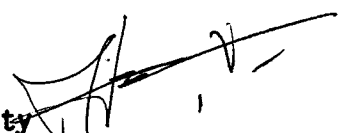
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D E D I C A T I O N

The project is dedicated to:

-My country,glorious Greece,to whom I extend my gratitude with hope that part or full use can be made of this project.

-My beloved wife,Soula,my loving sons Kostas and Andreas and my closest friends, Andreas and Litsa Marangos for their ceaseless moral support and the tremendous assistance in supplying me with an enormous amount of information,which made the completion of this project possible.

-The Greek seafaring community(Elliniki Naftiki Oikogeneia), which is eager to emulate our great ancestors in their successful exploits.

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- Last but no means least, my wife Soula, whose encouragement gave me the will to study and to be a success.

ABSTRACT

Greece has a long and honourable tradition in merchant shipping and its economy vitally depends on shipping. Therefore, a strong and efficient Greek merchant marine will be a prime factor in the strategy of economic prosperity and prestige. At the same time it is well known that our Maritime Education and Training (MET) is faltering. Today's technological advances with substantial reductions in manning levels have led to a considerable reorganization of shipboard operations. In close connection, private enterprises are in favour of fully automated vessels with low running costs and efficient master and officers to run the ship smoothly, safely and profitably. This calls for training to be more realistic and more relevant than it has been traditionally. However, to succeed in such a scheme the modernization of MET is highly desirable to keep pace with this rapid technological and social evolution of the marine industry.

In view of the above, the aim of the present thesis is to examine the structure of maritime education in Greece with a view to bringing about the necessary changes in the short and long run.

This study should be compared with the existing conditions of the Greek seafaring community. Its target is a competitive, effective and safety-orientated merchant marine for the benefit of all parties concerned.

The study is a personal reflection "status quo" without the influence of any emotional or traditional inhibitions on the part of the government or shipowners. Its main aim is to approach from a different point of view the currently known problems with respect to the upgrading of the qualitative standards of the Greek seafarers and those related to the marine industry.

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LIST OF A B B R E V I A T I O N S

ADSEN	Higher government maritime schools.
A.O.	Automation Officer.
b	billion.
c.f.	(Latin) compare.
DEK	Department of Education.
Drs	Drachmas, the Greek currency (rate Drs 135 against the U.S Dollar and Drs 250 against the United Kingdom pound, June, 1988).
DSEN	Government maritime schools.
DSHNO	Refresher center for electronic equipment.
DSMAEN	Refresher center for chief mates/2nd engineers.
EEC	European Economic Community.
EEE	Union of Greek Shipowners (UGS).
ESYE	National Statistical Department.
ESYE/YEN	National Statistical Department of the Merchant Marine Ministry.
FOC	Flag of Convenience.
GENE	Office for registered unemployed seamen.
GMDSS	Global Maritime Distress and Safety System.
grt	gross register tonnage.
ILO	International Labour Organization.
IMLA	International Maritime Lecturers Association.
IMO	International Maritime Organization.
INMARSAT	International Maritime Satellite Organization.
ITU	International Telecommunications Union.
KAEN	Marine officers reserve budget funds.
KESEN	Refresher center for masters/chief engineers.
KNE	Educational budget funds.

m million.
 M.A. Maritime Academy.
 M.A's Maritime Academies.
 MET Maritime Education and Training.
 M.U. Maritime University.
 NAT Seaman's Pension Fund.
 nm nautical mile
 P & I Protection and Indemnity.
 R/O Radio Officer.
 S.G. Secretary-General.
 STCW/78 International Convention on Standards of
 Training, Certification and Watchkeeping for
 Seafarers, 1978.
 TEI Technical education Institutes of higher
 education.
 TMS Technical Management of Shipping (W.M.U.).
 UMS Unattended Machinery Space.
 W.M.U. World Maritime University.
 YEN Merchant Marine Ministry.
 YEN/DD1 A department of YEN dealing with teachers/
 students (personnel).
 YEN/DOI A department of YEN concerning KNE budget.
 YEN/DOLS4 A department of YEN responsible for the
 function of M.A's.

INTRODUCTION

Shipping activities have been one of the most significant elements of economic prosperity in Greece since ancient years. The capacity of the Greek merchant fleet at the beginning of the Independence War (1821-1827) was 160-180,000 tonnes with 600 sailing ships and 20,000 seafarers. Most of these ships, either used as war ships or as fireships were sacrificed for the independence struggle. Immediately after Greece's enfranchisement was obtained, the restoration of the Greek merchant fleet commenced, based mainly on the initiative and enterprise of the islanders and the inhabitants of the maritime towns along the coast.

In those years, Greek seafarers navigated all over the world relying only on the practical experience which they had inherited from their father or on their intuitive instinct of seamanship. However, sailing and shipping activities were carried out by the experienced captain, who in fact was the master (today's shipowner), assisted by an educated man called "Grammatikos" (secretary), today's chief mate.

But the expansion of the Greek merchant fleet, the introduction of steamers during the last century and the demand for appropriate officers had been identified as early as 1838. However, an attempt was initiated in that year to teach nautical subjects in the schools of Navplion and Syros. On May 14, 1946, a royal decree passed through the parliament status that students could enroll at the same naval academy with royal navy officers and continue their career as merchant officers. For some unknown reasons, by a new royal order this combined naval

academy discontinued its activities in 1849.

The further development of the fleet necessitated a better system for upgrading master mariners. Therefore, in October 18, 1852 a new provision appeared on the scene, the first law for the examination of prospective master mariners, by which those who were in command of a steamer should grant the appropriate certificate.

On April 11, 1867, a new edict was introduced for the formation of nautical schools. Such schools were established in Syros, Hydra, Spetses, Galaxidi and Argostoli. This effort did not succeed, and a few years later these public schools were closed down.

Later on with the law ALB of 1872 for the establishment of nautical schools, concrete foundations were placed for the reformation of maritime education, but unfortunately this law never materialised.

Although government attempts were in vain, the private sector managed to eliminate all difficulties and to provide well qualified personnel.

On the part of the government all these dilemmas continued until 1930 when, with the law 4511/1939, the first maritime academy was established in Hydra. It provided four years of studies.

But the further growth of the Greek merchant fleet after 1948 led to a desperate need for more and more well qualified personnel. As a result, beginning in 1955 additional maritime colleges were established, namely the DSEN (government maritime schools) and later on the ADSEN (Higher government marine schools) so that by 1978 there were 20 schools. At the same time the fleet reached a remarkable peak, with 4,887 ships (Greek and FOC vessels with Greek ownership) of 52.5m grt.

1.1 CHAPTER ONE (1) : INTRODUCTION

The world is advancing technologically at a rapid rate every day. In recent years, technology applied in ship operations has brought about a significant change along with development in electronics. As a result, the increase in automation and simultaneous reduction in labour on board ship became extremely significant. Needless to say, the last recession (1981-1986) has been the source of a great concern to shipowners who struggle to survive in an internationally competitive market.

This recession has left Greece, which mainly depends on foreign cargoes, unaffected. The maximum of the Greek fleet (here, only those flying the national flag) was reached in 1981, with 3,950 ships representing a capacity of 41m grt. As of December 31, 1987 1,948 units of 23.56m grt in addition to 220 Greek-owned ships were registered with NAT (seamen pension fund), giving an aggregate of what is officially regarded as the Greek fleet consisting of 2168 ships of 28.15m grt (Source: YEN-NAT, 1988).

This situation has led to a high rate of unemployment, at its maximum of 14,213 (8,328 officers and 5,885 ratings) in March 1983. Statistics from the last week of June, 1988 give the numbers of officers and ratings being as 1,850 and 1,255 respectively (Source: GENE, office for registered unemployed seamen).

This number (3,105) does not include those who have failed to register as being unemployed.

It may be concluded that the rate of unemployment was reduced about 75% between March 1983 (the highest ever in Greece) and June 1988 (date of last statistics).

This slump has resulted in two major problems:

1. A significant number of officers and crew have moved into other vocations, whilst the elderly seamen took

advantage of a law,1711/87, regarding the retirement age, and retired earlier than expected.This resulted in a deficit of the NAT since June 1985,when all the reserve funds were exhausted.

2.As of September 28,1987 the NAT pension fund, comprising payments based on the seamen's salary and paid by the seaman and the shipowners respectively,has a deficit of Drs(Drachmas) 62.9 billion equivalent to USD 484.1m.This deficit was created NAT having to meet its commitments. It is expected that by the end of 1988,with the interest and annuity on the deficit, being Drs 29.7 billion and Drs 1.5 billion in taxes due to the government,plus Drs 17 billion which was received from KAEN and KNE(educational budget funds),it is estimated that the deficit will reach a level of Drs 120 billion,equivalent to USD 923.077 million(Ref:1).

It may be concluded that there is no motivation for the employment of seafarers for the following reasons:

- 1.lack of new entrants due to high unemployment in the shipping industry;
- 2.risk of not receiving adequate pension;
- 3.poor social benefits for their families as well as for themselves due to the deficit of funds in NAT;and
- 4.no indication of future improvements of the present situation.

These difficulties together with those present in maritime academies (M.A's) which are being analysed in subchapter 1.3 create doubts in the minds of the prospective students and seafarers on whether to pursue a seafaring career.

1.2.Present situation regarding M.A's.

At present in Greece there are (15) fifteen maritime academies(M.A's) throughout the country,as shown in

Appendix One, of which only one caters for deck/engine and radio departments, two for deck/engine and one for deck /radio departments. Of the remaining eleven, six provide tuition for deck officers, three for engineers and two for radio officers.

The M.A's are listed along with the year of establishment in the table below: Table:1/1.

Deck	year	Engine	year	Radio	year
1.Hydra	1930	Aspropyrgos	1956	Aspropyrgos	1960
2.Aspropyrgos	1955	Skaramagas	1964	Rhodes	1970
3.Kymi	1956	Chios	1965	Preveza	1973
4.Syros	1962	N.Mihaniona	1968	Hiraklion	1978
5.Oinnousses	1965	Chania	1969		
6.Chania	1969	Elefsina	1971		
7.N.Mihaniona	1975				
8.Kephallonia	1975				
9.Hiraklion	1978				
10.Galaxidi	1986				

The geographical distribution and the maximum number of students they can accommodate is illustrated in the following table: Table:1/2.

Geographical distribution.	Deck departments	Engine	Radio	Total capacity.
----------------------------	------------------	--------	-------	-----------------

Number of groups/ Capacity in students

1.Aegean islands	2/183	1/111	1/121	4/415
2.Ionian islands	1/150	-	-	1/150
3.Attiki including				
Hydra (Athens)	2/350	3/394	1/203	6/947
4.Evia (Kimis)	1/80	-	-	1/80
5.Macedonia				
(N.Mihaniona)	1/215	1/295	-	2/510
6.Ipiros (Preveza)	-	-	1/312	1/312

7.Kriti(Chania/

Hiraklion) 2/60 1/150 1/30 4/240

8.Stereia Hellas

(Galaxidi) 1/60 - - 1/60

10/1098 6/950 4/666 20/2714

The above are the minimum intake figures. Source YEN, January 1988.

The M.A's which are situated in the two largest urban areas (Attiki-Macedonia) can accommodate 40% in number and 53.68% in capacity of the total. Their distribution in figures and intake in students is depicted in Appendix 2. But the significant aspect is that the remarkable number of students (1,406 or 63.11%) attend classes in these two big urban areas. This almost covers their maximum output (1,487 students for this year, 1987/88) and only 822 (36.87%) study elsewhere. The general arrangement is illustrated below : Table:1/3.

Area	No of students	department deck	eng.	radio	percentage
1.Attiki	921	331	407	183	41.33%
2.Macedonia	485	153	332	-	21.77
3.Kriti	192	100	74	18	8.62
4.Evia	50	50	-	-	2.25
5.Aegean Isl.	373	136	165	72	16.74
6.Ionian Isl.	56	56	-	-	2.51
7.Ipiros	100	-	-	100	4.49
8.Galaxidi	51	51	-	-	2.29
Grand total	2,228	877	978	373	100.00%

Source:YEN/DEK-21/01/1988,Ministry of Merchant Marine, Department of Education.

One of the main reasons why students give preference to the M.A's in Aspropyrgos-N.Mihaniona, is most probably due to the fact that these academies are well furnished in terms of modern equipment and comparatively speaking,

offer better prospects of higher achievement, and a more desirable place of residence (whether in Athens or elsewhere).

1.3. Comments about difficulties within M.A's

The above stated geographical distribution and the number of students they accommodate at each one theoretically may be considered ideal. In reality, they are facing certain difficulties, which over the past 20 years have resulted in the following problems:

1. Due to the scarcity of funds to furnish 15 M.A's the purchase of new modern equipment, for example marine simulators and educational aids, was not possible.

2. The existing libraries in all M.A's are very poorly equipped with the exception of those in Aspropyrgos and N. Mihaniona. Even those that exist are lacking in modern literature. This has had a negative effect on both lecturers and students with regard to keeping abreast of modern technological advances.

3. There is a difficulty in posting suitably qualified personnel in the remote locations, as in the present case of Oinousses, which is a small island with barely 300 inhabitants. One contributing factor in the appointment of maritime personnel may be that there is no uniformity in the criteria of employment.

4. Due to the lack of motivation it is natural for the maritime personnel not to have an inborn consciousness about their work on a long-term basis. This can result in the students success not being the aim of their achievement. It is evident from the above that they consider themselves unable to develop their ability to the maximum extent, and so increase the effectiveness as educators.

5. There is a lack of motivation of personnel as they do not have job security.

6. Due to low income of the lecturers they are forced to conduct private lessons after the normal educational hours. By this means they generate extra income, but this results in their being subjected to a greater stress than is necessary, which understandably lowers their performance. An example of their basic salary versus living expenses may be seen in the table below: Table:1/4.

Year	Income per month	Living expenses per month
1985	1) 44.000-45.000 Drs	85.000 -90.000 Drs 2)
1986	48.000-58.000 "	95.000-100.000 "
1987	60.000-72.000 "	105.000-110.000 "
1988	63.000-85.000 "	? ?

N.B:1) Monthly allowance increases with duration of service.

2) Living expenses for a family of four.

With reference to Table 1/4, below are listed educators' gross wages in Drachmas (Drs) which have been in effect since February 1988: Table:1/5.

Capacity	Monthly minimum	Monthly maximum
Nautical instructor	91.005 Drs	100.062 Drs
Electronic instructor	62.749	70.083
Scientific instructor	77.272	97.387

Source: ADSEN Aspropyrgos, March, 1988

An additional means of obtaining extra income is through the utilization of extra hours. Under these conditions they are obliged to deliver 16 lecturing hours a week, plus 10 periods more according to their contract. An exception to that is made for the director of the M.A, whose weekly lecturing hours are 12. As a result of these extra hours, their performance has been declining dramatically, especially during the last periods of the day. Lastly, with respect to the above mentioned, it should be emphasized that this system causes lecturers to teach more than two subjects.

7. Due to the aspirations of certain politicians there has been a tendency to establish academies in their home areas for social and economical reasons.

8. The quality of the educators leaves much to be desired, because they are expected to teach too many subjects. Thus, they are not themselves able to generate a positive motivation for the students.

9. In the Greek society there is a concept, in broad terms that our governmental M.A's consist of schools in which there is a fast turnover of officers, to fulfill shipowners' needs without giving consideration to the officers' need for higher education to compete with the developed countries. As a result, Greek M.A's have been deprived of any possibility to attract those prospective students, who would be eager to be recognised scientifically and intellectually. Even the recognition of maritime academies as higher institutions has not been forceful enough to persuade them. Nor has the shipping industry been intellectually recognised so as to draw the attention of the thousands of graduated students of the secondary schools level to seek entrance at any higher (or highest) institutions. In fact, even the recognition as being institutes similar to T.E.I. (Technical Education institutes of higher education) has not yet been approved by the Ministry of Education.

10. In the Greek Coast Guard there is a policy in which officers (administrative personnel) are interchanged in their duties, so as to gain wide experience. As a result of this, the period of time which they spend in jobs relative to the M.A, being one or two years, is too short for effective administration. Therefore, the acquired capabilities are not being justifiably exploited and thus the entire education system suffers.

11. The Greek merchant fleet has been declining drama-

tically since 1981 (e.g in 1981 3,950 against 1,948 in 1987), principally because of the flagging out of vessels from the Greek registry as well as those registered with NAT(545 units in 1980 as opposed to 220 in 1987).However, an unbalanced situation has arisen between the number of ships and expenses paid for MET.A good example of this disparity is given hereunder,where the number of contributions does not show a significant difference,but the disproportion is reflected in the rate of exchange.

Year	Greek vessels contributions	NAT registered contributions	Rate of exchange in U.K pounds.
1981	Drs 554.9m	82.282m	1 U.K =Drs 90
1987	Drs 584.9m	102.272m	1 U.K =Drs 220

Source:YEN/DOLS June 4 ,1988.

12.KNE,funded by shipowners, being one of the budgets for nautical education,and contributing todate,70%.The balance of 30% is settled by the government which presently receives 23% from the EEC(European Economic Community). The apportionment of funds spent from 1981 to 1986 are indicated in the following table:

Table:1/6.

Year	government exp.	KNE expenses	total annually
1981	57.664 **	429.053 **	486.718 **
1982	51.444 "	607.506 "	658.950 "
1983	65.021 "	601.329 "	666.350 "
1984	66.370 "	599.059 "	665.430 "
1985	71.897 "	696.218 "	768.115 "
1986	69.406 "	1.058billion	1.127billion
*1987	82.498 "	773.849million as of 30.11.87	

*Note:It estimated that total expenses for 1987 will be Drs 1.612 billion. Source:YEN/DOLS4,June,1988.

**This indicates million of Drachmas.

These expenses will be covered from cumulative funds without guarantee of replenishment, thus creating a problem for future forecasts.

At the same time, NAT faced certain difficulties which have resulted in borrowing large amount of these funds in order to pay retired seamen pensions. The rate of increase of funds allocated to maritime education was 15.43% (1985 to 1986) and 31.88% (1986 to 1987). It seems that the point has been reached where contributions to M.A's are no longer possible due to the fact that the Greek merchant fleet is continuously shrinking. The effect of this is that there is no availability of funds for the purchase of modern equipment.

1.4. Proposals for the reorganization of the Greek M.A's.

Having analysed the present status in M.A's which has caused a possible lowering standards in the entire system certain quick actions should be taken at once by all the parties concerned. This is common knowledge as it has been publicized by the concerned government sectors, the shipowners and from union sources since time immemorial. In view of the above two solutions it may be able to solve the accumulated problems in MET.

a. MET should be divided in basic and advanced modules.

b. Five big centers should be established with respect to the demography of the country as well as to the nautical tradition of the area where such backgrounds exist.

a. Basic and advanced education.

Under the aforesaid conditions the two big M.A's of Aspropyrgos (Athens/Piraeus/Attiki) in the middle of the country and N. Mihaniona (Thessaloniki) north, should further be developed and equipped with the most advanced

technological means, in order to be able to cope with the present and future requirements. This should be done because they both have a capability to be enlarged. Moreover, an additional center, the third one in the south, could be developed in Kriti (where a M.A. already exists) so as to decentralize the entire system. Ideally advanced education should be established for the 3rd and 4th years of studies in these three large units, while the remaining small institutes should provide only the basic module, i.e. the first year of studies. This would diminish the expenses, and the saved amount of money could be diverted towards fitting out the big centers with the most advanced and sophisticated equipment. Having installed the sophisticated equipment the surplus funds may be utilised for upgrading libraries and for increasing the salary of lecturers. The accumulated funds, which will be derived from implementing these proposals are discussed in the following chapters.

As a short term proposal it is suggested that the prospective students attend the following education system to be eligible for deck or engine departments.

Deck

Mathematics 1 and 2, physics 1 and 2, navigation 1 and 2, seamanship, English, first aid, social science, signals and communications and international conventions.

Engine

Mathematics, physics, seamanship and safety, first aid, social science, international conventions, marine plant layout, electrotechnology, mechanical engineering science and strength of materials.

All the above stated are classified as theoretical subjects, which need no special or expensive equipment. For those subjects which include practical aspects, there already exists adequate equipment in most of the M.A.'s.

**1.5.1.A feasibility study (technical and economical)
for retaining the number of deck maritime academies.
(Basic education in peripheral Maritime Academies.)**

The basic education in the minor M.A's (seven in number) would require three lecturers as permanent personnel, namely a master mariner(manager), mathematician and physicist who will lecture 29 hours per week. The remaining six hours will be covered by temporary personnel (the present status), such as an English teacher, a philosopher and a doctor. However, based on this concept which is supported by the syllabus of Annex 1 Table 1 of this chapter, lecturers wages would be Drs 4m. It is obvious that a M.A cannot run without functional and maintenance expenses, such as for educational aids Drs one(1)m and maintenance of buildings Drs 0.4m. Note that maintenance expenses for buildings was thoroughly investigated at YEN/DOLS4 in June, 1988, by the writer. Therefore, a sum of Drs 5.4m would be needed to finance every small unit.

Listed below are expenditures which involve disbursements made in these units against the proposed expenses of the basic education.

*.N.B: As an example of the breakdown of expenses for small M.A's units, see Appendix Three(3)-"A".

Table:1/7.

Name	No of students	1987	Proposed
1.Hydra	25/30	24.052m	5.4 m
2.Kymi	"	20.670	"
3.Syros	"	23.110 *	"
4.Oinnousses	"	22.937	"
5.Kefallonia	"	20.625	"
6.Galaxidi	"	21.037	"
7.Hiraklion**	"	9.000	"
Total	175/210	139.913m	37.8 m

Source: YEN/DOLS 4, July 1988.

**** N.B:**Due to an agreement made with the Greek Orthodox church the M.A of Hiraklion is subsidized in the form of maintenance and rent of buildings. Comparing the difference in figures with that of 1987,it is a fact that the sum of Drs 102.113m would be gained.

**1.5.2.A feasibility study(technical and economical)
for retaining the number of engineering M.A's.**

Basic education.

Measures similar to those of deck M.A's should be taken to minimize expenditure to engineering M.A's. However, based on Annex 1 Table 2 of this chapter,the system may require the following expenses .

1.Permanent personnel	Drs 5.320m
2.Temporary personnel	" 0.686m
3.Overtime to physicist	" 0.047m
4.Operational & maintenance	" <u>3.000 m</u>
Grand total	Drs 9.053 m

Listed below are expenditures which involve disbursements made in these units against the proposed ones:Table:1/8.

Name	No of students	1987	Proposed
Elefsina	60/65	19.482	9.053
Skaramangas	60/65	24.019	"
Chios	<u>55/60</u>	<u>37.477</u>	"
Total	175/180	Drs 80.978 m	27.159 m

Source:YEN/DOLS July 4, 1988.

By comparing the new and the old system it may be clearly seen that the sum,Drs 53.819 m, could be saved.

1.5.3.Technical & economic study for radio officers M.A's.

1.5.3.1.Radio officers.

Radio officer M.A's should be converted into M.A's suitable for the education of automation officers (A.O) with

the capability of operating communication system and performing the duties of deck watchkeeping. The intake should be limited to 50/60 students per year due to changes to be brought about by the ITU/IMO recommendations (Ref:2), which would reflect on their future relative to GMDSS/INMARSAT. It is worth mentioning that maritime nations such as Sweden and Holland long ago closed down radio officer M.A's.

Consequently, this suggests the possibility of reducing the number by closing down those of Hraklion and Rhodos, leaving the other two situated in Aspropyrgos and Preveza which are the better equipped of the four, with the possibility of diversification and expansion if required. This solution obviously offers an economic benefit, which may substantially relieve the educational budget. The saved money could be utilised for re-educating radio officers as deck or engineer officers. In addition, fewer graduates will not cause an otherwise unavoidable socioeconomic problem, because the redundancy figure could easily be absorbed. As far as the lecturers are concerned, they would be posted in M.A's of their choice taking into consideration their place of origin and their ability to teach in that academy.

1.5.3.2. Electricians.

It is compulsory for Greek ships' above 10,000 grt to have an electrician on board in the capacity of an officer (wages are similar to 2nd eng. and radio officer-Ref:3). Since 1987 the government, amongst other incentives to attract shipowners to fly the Greek flag, has issued experimental dispensations for electricians on fully automated ships.

With regard to crew employment, present conditions indicate that there is a tendency for a high demand in

favour of automation officers rather than electricians. At the same time, today's advanced technology and high competitiveness have indicated that these vocational officers will vanish in the near future.

In view of the above, quick actions should be taken by the the administration and the electricians' union to remedy the socioeconomic problem, in the following manner:

1. Remove from the manning structure of fully automated ships the post of the electrical and radio officer and replace by the automation officer(A.O).

2. Generate the mechanism for issuance of the relevant certificate of competency and simultaneous to restrict the issuance of certificates of competency for electricians.

3. For those who have qualified from higher or middle electronic school or higher education school, six months of preparation to obtain the certificate of competency for operator(R/O). This should be followed by two additional terms (2 to 3 months each) in technical subjects to qualify for the certificate of A.O. with the three certificates. Hereafter, they would be in a position to apply for the certificate of competency. For those who come from lower level education schools they should be sent to specialised courses for engineers.

4. Establish specialised courses for A.O and electricians within the existing higher education centers (KESEN). In this respect the following arguments may be put forward:

- a. The infrastructure is already in existence.
- b. Present lecturers are in possession of the most up-to-date qualifications.
- c. This center possesses modern equipment.

1.5.3.3. Proposal of technical and economic study for R/O M.A's.

Having described the present status of the R/O profession and basing calculations on an intake of 50 students, the expenses incurred by the lecturers would be as follows:

1 manager X Drs110,000=Drs110,000 X 14 months=Drs 1.54m

14 lecturers X Drs90,000=Drs 1.260 X " " = " 17.64m

Total =Drs19.18 m

2 Academies X Drs 19.18 m=Drs 38.36 m/year will be required to pay lecturers for all three years of studies within M.A's.Table:1/9.

Name	No of students	expenses in 1987	expenses proposed
Aspropyrgos *	25	Drs 43,114 m	19,18 m
Preveza	25	" 33,485 "	" m
Rhodos	-	" 17,281 "	-
Hiraklion	-	" 10,698 "	-
Total	50	Drs 104,848 m	38,36 m

Source:YEN/DOLS July 4 ,1988.

*.N.B:As an example of the breakdown of expenses of big units,see Appendix Three (3)-"B".

A comparison of expenses of 1987 with those of the proposal indicate the profitability of the recommendation. The sum of Drs 66.488 m will be credited.

1.6.1.Technical and economic study for advanced education in deck M.A's(short term).

The sub-division in basic and advanced education has been made in conjunction with the concept of recruiting personnel with lesser qualifications who would service the basic requirements.With reference to advanced training there is a greater possibility of employing more qualified lecturers in urban areas than in rural districts.Especially in the minor academies,the existing deployment of educational equipment does not satisfy the

needs in training personnel at all levels. In addition sufficient funds are not available to provide all these M.A's with fundamental equipment.

The advanced education in these main centers may require the following lecturers based on Annex One Table Three of this chapter (ADVANCED) and in accordance with the number of students and with division into groups shown below:-

Name of M.A	3rd year of study.	4th year of study.	Total
	No of students.	No of students	groups.
Aspropyrgos	90/75 (3 groups)	90/75 (3 groups)	6.
N.Mihaniona	60/50 (2 ")	60/50 (2 ")	4
Chania	60/50 (2 ")	60/50 (2 ")	4
Total	200/175 students	200/175 students	14 groups

3 managers X Drs 110,000 monthly X 14 months = Drs 4.62 m

1. Aspropyrgos lecturers 17

2. N.Mihaniona " 14

3. Chania " 14

Total 45 lecturers X Drs 90,000 months

X 14 months salary = Drs 56.7 m

Managers wages = " 4.62 m

Grand total = Drs 61.32 m

A study comparing with respect the expenses of 1987 with those of the proposal is made in the following table:

Table:1/10.

Name of M.A	Expenses 1987	Proposed
Aspropyrgos *	Drs 51.198 m	Drs 61.32 m in all three
N.Mihaniona	" 35.507 "	units.
Chania	" 23.472 "	
Total	<u>Drs 110.177 m</u>	

*.N.B: As an example of the breakdown of expenses for big units, see Appendix Three(3) "B".

The above table indicates the profitability of this

proposal; the sum of Drs 48.857 m will be saved.

1.6.2. Technical and economic study for advanced education in engineering M.A's.

The advanced education in engineering M.A's may require the following lecturers with reference to Annex One Table Four under the basic term and advanced/short term.

Name of M.A	Year of study 3rd/students No	Year of study 4th/students	Ttl group
Aspropyrgos	65/60(2 groups)	65/60(2 groups)	2
N.Mihaniona	65/60(2 ")	65/60(2 ")	2
Chania	50/55(2 ")	50/55(2 ")	2
Total	180/175 students	180/175 students	12 groups
3 managers X Drs110,000 monthly X 14 months=Drs 4.62 m			
3 M.A's X 14 lecturers X Drs 90,000 X 14 " = " 52.92 m			
Grand total			=Drs57.54 m.

With respect to the number of lecturers, the largest possible number has been calculated, which is not the case today. In reality one expert may deliver lectures to different departments in his/her specialization within the same center, such as dealing with draughtmanship, philosophy, computers and naval architecture. Table:1/11.

Name of M.A	Expenses 1987	proposed
Aspropyrgos *	Drs 40.42 m	Drs 57.54 m in all three
N.Mihaniona	" 70.29 m	units
Chania	" 22.10 m	
Total	Drs132.81 m	Drs 57.54 m

Source:YEN/DOLS 4, July, 1988.

*.N.B:As an example of the breakdown of expenses for big units, see Appendix Three(3)-"B".

A comparison of the expected expenses with those of 1987, is made, from this one can see a savings of Drs 75.27 m.

1.6.3. Comparison of the expenses of basic and

advanced education against the proposed system.

Basic education.

Credit from deck M.A's (sub-charter 1.5.1)=Drs 102.492 m
" " engine " (sub-charter 1.5.2)= " 53.819 m
" " R/O including all three years
of studies (sub-charter 1.5.3.3) =Drs 66.488 m
Total =Drs222.420 m

Advanced education.

Credit from deck M.A's (sub-charter 1.6.1)=Drs 48.857 m
" " engine. " (sub-charter 1.6.2) = " 75.27 m
Total =Drs124.127m
Grand total =Drs346.54 m

For example the sum of Drs 6.54 m of the grand total could be utilised for maintenance and repairs of buildings.It is considered reasonable when compared with expenses,from the last two years,namely Drs 25.4m in 1986 and Drs 4.9m in 1987,for all maritime units (M.A's/ DSMAEN/KESEN) . Source YEN/DOLS4,June,1988.

1.7.The establishment of five main maritime centers with respect to the demography/nautical tradition background/existing facilities and lecturers.

The present hard times dictate that fast,urgent and decisive action should be taken in order to pave the way for a new era in the Greek educational system.A step in the right direction,which is the title of this subchapter is the establishment of five big centers distributed in appropriate areas,having the following advantages:

- 1.Existent large centers with capable facilities in personnel,buildings and nautical equipment,such as Aspropyrgos,N.Mihaniona and Preveza.

2.Demographic reasons and the tradition of the area which offer a great number of seamen (Athens,Piraeus and Chios).

3.Existing facilities with the possibility of further development(Chania/Kriti).

4.Avoiding a number of conflicts with shipowners who wish to keep their local M.A's running.

5.A greater possibility for the recruitment of lecturers with better qualifications (Athens/Thessaloniki/Piraeus).

As a consequence of the above,the following M.A's seem to be the more favourable ones:Table:1/12.

Name	Department to serve	Maximum capacity	Proposed groups	No of student
Aspropyrgos	Deck-R/O/engine	750	2/2	60/60
N.Mihaniona	" - " / "	510	2/2	60/60
Chania	" - " / "	150	1/1	25/25
Chios	" - " / "	183	1/1	25/25
Preveza	" - " / "	312	1/1	30/30
Grand total		2,055	8/8=16	200/200

Source:YEN/Development programme for maritime education, 15/12/84 and student intake proclamation for the M.A's, 1986/1987.

In connection with this proposal the following issues should be thoroughly examined in order to counterbalance any opposition whatsoever.

1.Whether existing buildings and educational equipment corresponds to the ones required or if any further expansion is required.

2.The socioeconomic problem of the lecturers and the administrative personnel.

1.Buildings and educational equipment.

Buildings

With respect to buildings it is obvious from Table 1/12

that there will not be a problem, especially as all real estate and buildings belong to the government and are not hired as is the case in Hiraklion, Rhodes, Syros and Galaxidi. On top of that, all five units have the possibility of expansion if needed, which is not the case with Hydra, Syros, Hiraklion and Kimi.

Equipment.

With the exception of those of Aspropyrgos and N. Miha-niona, the remaining three M.A's suffer to a greater or lesser extent from a lack of equipment. But it will be easier economically to deploy educational equipment for five M.A's than for fifteen. Moreover, all the existing equipment will be easily transferred to their closest M.A's. Good examples are those of Elefsina and Skaraman-gas, which are two and ten kilometres away from Aspro-pyrgos respectively, or Chios and Oinnousses which are situated at a distance 1.5nm from each other.

2. Socioeconomic problems of lecturers and administra-tive personnel.

M.A teaching personnel consists of three categories:

1. Permanent personnel (17).
2. On special agreement for indefinite period, which is a kind of permanency (171).
3. Those who are being employed seasonally twice a year and work on overtime. With respect to them, there is no consistent obligation for employment next year (123 lecturers for 1987/88).

The following table 1/13 presents the number and distribution of lecturers within the M.A's for all three departments (column 1 & 2), against the two proposals, being column 3 (basic and advanced education) and column 4 with five main centers: Table:1/13.

PROPOSED

Name of M.A	Permanent	On special	Basic/	With five
-------------	-----------	------------	--------	-----------

	personnel	agreement.	Advanced	centers.
1.Aspropyrgos	9 1)	51 2)	48 3)	33 4)
2.N.Mihaniona	1	31	30	33
3.Chania	1	9	30	21
4.Hiraklion	2	5	3	-
5.Syros	-	6	3	-
6.Hydra	-	7	3	-
7.Kymi	-	8	3	-
8.Kefallonia	-	5	3	-
9.Skaramangas	-	8	4	-
10.Elefsina	-	4	4	-
11.Chios	3	10	4	21
12.Oinnousses	-	9	3	-
13.Galaxidi	-	4	3	-
14.Preveza	1	13	15	21
15.Rhodos	-	1	-	-
Total	17	171	156	129

Source:YEN/DD1(January,1988)

It estimated that a total of 156 lecturers would be employed under the term basic and advanced education versus 129 lecturers to accommodate the needs of five main centers(Annex One,Tables 1,2,3 and 4).The difference of 32/59 lecturers (c.f columns 3 and 4 against columns 1 and 2) will not be a problem,bearing in mind that by the time of full operation of the system some of lecturers will retire.

Having also in mind the social obligation,a further proposal will be re-educating a certain amount of juniors at the maritime university,which will ultimately eradicate the weakest of the lecturers.

This dynamic project incorporates two new main aspects:

- 1.the introduction of automation subjects for the deck cadets,so as to transfer the obligation of teaching to one instead of two departments,and by having a single

department to reduce the expenses of the M.A's. Onboard ship the combination of deck and radio officer will reduce crew expenses.

2. the possibility of introducing automation-officer special courses for R/O 2nd class, electricians and deck officers, due to the fact that the establishment, the means and the lecturers are in place. Of course, the argument against this plan would be their allocation amongst the institutions. To offset these difficulties one should take note of the following:

Chios/Oinousses.

Being only 1.5 nm apart, amalgamation would be an easy task, and an aggregation of 22 lecturers could lecture for deck/engine courses.

Rhodos.

With only one lecturer as permanent personnel this will be also an easy case.

Aspropyrgos.

The biggest center of all could easily absorb its next door neighbours of Elefsina/Skaramangas.

Chania/Hiraklion.

Chania with a total of ten (deck and engine) and Hiraklion with seven lecturers (deck and radio) being on the same island may require some lecturers from those Aegean islands of Syros and Hydra.

Kefallonia/Galaxidi.

The establishment of Preveza (presently a R/O center only) as a main unit would require a number of lecturers to be transferred from the other two departments'. Therefore, those from Kefallonia /Galaxidi M.A's should be transferred (5+4=9) to that of Preveza.

Administrative personnel.

The administrative personnel who are military (approx. 90-95 %) may return to their units. The excess civilian

staff (5-10 %) can be re-absorbed into public service.

1.8. The economic consequences resulting from the establishment of the five main centers.

When proposing the upgrading of the entire MET system it is essential to persuade those who offer their contributions that the plan is practical, feasible and economically advantageous. However, the focal point as in this section will be once again the expenses which concern personnel.

In view of the above, based on Annex one, Tables 1, 2, 3 and 4 the following expenses should be anticipated:

5 managers X Drs 110,000 monthly X 14 months payment =
Drs 7.7 m.

124 lecturers X Drs 90,000 monthly X 14 months payment =
Drs 156.24 m.

Drs 163.94 m. would be the grand total.

It is obvious that the sum of Drs 406.067m (Total expenses of M.A's, in 1987 Drs 570.007m -163.24m) would be saved (excluding maintenance and repair expenses), provided that the proposal of 5 main centers is adopted.

1.9. Education in short term.

One of the two described proposals should be put forward in academic year 1989/90 in order to enable the government to prepare the relevant legislation. In the meantime, a certain amount of minor actions would be taken in this academic year to prepare the ground for the implementation of these suggestions.

First, it is essential to abolish the system by which those who complete studies of the secondary school reach the same level of hierarchy (unlimited certificate of competency for masters/see Appendix Three "A") as those who graduate from M.A's. This problem was identified long

ago but has remained inside the drawers of the existing bureaucracy. Such a plan will provide the possibility for those who do not wish to study in M.A's to obtain 2nd mate's or the chief mate license of competency in ships of up to 1,600 grt, and for those who have served for some time at sea and possess the necessary entrance requirements to enroll in M.A's.

Secondly, it would be beneficial to give an end for the certificate of watchkeeping officers for those who have not graduated from the secondary school but having the privilege of long service, either on deck or engine to obtain the so-called practical officer or engineer respectively, after having passed an exam.

Lastly, it is desirable to modernize the existing syllabus by invalidating classes for rowing and sailing with subjects which reflect modern technology, such as maths, electronics and computers in the first and 3rd year of studies.

In connection with the above, Appendix Four sub-divided into "A", "B" & "C", illustrates the existing system as well as the proposed one for short-term implementation.

1.10. COMPARING THE TWO SYSTEMS.

Comparing the proposed sub-division of the M.A's in basic and advanced education to that of the establishment of five main centers, one may easily observe that the latter bears greater advantages than the former. The advantages are stated below:

Advantages.

1. A large amount of money will be saved in educational equipment, maintenance of buildings, lecturers and administrative wages.

2. The national budget will be reduced enormously due to the smaller number of administrative personnel, the Greek

Coast Guard officers and ratings will be utilised somewhere else.

3.Fewer M.A's will lead to fewer administrators in the executive,planning and administrative board of the ministry.

4.Fewer M.A's means better communication between center and units.

5.It is a less tedious job from the administrative point of view bearing in mind the large amount of planning in the short and long term.

6.This system will improve in productivity and effeciency simultaneously by the provision of equipment and personnel.The result will be more profitable in short term and in addition to which the entire education system would be upgraded equilaterally.

7.These institutions will be recognised nationally due to high capabilities amongst the students.

8.Combining the small units to form larger units this would bring about closer association of students from the various disciplines(deck/engine/radio) through which better relationship and improved cooperation could be developed.

9.Shipwoners will gain higher qualified personnel.

10.The government and the entire shipping industry will benefit from well educated seafarers.

Disadvantages.

1.It will be used as a weapon against any government for centralizing the system,resulting in offering fewer jobs in these remote areas.

2.There will be an opposition on the part of local populations due to the economic losses as well as the deprivation of a higher education center,the pride of their area.

ANNEX:one(1),Table:one(1).

DECK/SHORT TERM

Subjects	BASIC		ADVANCED education				G.total. hours
	1st year		3rd		4th		
	A	B	E	F	G	H	
Maths 1	4	4	-	-	-	-	112
" 2	3	4	4	2	-	-	182
Physics 1	4	4	2	2	-	-	168
" 2	4	4	2	2	-	-	168
Navigation 1	4	3	2	2	-	3	196
" 2	3	2	2	3	3	-	182
English	4	4	4	4	4	4	336
First aid	2	-	-	-	-	-	28
Psychology	-	2	-	-	-	-	28
Signals	2	2	-	-	-	-	56
Int.conventions	3	2	-	-	-	-	70
Drawing	-	-	2	-	-	2	56
Metereology	-	-	-	3	3	-	84
Computers	-	-	2	4	3	4	182
Nautical							
Instruments	-	-	4	5	-	-	126
Communications	-	-	-	3	2	2	98
Project work	-	-	-	-	2	3	70
Cargo handling	-	-	4	-	3	-	98
Commercial law	-	-	2	-	2	2	56
Stability	-	-	3	-	3	3	126
Naval							
Architecture	-	-	-	3	-	3	84
Marine							
Engines	-	-	-	-	-	3	42
Automation	-	-	-	-	3	3	84
Oceanography	-	-	-	-	4	-	56
Total	35	35	35	35	35	35	2,940

Grand total based on 14 weeks per semester.

ANNEX:ONE(1),table:two(2).

ENGINE/SHORT TERM.

	BASIC		ADVANCED education				
	1st year		3rd		4th		G.total
Subjects	A	B	E	F	G	H	hours
Maths	4	4	3	2	-	-	182
Physics	4	4	-	-	-	-	112
Chemistry	2	3	-	-	-	-	70
Seamanship	2	2	-	-	-	-	56
English	4	4	3	3	3	-	238
First aid	2	-	-	-	-	-	28
Psychology	-	2	-	-	-	-	28
Int.conventions	2	2	-	-	-	-	56
Marine							
Plant layout	4	3	-	-	-	-	98
Electrotechnol.	4	4	2	-	-	-	140
Mech.engineering	4	4	3	-	-	-	154
Strength of mat.	3	3	3	-	-	-	126
Computers	-	-	2	3	5	2	168
Drawing	-	-	2	2	2	3	126
Fluid mechanics	-	-	3	3	-	-	84
Thermodynamics	-	-	3	-	-	-	42
Marine steam power	-	-	-	2	3	4	126
Internal compustion engines			-	2	3	4	126
Electrical generators	-		-	6	4	4	196
Aux.machinery	-	-	3	-	3	4	140
Naval architectrure			-	3	-	-	42
Marine Refregerating	-	-	-	-	2	2	56
Fuel/lubricants	-	-	-	-	-	2	28
Electronics	-	-	-	-	4	4	112
Automation	-	-	-	-	3	4	98
Workshop	-	-	8	3	-	-	154
Project work	-	-	-	6	3	2	154
Total	35	35	35	35	35	35	2,940

Grand total based on 14 weeks per semester.

ANNEX:one(1),Table:three(3).

DECK.

Subjects	Odd semesters				Even semesters				Total le- cturers
	A	E	G	Ttl hrs	B	F	H	Ttl hrs	
Maths	7	4	-	11	8	2	-	10	1
Physics	8	4	-	12	8	4	-	12	1
Electronics	-	2	3	5	-	4	4	8	1
Naut.subject	12	13	21	46	11	10	14	35	3
English	4	4	4	12	4	4	4	12	1
R/O subjects	2	-	2	4	2	3	2	7	1
Law	-	2	2	4	-	-	-	-	-
Automation	-	-	3	3	-	-	3	3	-
Social science	-	-	-	-	2	-	-	2	-
First aid	2	-	-	2	-	-	-	-	-
Naval architecture	-	-	-	-	-	3	3	6	1
Engineering	-	-	-	-	-	-	3	3	1
Drawing	-	2	-	2	2	-	-	2	-
Nautical									
Instruments	-	4	-	4	-	5	-	5	1
Total	35	35	35	105	35	35	35	105	11

Based on the above table for all three years of studies the following staff would be needed:

Group of students

Lecturers	one	two	three(Advanced only)
1.Mathematician	1	2	1
2.Physicist	1	2	1
3.Electronics/N.Instruments	1	2	2
4.English	1	2	2
5.Master mariners/Naval Arch.4		8	8
6.Radio officer	1	1	1
7.Automation/M.Engines	1	1	1
8.Naval architect./drawing	1	1	1
total	11	19	17

Lecturers, such as lawyers, philosophers and doctors, will work on an overtime basis, which is the present status.

ANNEX:One(1),Table:four(4):ENGINE.

Subjects	Odd semesters				Even semesters				Total lecturers
	A	E	G	Ttl hrs	B	F	H	Ttl hrs	
Maths	4	3	-	7	4	2	-	6	1
Physics	4	-	-	4	4	-	-	4	
Chemistry/fluid									
Mechanics	2	3	-	5	3	3	2	8	1
Eng.Subjects	12	21	21	54	11	19	24	54	5
N.Arch./Drawing/									
Material Str.	-	5	2	10	-	5	-	5	1
Comput/Electr.	-	-	9	9	-	3	6	9	1
English	4	3	3	10	4	3	-	7	1
M.Mariner	4	-	-	4	4	-	-	4	-
Doctor	2	-	-	2	-	-	-	-	-
Philosophist	-	-	-	-	2	-	-	2	-
Total	35	35	35	105	35	35	35	105	10

Based on the above table the necessities in teaching staff would be as follows:

Group of students

BASIC & ADVANCED

Lecturers	One group	Two groups.
1.Mathematician	1	1
2.Ch.Engineers	5	7
3.N.Architect	1	1
4.Electr./Computers	1	2
5.English	1	2
6.Chemist/Physicist	1	1
7.Physicist	-	1
Total	10	14

Note that a master mariner can be utilised from the deck M.A. the doctor and philosophy teacher will work on an overtime basis.

CHAPTER TWO (2) .

2.1.A proposal for upgrading the system in the long term.

The rapid development of technology has led to considerable changes in the shipping industry over the years. As a result of efficient automation and improvement of reliability of the sophisticated equipment onboard ships, the role of the crew has changed considerably.

The introduction of unattended machinery space in the engine room and the evolution of modern navigational equipment as well as autopilots, automoooring winches, quick closing hatchcovers and cranes on deck have initiated the reduction in labour. Furthermore, capital costs, fuel costs and port expenses are beyond any shipowner's control. However, operational costs are the only manageable ones. Ship-owners in the developed countries showed a great concern for this situation long ago. Undoubtedly the replacement of man by machines that are more efficient and reliable has been the result. This calls for a further reduction in labour the solution of which is dual purpose training to both officers and ratings. If machines are to be substituted for human beings the latter must be properly trained to service and maintain these machines.

In view of the above crucial elements, the Greek maritime education system, being a far cry from those of developed countries desperately needs a deep dichotomy in adapting to new innovations in accordance with the following factors:

1. safety of life and property at sea and the protection of the marine environment.
2. measures in connection to the age of its fleet.
3. EEC and international competitiveness.
4. with the reality of the social life of the country and its necessity.

5.in conjunction with the standards of STCW/78 and above if it is considered necessary.

In the past there was a high degree of cooperation between the Greek government, unions and shipowners in the development of the shipping industry and the MET. This effort supported the Greek, MODELO TRIPTIHIS AGASTIS SYNERGASIAS meaning as the MODEL OF THREEFOLD ADMIRABLE COOPERATION. Due to personal interests of the union leaders this is no longer the case, the result being an ever-increasing gap between the level of training and educational system of Greece and the developed countries. This gap should be bridged and obstacles removed for the common interest at once, and serious and constructive discussions concerning the following crucial topics should be conducted as soon as possible:

a) the future of the Greek ship and its competitiveness. This should be investigated with a view to determining the suitability of its complement.

b) the maritime training, education and certification of seafarers.

c) shipping and the ancillary industries home.

These concerns are examined thoroughly and relevant suggestions for needed changes are presented in the subsequent sub-charters.

2.2.The future of the Greek ship.

The Greek merchant fleet reached its zenith in 1981 with 3,950 ships and a total capacity of 41m grt (see Appendix Five). The environment in which it had culminated was favourable for such a considerable development. The freedom of the seas, the high operational cost in the developed countries, the lack of shipping in the developing world, certain events having world-wide influence (the Korean War, the closure of Suez Canal and the Vietnam

War), the plethora of the Greek labour, and lastly the suitability of the free capitalistic society home, all influenced the rapid rise of the shipping industry.

Today this environment has altered noticeably with regards to these conditions and seems to be reversing the above stated situation. At the same time, the raising of the intellectual and income level of the Greek seafarers has reduced the effect of the "law of demand and supply", resulting in an increase in wages. However, the operational costs have raised, and it seems at the same time that the competitiveness of the Greek ship has deteriorated seriously.

To overcome such difficulties the Greek ship could draw a new course by which modern technology, well qualified personnel and reduced manning could be applied in the near future.

To succeed in such a scheme certain incentives should be given to shipowners by the government's administration and the unions and a good liason should be established between them. In particular, unions should agree to the combination of some new manning structures in two phases.

1. Phase One.

has been justified in the first chapter with the introduction of deck/A.O. (Automation Officer) with respect to their future orientation as well as the electricians. In the first phase an additional step in the right direction should be the initiation in 1989 of multi-purpose crews on the ship manning structure.

This will further reduce the number of crew from 16/17 to 14. The existing experimental and proposed complements on fully automated ocean-going vessels over 3,000 grt, can be seen in the table below: Table:2/1.

<u>Existing</u>	<u>Experimental(1987)</u>	<u>Proposed</u>	<u>by</u>	<u>1989-90</u>	
master	1	master	1	master	1

ch.mate	1	ch.mate	1	Chiefmate	1
2nd mate	1	2 2nd mates	2	2nd mate	1
3rd mate	1	R/O	1	A.O/3rd mate	1
R/T	1	Bosun	1	Chief engineer	1
Ch.eng	1	A.B's	4	2nd engineer	1
2nd eng	1	Ch.eng	1	Automation	
3rd eng	1	2nd eng	1	Officer	1
Oilers	2	3rd eng	1	Bosun	1
Bosun	1	Asst.eng	1	Multi-purpose	
A.B's	4	Steward	1	crew	4
Steward	1	cook	1	Steward/cook	1
Cook	1			Assistant	1
Total	17		16		14

Source:NAT 13/1/88

However, union leaders should be reminded of a vital point ,namely, "Low-cost crews have in some cases below skills but they almost never strike,and many ship managers now prefer Asian crews for reasons quite apart from cost"Fairplay,21st January,1988," A ship's flag-who cares ?" (Ref:4).

As to the administration, quick actions should be taken to formulate the necessary legislation.

Shipowners who have been among those who have offered incentives will benefit to an extent by having their own share in this desirable effort.This sign of goodwill could be proven by returning their ships to the Greek flag registry.A great number of ships of which the ownership has been proven to be Greek is indicated in Appendix Six.

Under the aforesaid circumstances,the country would gain foreign exchange,NAT could register a profit,seafarers could be easily employed, and lastly KNE will obtain additional funds to satisfactorily carry out its future target,which is the production of excellent training.

2.Phase two

closely related to the first one, should be planned accordingly in order to be able to meet the future requirements by 1992 and in 1996, as it is suggested hereunder(see Annex One of this chapter):

This is the long term plan,introduction of the dual- purpose officer in two stages.

The first stage would begin in 1992 and the second by 1996.

Apart from the suggestion concerning the short-term project,which was referred to in Charter One(1), listed below are reasons why is not feasible for the project stages to take place before 1992 and 1996 respectively.

1.After personal research with cooperation of NAT staff regarding the Greek merchant fleet in January,1988,it has been shown that of 1,277 ships (those over 500 grt, flying the Greek flag) only 480 vessels had UMS (Unattended Machinery Space).

2.Having examined the last 100 units which entered the national registry,it was discovered that only 53 were UMS (22/1/88).

3.Lloyd's Register of Shipping statistics dated 31/12/87 for the Greek fleet showed the following significant numbers:Table:2/2.

<u>age</u>	<u>No of ships</u>	<u>grt</u>
0-4 years	162	3.163 m
5-9 "	197	3.641 "
10-14 "	407	9.661 "
15-19 "	351	4.536 "
20-24 "	230	1.381 "
25-29 "	206	0.646 "
<u>30 years & over</u>	<u>395</u>	<u>.531</u>
Total 1,948		23.560 grt

Items 1,2,and 3,show a rather old fleet progressing slow-

ly towards obtaining new units with modern technology. However, to have such qualified personnel there is definitely the need for ships with very high technology.

4). Shipowners have not expressed any willingness to build such ships with extremely sophisticated equipment, but they do keep a sharp eye on the experiments of other developed nations (W. Germany, Norway, Japan and Sweden).

5. So far reactions from underwriters, P & I clubs, classification societies and other organizations, namely IMO and ILO have not been optimistic for the one man watch officer system.

6. The reliability of the machines has not yet solved all the safety problems, which are also interconnected with the protection of the marine environment.

7. The French bi-valent system, which was introduced in 1967, has not completely convinced other administrations of its practicality, except the Netherlands, which initiated theirs in 1985 and recently the West Germans who intend to commence by 1989-90.

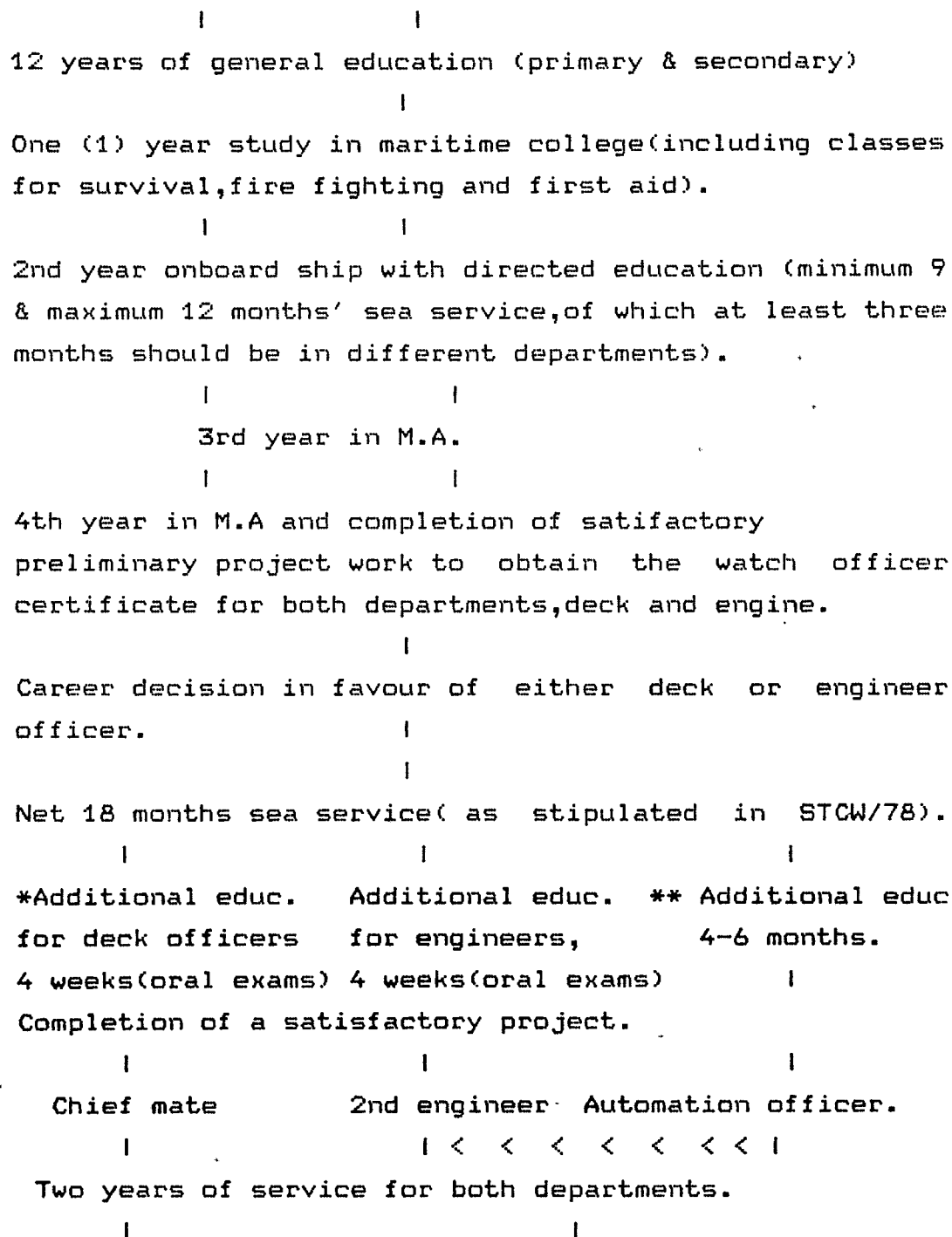
In this respect important matters should not be overlooked. These are economic factors (saving time and money), shipowners' demands and a great number of subjects which either coincide (maths, electronics, computer, physics) or overlap each other. This has totally altered the scenario in favour of dual-purpose officers.

8. It will take some time to formulate administrative and operative legislation. Moreover, feeding the M.A's with suitable educational equipment and well qualified personnel will not be an easy task.

9). Lastly, the seafarers' community, which by nature has proven to be stubborn, could take a considerable amount of time to accept such huge innovations.

2.3. The MET and certification in the long run, stage one.

The following flow chart showing the evolution of Greek seafarers for the first stage has been proposed for implementation by 1992:



Updating and skills assessment program for 4 months.

Master mariner licence & the	Ch.engineer licence & the
Bachelor of Nautical Science.	Bachelor of eng. Science.

Entrance examinations for enrolling in the maritime university (see Chapter Five).	

* Note:1.Due to the fact that a long time would have elapsed since they have graduated from the maritime colleges,it is absolutely necessary to provide additional education for senior officers,namely masters and chief engineers.Besides they will be updated in the new developments which have been implemented rapidly in recent years in the maritime field. Moreover,subjects such as accountancy,maritime law,international conventions,shiphandling techniques and shipboard management will not completely fulfill the opportune future requirements rising by the time they take over the command.

**Note:2.Within the rapidly changing field of electronics,it is completely unrealistic and wrong to expect that methods used for maintenance/repairs and fault finding on equipment designed at the beginning of '80's are efficient and effective when applied to the equipment of the late '80's or even beyond that.

One important factor that should be taken into account is that ships' engine rooms and cargo systems are very often "on-off units",involving items of equipment from different manufacturers.To complicate matters,in most cases drawings are incomplete or incompatibilities often exist between manufacturers.Needless to say,the direction which has been taken by the manufacturers is that repairs should not be effected onboard.This approach has been totally rejected by the developing world,which no longer desires any dependence on the developed world.Besides,

neither shipowners nor the seaman would be pleased with the idea of being helpless due to the malfunctioning of a microprocessor within the office or of being in the middle of a ocean seeking assistance from the individual manufacturer. Moreover, it could be a waste of time since one day lost for such failures could for instance cost a Panamex type ship \$ 8,000-12,000 in damage for a delay other than any anticipated claims which would inevitably arise. Therefore, it is felt that the capacity of an A.O. becomes more and more important in the near future.

To employ and fully occupy under such a capacity an A.O. it may be considered uneconomical and unproductive due to the fact that he may or may not be employed during full working hours. Nevertheless, his responsibility should encompass electrical power generation and distribution, control and instrumentation, radiocommunications and most of all the watch officer's duty.

With reference to his MET studies, the most economical and appropriate component would be to follow the above mentioned mainstream system. Also, during his two years' service onboard he would be able to obtain on-the-job experience, which could be upgraded with additional education specified by the administration.

Nevertheless, the following format of specialised subjects could be established within the existing system.

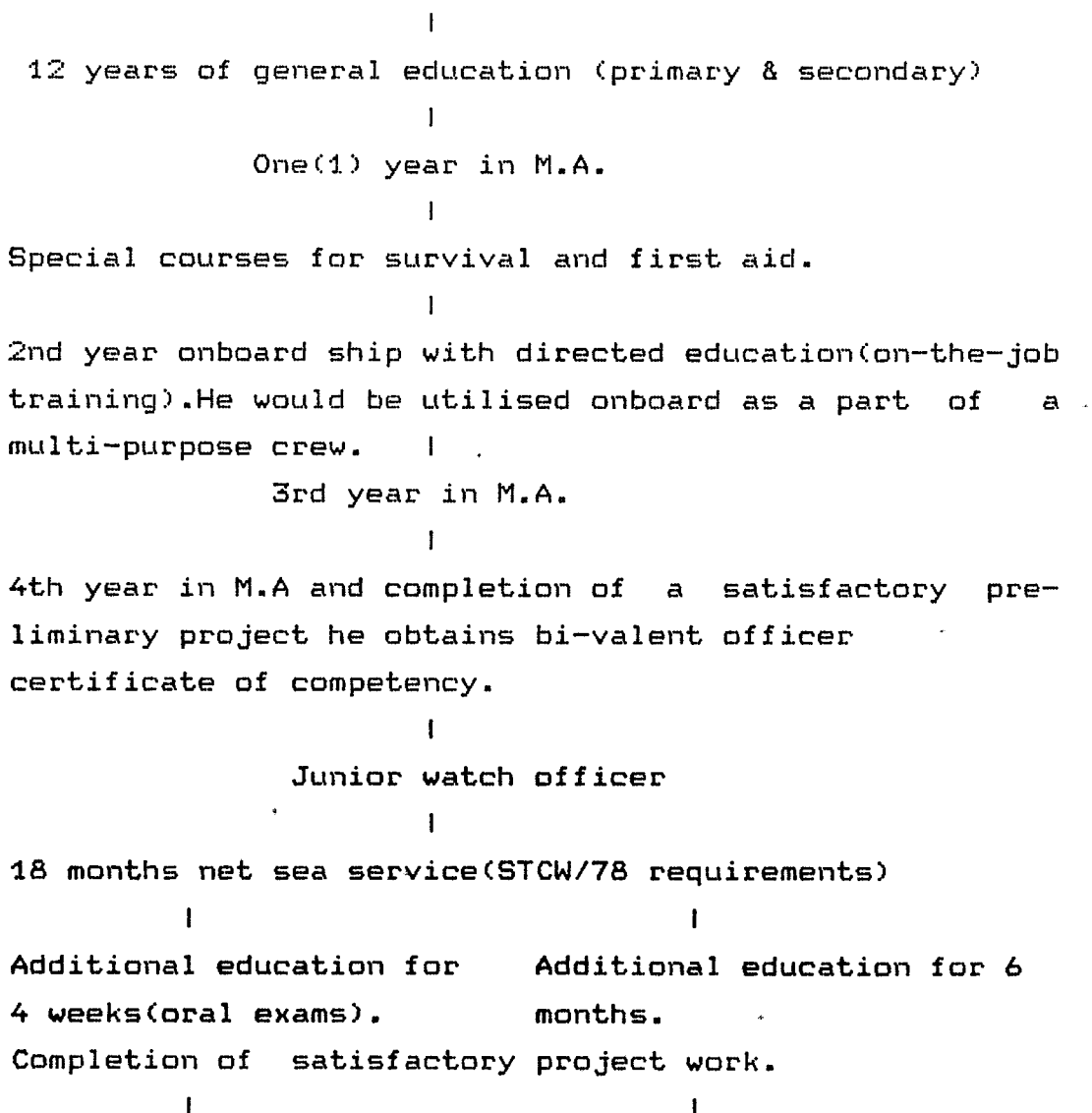
1. Instrumentation and control.
2. Radio/Telecommunication systems.
3. Marine engineering plant.
4. Electrical power systems.
5. Deck machinery systems.
6. Navigational systems.

This suggestion has two-fold trends. First of all, it provides freedom for the junior officer to select his own future career, from which the entire system will

benefit. Secondly, on the other side of the spectrum there is no need to set-up an extra educational center, which involves additional expenses.

2.4. The MET and certification of seafarers in the long term, stage two.

Similarly, the 2nd stage for training bi-valent officers will follow the same mainstream, but will not be diverted to the two departments after having qualified as dual-purpose officer. However, the flow chart below should come into effect by 1996:



should be placed close to each other.

In upgrading the entire system, the present situation replaces completely what is used to be "practical experience", giving space to the more academic and scientific subjects and teaching procedures. However, a primary obligation should encompass a well defined and orientated syllabus.

This syllabus should be upgraded at regular intervals based upon the necessities of the ship and the demands of the industry in accordance with the existing international conventions, laws and recommendations. It is considered absolutely necessary to place the substructure at this initial stage which could follow the curriculum shown below: Table:2/4.

1st year of studies

Courses	A semester week/total sem.	B semester week/total sem.	Grand total
Physics	3/42	3/42	84
Maths	3/42	3/42	84
Ship Knowledge	2/28	-	28
Thermodynamics	3/42	-	42
Navigation/chart	2/28	2/28	56
Electronics/Radioe.	3/42	2/28	70
Electricity/electro- technology	3/42	-	42
Technical Drawing/ Plan Reading	2/28	-	28
Computers	2/28	2/28	56
English	4/56	4/56	112
Machine & workshop Technology	2/28	2/28	56
Communications	-	2/28	56
Law	-	2/28	28
Automation	-	3/42	42

Machines	-	3/42	42
Total	29/406	28/392	798

Workshop/Laboratories

Seamanship(boat/rope)	2/28	Chartwork	1/14
Chart work	1/14	Mach./work	2/28
Electricity	1/14	Signals	1/14
Workshop & machines	2/28	Electronic	3/42
Total	6/84		3/98
Grand total	35/490		980

2nd year of study.

This term should comprise practical training in technical subjects in which the prospective bi-valent officers have acquired theoretical knowledge or extensive practice by the use of appropriate simulators. In this respect they will be provided with a booklet which consists of certain exercises. This booklet shall be prepared by the educational center (different or corrected on annual basis) and the task of the trainee will be to complete the exercises appropriately. This copy should be countersigned by the director and the senior operator of the ship and ultimately will be submitted to the M.A. for evaluation.

As far as the employment of the candidate is concerned, relevant legislation should be conducted to ensure that he will be employed as a part of the multi-purpose crew. Without overestimating such an assessment, it is considered that it will be a great deal of experience for the cadet. Besides, this project aims at three main purposes:

a). To provide the student with extra knowledge of the real seaman's life by exposing him to actual sea conditions. At the same time he will be properly trained to be able to keep pace with his future requirements. Moreover, he may carry out research which will assist him in preparing his project work adequately.

b). To enable shipowners to select the best candidates

for their own enterprise and to recognise where their investment has gone.

c).To make it possible for the administration and M.A's to identify and correct any failures on their part and ultimately to be absolved from those who not wish to continue their studies.However, strong regulations should be imposed in assessing their log book for those who have not successfully accomplished these strict requirements.

Table:2/5.

Subjects	<u>3rd year of studies</u>		G.Total
	A semester week/semstr	B semester week/semstr	
Maths	3/42	-	42
Chemistry	3/42	-	42
English	4/56	4/56	112
Mechanics	3/42	3/42	84
Fluid Mechanics/ Machines	2/28	-	28
Navigation(nautical calculations)	3/42	3/42	84
Ship construction/ Naval architecture	-	3/42	42
Automation	2/28	-	28
Computers	-	3/42	42
Communications	3/42	3/42	84
Metereology	-	3/42	42
Radioelectricity/ Electronics	3/42	-	42
Nautical Instrument	3/42	3/42	84
Stability	-	3/42	42
Cargo handling and stowage	4/56	-	56
International Convent.	-	3/42	42
Marine engines	-	2/28	28

	33/462	33/462	924
<u>Laboratory/Workshop</u>			
Automation	1/14	Mar.engine 2/28	
Fluid analysis	<u>1/14</u>	<u>-</u>	
Total	35/490	35/490	980

4th year of studies

Subjects	A semester week/semstr	B semester week/semstr	G.total
English	3/42	3/42	84
Shipboard management	2/28	-	28
Shipping economics	3/42	3/42	84
Machines	4/56	4/56	112
Navigation (passage planning)	3/42	3/42	84
Maritime law	2/28	2/28	56
Ship stability	3/42	-	42
Automation/electr.	2/28	4/56	84
Shiphandling	3/42	-	42
Communications	3/42	3/42	84
Rules of the road/ Radar/ARPA(watch)	3/42	3/42	84
Psychology	2/28	2/28	56
Naval architecture	-	3/42	42
Electricity/Refriger		3/42	42
Total	<u>33/472</u>	<u>33/472</u>	<u>924</u>
Project work	<u>2/28</u>	<u>2/28</u>	<u>56</u>
Grand total	35/490	35/490	980

Summing up the aforesaid, the syllabus consists of 35 hrs a week divided in two semesters of every academic year. Each academic year would begin on 1st October and continue until 30th June. Every semester comprises of a minimum of 14 teaching weeks, with a break of two weeks each for Easter and Christmas holidays. Moreover, exams have to be taken for two weeks, the first two weeks of

February in the first semester and the last two weeks in June. Students have to sit an examination at the end of both semesters. They will be required to sit subjects which will be terminated in this first semester and at end of the academic year those for which they had received lectures over the entire year. The examinations would be either written or oral. Students may resit subjects which they have failed either in June or September. The main subjects the successful completion of which should allow the students to proceed to the next year of studies will be assessed as follows: Table:2/6.

First year		3rd year	
1. Mathematics	8	Mechanics	7
2. Physics	7	Nautical instrum.	7
3. Navigation	7	Communications	7
4. Machines	7	Navigation	7
5. Electronics	7	Marine engines	7
6. Automation	7	English	8
7. Electricity	7	Ship construction	7
Total points	50		50

2nd year	4th year
To be assessed by a board of assessors.	All subjects

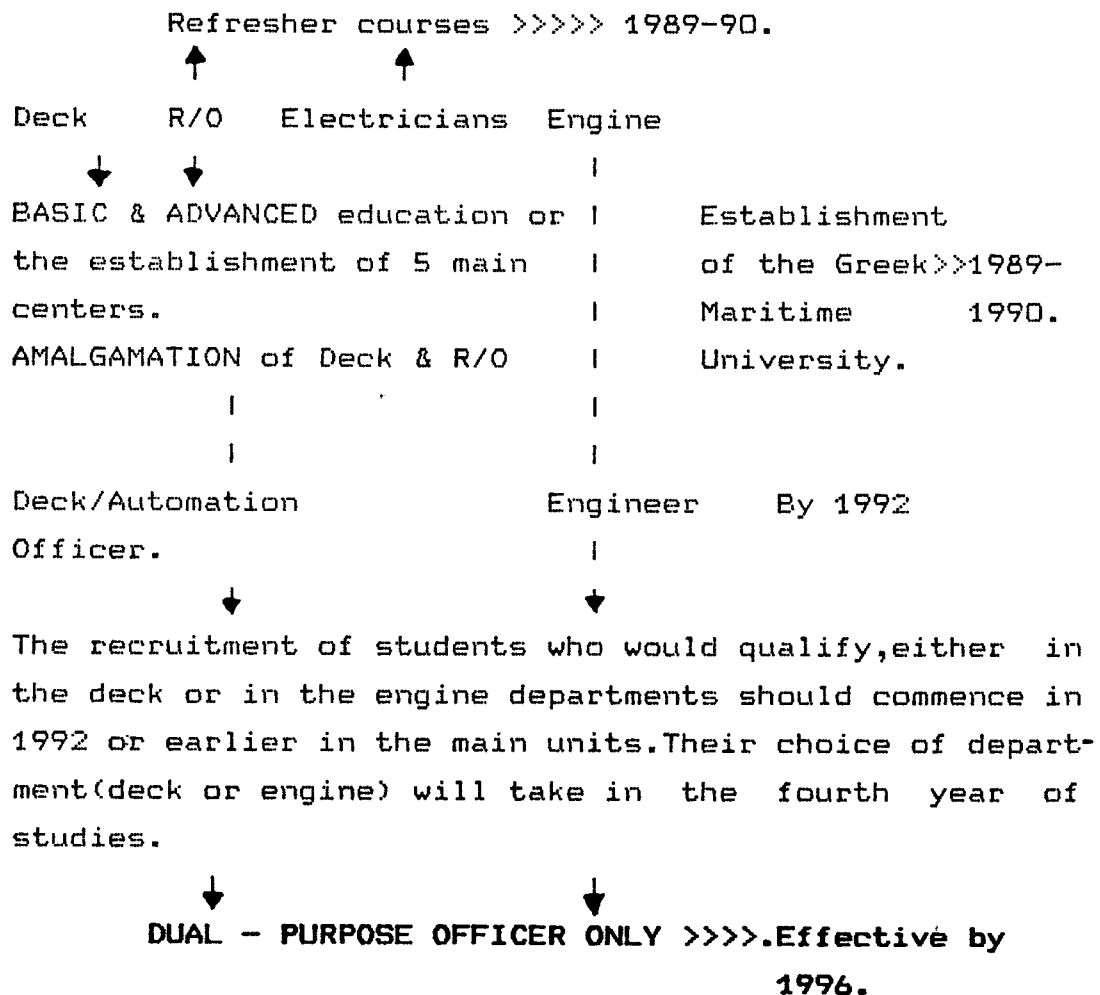
The numbers which are stated next to the subjects correspond to the minimum requirements in evaluating the students. Their assessment will be based on the point system, as it is represented in the table below: Table:2/7

Maximum points per subject	9	
Maximum point for attendance	1	(one means 100%
Total	10	attendance).

The lower limit would be six(6) points for every subject, of which five(5) points are what he/she earned, plus one(1) point from attendance.

ANNEX ONE(1) of chapter two(2).

Proposed FLOWCHART for the improvement of Greek
nautical officers.



CHAPTER THREE (3)

EDUCATIONAL EQUIPMENT

3.1.The existing system.

There is a need to examine to what extent training equipment corresponds to today's maritime training. In this context the following has to be taken into consideration.

-The increasing number of ships all over the world, especially in congested areas is associated with fast turnovers in ports. This is due to high competitiveness, notwithstanding that ships should sail under adverse weather conditions, such as stormy weather, dense fog, day and night.

-A tremendous progress in technology by which manufacturers have been producing advanced marine navigational equipment. They contribute to safety at sea, the protection of the marine environment and the facilitation of ship-board management, provided that they are appropriately handled and operated.

-The introduction of the sophisticated apparatus onboard ships with the objective of reducing expenditure caused by the use of manpower, which ultimately leads to the substitution of crew by soft-and hardware.

-The vast quantity of dangerous and hazardous cargoes carried by ships and the raising of pollution prevention requirements, have unquestionably brought about a great concern for such needs.

-The sufficient proof that mariners have not been adequately informed about the use of modern equipment without endangering life, property or the environment.

-The need to save both time and money whilst educating either cadets or senior officers. Moreover, adaptation of seafarers to new developments in technology as a substitute for shipboard service and experience, is an essential element.

Hence, it is of primary importance to examine the existing conditions at home with an open mind.

In fact, it is only by compromise that the gap can be narrowed between the navigator (the decision maker) and the monstrous equipment in close man-machine interaction. Therefore, the human being should be adequately trained in the operation of these devices, their potential, limitations and possible failures, in order to be in full command in all circumstances.

-The absence of adequate facilities at home is a fact. One only has to mention that the first shiphandling simulator was introduced at KESEN in September, 1987. Moreover, at a meeting which was held at YEN (December, 1987) between the minister and the principals of all marine schools for the purpose of upgrading the MET, amongst the main topics that were discussed, was the inadequacy of proper training equipment.

In this respect an anonymous resident professor of the W.M.U has been noted to express the following words: "I visited the M.A of Hydra (the oldest unit) in 1984 and to my great surprise I discovered an empty nautical school."

Furthermore, the last element which closes the loop of the defined defects is the inventory of 1987 (Source: YEN/DOLS 4, Jan., 1988) in educational equipment. These shortcomings along with the building facilities are briefly described below:

-There is no radar or shiphandling or cargo handling or diesel engine simulator in any of the fifteen units. The purchased unit (September, 1987) is only for chief mates and masters.

-The lack of electronic instruments, such as satellite navigation and Omega in as big unit as Aspropyrgos cannot be ignored. The use of 20 to 30 years old nautical

instruments is not conducive to proper training.

-The building facilities in Rhodes and Hiraklion, each representing high operational cost, and the lack of educational equipment are other drawbacks within the network of the M.A's. This also justifies the proposal of the chief of the Greek Coast Guard (Source: Circular named, APOPSI ALS, 26/8/85), in which he attempts to justify the need to close down these two schools in order to secure a programme which would provide better equipment and teaching aids.

-The absence of computers in M.A's with the exception of Aspropyrgos and N. Mihaniona generates the relevant repercussion and retards the thorough knowledge in the modern technology.

Furthermore, the scarcity of these units has a detrimental effect on lecturers in being time consuming for the purpose of delivering certain lectures.

3.2. Provision of modern equipment for M.A's.

Having described the deficiencies in educational equipment within M.A's, decisive action should be taken in order to substantially eliminate the problem within the MET. This action shall require the support and the willingness of both parties involved in these crucial decisions, these being the administration and the teaching staff of the refresher course centers (KESEN/DSMAEN/DSHNO). This action is an extension of the recommendations which have been described in Chapters One and Two. This proposal refers to the acceptance of shifting from the dispersed centers to one center, which would be Aspropyrgos.

To succeed with such a proposal, the points listed below should be borne in mind by all who are involved to a greater or lesser extent within the shipping activities.

a.All sophisticated equipment which exists within the network of these centers will save money and increase the efficiency through the utilization by all 3 departments.

b.The economical aspect of high rent payments would be eliminated through the occupation of buildings already in existence("Refresher centers" are located in buildings not owned by the government,thus they pay rent).

c.There will not be a duplication in the purchase of different and expensive equipment such as simulators for different units.

d.The availability of additional lecturers within a centralised unit would also lead the way,once again to save money via human resources.

e.Less administrative personnel and maintenance of buildings than for a distributed number of centers.

A further rationalization of such a proposition which may support more stringent arguments would be that of disposition of money to the M.A's versus the cost which would be derived as a result of providing education for a number of students at these centers.

Hereunder is an evaluation of expenses for those M.A's against these centers.

	M.A's	Centers
A.Total expenses	Drs 570,007m	Drs 277,172m
B.Total No of students	2,190	657

Source:YEN/DOLS 4,June,1988.

Divide "A": "B"=Drs 260,277 per student for nine months of studies in M.A's, and Drs 421,874 per student for four and half months of studies in centers(expenses incurred,1987) Therefore,for the saved amount of money,the utilization of advanced equipment and the human resource,along with the savings from minimizing the number of M.A's could have been used in upgrading the entire MET.Furthermore,an

additional source of funds which may contribute to this budget is the removal of expenses from the training ship. In view of the above, a five-year plan should be made based on the savings which are listed below:

a.Savings from M.A's	(sub-charter 1.6.c)	Drs 340m
a.Savings from refresher centers (estimated)	"	150m
c.Savings from the training ship.....	"	50m
Total		Drs 540m

To this amount, may be added another saving concerning the administrative personnel (coast guard) which is beyond the the purpose of this study.

The Drs 540 m annually can be distributed in the following ways, in descending order of priority:

a. In the purchase of equipment.....	60%	
b. For the establishment of libraries/supplying books	15%	
c. In modernizing teaching means.....	10%	
d. For sponsoring fellowships.....	5%	
e. For contracting seminars.....	5%	
f. In increasing lecturers' wages.....	5%	
Total		100%

The provision for the purchase of equipment is the only item which has not as yet been discussed in detail. However, the following list may provide some indication of the relative importance of purchase and utilization of equipment which is intended to be acquired.

A. Purchase of 17 computers, two for operational and 15 as training units, for each of the designated five main centers. This point should be given major consideration and should be dealt with as soon as possible.

B. In addition to the transfer of the ship-handling simulator from KESEN to the M.A of Aspropyrgos, the following types of simulators are recommended for the centers mentioned below:

1. Engineroom simulator to be installed at N. Mihaniona,

in 1990/1991.

2.Chania to be supplied with bridge simulator in 1991.

3.Liquid and cargo simulator to be established at Aspropyrgos in 1989/90.To be used also for refresher courses (KESEN/DSMAEN).

4.The installation of radar observer classroom;Radars with target injector ARPA should be set up in 1992/93,at Preveza.

5.Diesel generator simulator in M.A of Chios,by 1994.

The perception behind the idea is that all five main centers would be substantially developed with the distribution of such expensive equipment.At the same time, students of different M.A's should be interchanged through field trips designated by the administration, using ferries,which sail between the mainland and the islands at regular intervals.

The objective of this plan is threefold:

a.Education on a field trip whilst onboard the ferry boat and the simulators of the centers could be properly utilised.

b.Less expenses at the beginning,so as to enable completion of this project within the specified period. The burden of expenses for transportation to and from the islands is relatively insignificant(special fares for prospective seafarers).

c.With this proposal the standard of education would be more uniform throughout the M.A's,as all students would be subjected to the same type of theoretical and practical knowledge.The financial burden to carry this system out will not be great as existing accommodation would be utilised.

C.Equipment for re-education of R/O or the formation of classes for automation officers are up-to-date,(KESEN of R/O).However,it should be left out of the intensive plan

of development, unless some minor equipment may be needed.

D. Electronic navigational aids, receivers and simulators for satellite navigation, echo sounders and measuring instruments should be provided for the M.A's of N. Mihaniona, Preveza, Chios and Chania. Aspropyrgos can make use of those of the KESEN. This project, through which every M.A could initially be supplied with two units of each item, should begin by 1989.

As for the nautical equipment in the M.A's which is to become redundant, it should be transported to the main centers when the basic and advanced education would come into force (1989-1990).

3.3. The justification of retaining the training ship.

The organization of a well defined MET is the reinforcement of the classroom lessons with practical experience. This may be accomplished on a training ship. Greece has been in possession of its own training ship since 1965. In evaluating its ability to fulfill the requirements for an intensive training programme such utilization has been proven to be unjustified. This fact had been fully recognised in a recent meeting which was held in December, 1987 (see present Chapter 3.1 on page Two). In this meeting the incomplete practical exercise of students was mentioned on this ship and a suggestion was put forward to purchase a trading ship for educational purposes.

This explanation fully complies with some of the deficiencies listed below:

- High operational cost in maintenance with annual expenses Drs 11.744m and crew manning expenses (30 crew-members) Drs 38.8m including victualling (Source: YEN/DOI and DOLS4, June 1988).

- Lack of advanced navigation/communication/engineering

equipment, due to a scarcity of space room for the installation of such devices. This in turn causes uneasiness and inconvenience for both students and lecturers. In the case of students, they will not have the necessary practice; and in the case of lecturers they will be unable to support their classroom lectures with practical application.

-Its small engine's output capacity with the need for long range coverage along the coast and the islands constitutes an imbalance in providing full requirements for today's needs. Of course, the possibility of rendering practical experience becomes even worse, due to technical restrictions from either her small engine or the inability to use her sails.

-Furthermore, the training ship is berthed alongside a wharf (Elefsina harbour) with a limitation in draft, which is heavily affected by adverse weather conditions. Even more, there is a further restriction of making full use of these practical field studies.

-Despite the laborious and the zealous attempts of the administration and her crew to serve all the M.A's, it has been proven to be unsuccessful. An examination of this year's itinerary fully explains certain deficiencies.

Below are listed details of the itinerary.

M.A	Period	
	From	To
1. Aspropyrgos	3.12.87	4.3.88
2. Elefsina	"	"
3. Skaramangas	"	"
4. Preveza	7.03.88	15.3.88
5. Kefallonia	16.03.88	24.3.88
6. Galaxidi	28.03.88	01.4.88
7. Piraeus	02.04.88	16.4.88 for holidays.
8. N. Mihaniona	18.04.88	20.5.88

Source:YEN/DOLS,December,1987.

The so-called winter field studies are completed at N.Mihaniona,from 18.4.88 to 20.5.88 and then she returns to Piraeus for the preparation of the summer field trips. Having analysed the winter field trips for 1988, one important thing should be noted,namely that the remaining seven units are deprived of this training.To overcome this discrepancy the present regime is that the students of these M.A's should be trained on liner ferry boats, during weekends,which run between the islands and the mainland.

In light of the above,taking into consideration the deficiencies of the training ship,the proposed method of training apart from being effective would also be more cost effective than investing in the purchase of a trading ship.To support this reasoning,it is pointed out that a national shipping line does not exist in Greece, thus a necessary infrastructure should be created to run the vessel.The fact that the current era is entering into a shipping boom will result in that ships' prices would be extremely high which must not be overlooked.

CHAPTER FOUR (4)

Entrance qualifications for students/lecturers.

4.The need for better entrance qualifications.

Nowadays,the manner in which ships are operated and managed is changing radically.The IMO convention STCW/78, as well as the enhanced public perception of the protection and the conservation of the marine environment, has introduced a thorough and complete change in MET.

At the same time,high technology has deeply penetrated the shipping activities faster than expected a few decades ago.On the other hand,shipowners eliminated certain sophisticated electronic systems from ship specifications due to the inability of seamen either to operate them efficiently or to carry out the proper maintenance.Futhermore,it was underlined that in a few cases of malfunctioning of equipment,seafarers were unable to remedy these conditions,which led to the calling in of spacial-ists for repairs.This caused two major headaches to the shipowners,namely increased expenses and the burden of being delayed in the operation of their vessel for an unlimited period of time.

Nevertheless,the above described situation has attracted attention to the entrance qualifications for both the prospective student and the junior instructor.

4.1.The present status.Suggestions for improvements.

The desperate demand for officers and ratings who were needed to keep the Greek merchant fleet running in the late 1980's had provoked deep traumatic experiences.

With the passing out of a new type of officer qualified according to the minimum requirements of STCW/1978 convention,which was implemented from 1984,there existed a condition of unemployment.This was brought about by

having one set of officers with up-to-date training and with no places to fill and another with practical experience only and whose positions became redundant when their companies went bankrupt. The vast majority of the second group was unable to be absorbed in the shipping industry.

Nevertheless, in order to attract students to the maritime colleges and thereby justify the continued existence of such colleges, the entrance qualifications were lowered. A thorough examination of the defects listed below pertaining to the existing system will persuade even the most obstinate.

One

The maximum age to enrol in a maritime college is 24 for those who have never sailed before. Entrance is also permitted up to 30 years of age for those who have sailed more than six months on a Greek ship (1), over than 100 grt, regardless of any other specific requirements (excluded medical and physical fitness), decree 82000/4398 /87 of 30/6/87-source YEN. Such attractive incentives would only introduce students, either with lower qualifications or a squad of people with peculiar characteristics, who may not stay in the occupation for a long time. However, it will inevitably be an extra burden with indeterminate results.

Two

The number of students in an intake should be limited to the pre-announced figure and should be in accordance with the planning project based on the existing figure, unemployment and shipping needs.

It would be somewhat illogical to contemplate success in

(1). In this context a Greek ship means one flying the Greek flag or a foreign flag vessel registered with NAT

a competitive market which only relies on haphazard figures jeopardising our future. A good example will be that of 1987/88, where there was an advertisement for 505 students and the final number of acceptances was 810. In the same month with this declaration, the unemployed officers were 2,127 in all three departments, with a further steeply declining fleet and in a season where normally there is a high demand for seafarers.

Three

Prerequisite subjects required for entrance are mathematics, physics and the Greek language with a differentiation for students who do not belong in one of the following categories (law 1702/1951):

1. 25% of the entrants may be classified under one of the categories:

- a. children of qualified officers of the merchant marine,
- b. children of ratings as distinct from officers,
- c. children of Greek coast guard officers,

2. Regardless of the number of entrants an additional 10% of students is allowed to gain entry into M.A's provided that they form part of one of the underlisted branches (law 380/1976):

- 1. children or brothers of crippled or war victims and of national resistance,
- 2. children or brothers of crippled and victims of peaceful periods (serving military service),
- 3. children of families with more than two children.

However, the question arises that when we have taken these and other factors, such as maths and physics into account, is there any discrimination amongst competitors in the first place? How and when should different levels of students compete with each other? Therefore, it is important in this context to dwell for a moment on the means of offering positive benefits to one class of

people, while refusing entry to the others. If you wish to upgrade a system you must clarify what is and has to be your input in order to get the best results.

Four

In every annual announcement it is always declared that prospective students should be physically fit and intellectually capable according to the regulations which are in force. But do we miss something very vital which is now very rapidly changing and which has far reaching implications? Certainly "yes", and these are the psychological tests, bearing in mind that the future seafarer should pass a major part of his life in a very unsocial and hostile environment.

Five

Practice, procedures and required qualifications adopted for permitting graduates from general education to enroll in M.A's are considered insufficient. Elaborating the procedure one may observe that these schools (M.A's) have not yet been recognised at the same level with other schools of higher education. However, they only attract candidates either of a lower standard who failed to gain entry into the aforesaid institutions or those who wish to obtain temporary deferment from the army service and those who seek the opportunity to resit the national exam for the 2nd or 3rd time. A good example of this undesirable situation is illustrated hereunder:

"Attrition from the M.A's."

capacity	entrants	year	graduated	leakage
deck	3,063	1973/83	2,638	425 (13.9%)
engine	2,883	1973/83	2,123	760 (26.2%)
radio	1,768	1973/83	1,471	237 (16.8%)

Source: Oikonomikos Tachidromos 28/7/85, also Ref:5.

The availability of the latest statistics were not feasi-

ble due to the existing law, by which students have the absolute right of obtaining their graduation certificate up to five years after they have last studied in M.A. Nevertheless, nowadays it is estimated that about 30% fail to complete their studies in these schools.

4.2. Encouraging incentives.

Without prejudice to the aforementioned, below are listed the inducements by which have attracted students to the maritime field.

They are not listed in order of importance.

1. Reduction of military service, from two years or 27 months for certain specialities, down to only one year.
2. Possibility to obtain temporary deferment from military service until completion of studies.
3. Half of military service carried out in the appropriate department of naval ship assessed as sea service for the next certificate of competency.
4. Free transportation to and from the maritime college.
5. No tuition fee.
6. Social security similar to that of the seafarers.
7. Seaman's book issued free of charge.
8. Books for studies free of any charge.
9. Choice between daily attendance and boarding.
10. Free accommodation and amenities.
11. Bathing trunks, boiler suits and sports gear free of charge.
12. Light snacks for day pupils and full meals for boarders free of charge.
13. 50% and 25% discount in travelling by ship or train, bus and air respectively.
14. No restriction with respect to marital status.
15. Recognition of M.A'S as higher education only in media.

4.3.Recommendations for improvements.

If we are to survive as a strong,independent maritime nation capable of sustaining our deserved freedom of operation without dependence on foreign labour,we must take all steps to restore the best entrance qualifications for students on which the future of our fleet can be assured. To remedy all defects and deficiencies which interfere with short term plans and which hurt the system as a whole,constructive objectives should be determined in order to correct these defects and integrate the existing ones.

1. Age

The maximum age of admission should be 21,for those who have never had any sea experience,and 24,for those who had previously joined the seafaring vocation.Thus, youngsters should be able to devote themselves to their studies and subsequently could remain in the maritime industry for longer periods of time.It is totally undesirable to enroll students at the age of 30, because by the time they will have completed studies they will be 34,and above 40 by the time they will have obtained the highest certificate of competency.Besides there will always be a disciplinary problem in obeying youngsters' orders.

2. Required subjects.

Subjects for admission should be the same for all categories of candidates with only one exception in the structure of qualifications,that is to say for those who have sailed and for the graduates of marine schools.To counterbalance the above-mentioned status the following recommendations would be introduced:

Table:4/1.

Qualifications to obtain entry in M.A's.

<u>Without sea service.</u>	<u>With sea service.</u>
-----------------------------	--------------------------

1.Mathematics	20	1.Mathematics	20
2.Physics	20	2.Physics	20
3.English	20	3.English	20
4.Greek languag.	20	4.Greek language	10
5.Graduat.grades	<u>20</u>	5.Sea service	<u>30</u>
total	100	total	100

Graduates from nautical schools

1.Navigation/M.Engines	* 20	* For those who attend the
2.Mathematics	20	deck department the app-
3.Physics	20	raisal will be on
4.English	20	navigation and for engi-
5.Greek language	20	neers on marine engines.
total	100	

The number 20 which has been used throughout corresponds to the evaluation figure by which every student has to be assessed within the national system of general education. Referring to, "with sea service", the number ten denotes that his/her assessment should be divided by two, so as to be equally appraised.

c. Recognition of the M.A's

By a presidential law (No 9/1978) all maritime colleges have been recognised as higher institutions of education. But, at the same time, neither their graduates nor their instructors/lecturers of these M.A's have been accepted at the similar level within the national education system. This has resulted in an imbalanced situation with a tremendous impact on the students, their families and lecturers as well. Therefore, new legislation should be proposed at once to rectify this deformity, which has caused immense damage to MET at home.

d. Plan for entrances.

The existing demand for the recruitment of an X number of seamen inside and outside ships from the one part, and the supply for the enlistment of X on the other part does not

necessarily means that there is parity. Evidence exists where in some capacities there is sufficient provision or even redundancy in one occupation and deficits in the other, as is always the case with engineers (Source: GENE). In reality the predominant conditions at home comprise three main elements that should be borne in mind.

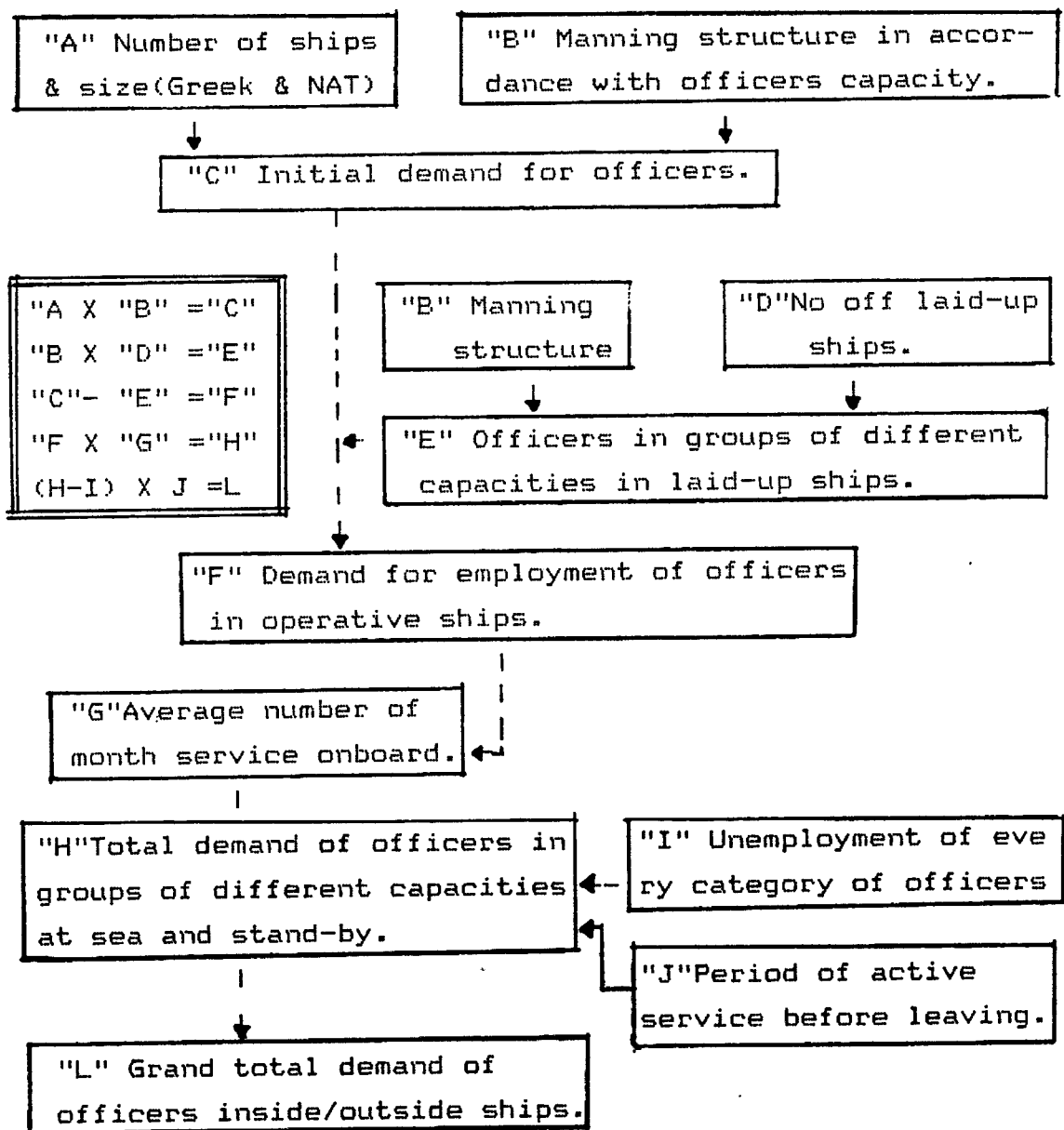
a). To a number of unemployed officers (no reference is made for ratings due to certain implications) no preference for employment is given due to certain conditions, such as objectionable behaviour, diseases, short stays in ships and those who have exceeded the marketable age.

b). Those who endeavour to find an appropriate ship which fulfills certain requirements, like voyages in S. American ports, famous shipping company and ships remained in ports longer periods of time.

c). The third category being those who do not wish to enroll on a ship upon completion of their shore leave. Nevertheless, although "a and b" above have faded out in the recent decline, they should be taken into account bearing in mind the recent boom in shipping activities. However, in order to ensure that the appropriate and sufficient number of candidates have been selected, a long plan should be concretized. This project could be based on the number of ships and the existing labour force including the employed and the unemployed. This long term policy should be planned by a committee, which would be comprised of representatives of the concerned parties, administration, shipowners and unions. Moreover, this committee should convene at regular intervals (twice a year) and plans should be drawn up to decide how many students could be accepted in M.A's on an annual basis. So far, the right step has already been taken by the ESYE/YEN (department of statistics of the Merchant Marine Ministry) and the national statistics department of

Greece, for the enrollment of officers and ratings carried out in 1978, 1980, 1982, 1984 and 1986. In view of the above, the following chart has been prepared on which a long term policy could be based.

Mathematical model for calculation of total demand in officers.



Explanation of the above mentioned chart.

"A" NAT is always aware of the disposition of the ships. Latest figures show that 1,948 ships fly the Greek flag and 220 ships flying foreign flags are registered with NAT (Source:NAT-January,1988), which by virtue of an agreement Greek seamen are registered.

"B"can be easily derived from presidential laws 289/ 24. 4.1986-916/30.1286/Re:manning structure.

"D"&"F"The number of active vessels and laid-up ships is always available on demand.Figures are issued on a daily basis by YEN.

"G"The average number of months(duration of seamen service onboard) mainly fluctuates between 7 and 9 months in accordance with the Greek collective agreement(Ref:3) and statistical information derived from ESYE over the last 10 years(Ref:5).

"I" Unemployment figures are listed on a weekly basis by GENE in full details for every capacity.

"J" The rate of staying in seamen's vocation as well as their evolution within the network of shipping has been calculated by ESYE and YEN.Statistical figures are available every two years.

3.Psychological tests.

Undoubtedly a ship can be a very unpleasant and unsocial environment.It is not only a working place,but it is also a place where the seaman spends a considerable part of his life.With the further reduction in manning structure it can result in certain members of the crew from not seeing each other for the entire voyage.Moreover,other factors such as heavy seas,noise and vibration all have detrimental effects on the physical and mental behaviour of the seafarer.

In this field,neither the administration nor the unions/ shipowners have raised their voice,so as to carry out research and a project by which certain measures could be

placed forward. However, psychological tests for candidates seeking admission are considered absolutely necessary among other entrance qualifications. These tests should be done in order to identify those prospective seafarers whose characters testify as the appropriate person for this vigorous occupation. At this initial stage suitable candidates could be identified, so as not to be burdened with expenses which would be incurred to train an unsuitable person. Therefore, a team of professional psychologists should form an examination panel annually. The task of this panel would be to thoroughly examine the candidates, in accordance with the most modern psychological tests and to select those of the right calibre.

4. Improving the existing incentives.

An additional expedient design should be formulated forward in which the well founded incentives directed to the foreseen candidates would be further promoted.

A further reduction to six months in their military service might have been a better inducement. In this respect, it is one of the government's present objectives to reduce the mandatory service to 18 months, instead of 24/27 which is today's condition for non-seafarers.

Another aspect which should be taken into account is the hermaphroditic situation as to where these higher schools of education belong. This dilemma has been in contradiction to the whole infrastructure of the MET in Greece. Developed countries, such as Sweden, France and the Netherlands, as well as developing countries, namely Egypt and Philippines have long ago adjusted their legislation so as to recognise the master or chief engineer licences to the level of the Bachelor of Science degree. Therefore similar steps should be taken at once, in which appropriate legislation would ratify the validity of these

certificates of competency. Additionally, the aforesaid measures should be announced by all kinds of media, viz. newspapers, nautical magazines, radio and TV. Such an action would be very much welcomed by thousand of officers/ engineers. It is the least recognition to be conferred to a class of people who has suffered a lot and received little.

Furthermore, an appropriate booklet has to be issued in which information should be contained that would clarify this matter in the minds of the prospective students.

Another important element which is worth mentioning is the present demand by the students of these M.A to be provided with meal coupons. To date similar coupons have been granted free of charge to the students whose family's incomes are rather low. In parallel, coupons with competitive prices are distributed to the rest of the students. This discrimination has built up a concrete wall against these schools, which is considered rather harmful for the MET. It may be said that it is a social obligation of the government to treat all its citizens equally.

A disciplined approach could be a means, by withdrawal of their coupons, in the event that they fail in more than one academic year of their studies. Inevitably this would encourage them to be more dedicated to their studies. Therefore, it is recommended that proper action may be taken to remedy these harmful situations.

The culmination of the stimuli would be the possibility to gain entry into a university (see Chapter Five).

4.4.Existing status for instructors/lecturers.

One major factor influencing the success or failure of any large organization ,in this case a maritime training and education institute is the flair and the ability of the educators.

Nevertheless,without being pessimistic the entire system is somehow faltering. This observation is the result of certain malfunctioning parts of the system.

Some of the more obvious ones are illustrated hereunder:
There is no age limitation as to entry requirements for teachers/instructors and lecturers. Therefore, anyone who has not retired would have access in the system provided that he/she fulfills some prerequisites. This has resulted in an unacceptable condition, whereby a person with no teaching experience can be employed as an instructor or lecturer at an age close to fifty. By the time they have gained some experience or have fitted into the system they have reached the age of retirement.

The reasons why it cannot be proposed that maritime education should be entirely integrated into the higher education sector like other disciplines, are the following:

- 1.complications involving pensions and retirement benefits, because they have to be in continuation with the scheme of NAT;
- 2.resistance of maritime lecturers due to conflicting interests;
- 3.non-acceptance of the qualifications of the maritime lecturers by those of the higher educational system;
- 4.lack of relevance between the Ministry of the Merchantile Marine and that of Education. Entry qualifications for principals/managers and for instructors or lecturers in M.A's have been set at a very low standard. A cursory glance at the table below supports this:

Table 4/7.

1.Graduates from Greek universities.....57

From the above figures additional qualifications are as follows:

- 1 holds a Ph.D.in physics.
- 1 Master of Arts in administration.
- 1 diploma in port and shipping administration.
- 1 Master in Maritime Law (Brussels).
- 3 hold also master mariner licences.
- 4 hold a Cambridge certificate in English language.
- 1 holds a certificate in French language.

2.Graduates of maritime academies.....76

additional qualifications.

- 1 holds a Bachelor of Science in civil engineering (University of Houston).
- 1 holds a certificate from London Chamber of Commerce.
- 1 holds a higher technical school certificate.
- 1 holds a middle technical school certificate.
- 2 hold a Cambridge certificate in English language.

3.Master mariners/chief engineers certificate of competency not graduates from M.A's.....78

4.Graduates from higher technical schools.....25

additional qualifications.

- 2 studied of the Southampton School of Navigation.
- 3 hold a Cambridge certificate in English language.

Total...236

source:YEN/DEK January,1988

Nowadays,rapidly changing technology demands higher qualified or specialised personnel,so as to arm the system more suitably in the struggle against worldwide high competition.Due to the above mentioned we are far behind the others.A close examination of the requirements would persuade the most optimistic person as to its inadequacy to meet the present needs.

First of all, these prerequisites were enacted in 1974 and 1975 (No 24/January 25, 1974-No 1482/Dec. 20, 1975) and have never been amended since then.

Secondly, principals or managers for the deck department in the M.A's have only been designated to the listed categories below:

- 1.1. Higher naval officers or coast guard officers graduates from naval academies.
- 1.2. Master mariners graduates from M.A's, or
- 1.3. Master mariners of the old system (i.e no graduates from M.A's, but those who had qualified with sea service and exams) with three years' instructive experience, provided that they had undergone ten years' sea service, of which three of these years were at the rank of a master mariner.

2.1. Managers for the engine department, as those who graduated from our national university as mechanical engineers or naval architects and chief engineers (seamen) having also the following two qualifications.

Sufficient knowledge of the English language, and one year's teaching experience for the chief engineers and four years for the graduates of the university in nautical education.

In case some of the prospective managers/principals do not fulfill the aforesaid prerequisites, permission is also granted even with lower qualifications.

Consequently instructors' qualifications are lessened, fortunately not less than the rank of the chief mate/2nd engineer. In the case of English teachers, a lower qualification is the Cambridge Certificate of Proficiency.

With reference to the above mentioned, entry qualifications in the urban areas coincides somehow with the requirements, so as to have a fair probability of employing the right person in the desired position. But it is

almost impossible for this to occur in the remote areas. Similarly, some additional problems have had a tremendous impact on the entire system through which a fundamental argument has been built up. These deficiencies are considered extremely difficult to confront and eventually to overcome, unless certain concrete measures are taken on the part of the administration to remedy the listed defects below :

a) Lower salaries in comparison with lecturers of similar institutes. The ratio is two to one, in favour of the others.

b) There is no recognition of the maritime trainers when compared with colleagues in technical schools, who work at the same level in these institutes.

c) Insecurity, due to the fact their engagement has been done on a private contract with the government for an unlimited period. This means that the administration can postpone their contracts at any time, which is not the case with all other educators all over the country.

d) They are obliged to teach any allocated subject or subjects which they might be asked to perform, not having the option to refuse. Thus, under the circumstances they may be subjected to teach from three up to five subjects every semester resulting in a unhealthy situation for both the instructor and the student.

e) The new rules of internal function and discipline for the students in the M.A's which were brought into force at the beginning of the academic year 1986/1987 are generally considered too loose. An enormous number of complaints have been raised by the lecturers, supported by the shipowners, who have commenced a determined campaign to remedy this situation.

f) The inability in providing the M.A's with appropriate educational equipment, such as computers, modern nautical

instruments,overhead projectors and all the necessary teaching facilities is also a negative factor.

g) There is no separation or seniority amongst the instructors and lecturers.From the time of enlisting a lecturer until the termination of his/her career,he/she remains in the same position unless he/she has qualified for a managerial position.

However,it may be considered that there is a small incentive in the format of a pay rise,which occurs after a three year interval throughout the lecturer's career.

4.5.Suggestions for upgrading instructors/lecturers.

The described system,which has existed over a long period of time and may be said to have been successful a few decades ago is no longer practical.If we do not endeavour to produce something new we become stagnant.There are some people and some countries who have tried new ideas with varying degrees of success.However,if we are to attempt something new we should examine the procedure of others,learn from their mistakes and take the advantage of constructing the proper infrastructure or foundation. Its main support would be the professional and well qualified lecturers based upon the suitable interpretation of some components.

There should be an age limit for employing junior instructors,as well as a retirement age.The skeptic will say the sole purpose is to upgrade the entire system beginning from scratch.For instance,let us assume that the age of entry would be at 35 and in extreme cases 40. He or she would have the knowledge and the experience of about 20 years so as to be able to teach and challenge himself/herself in a very exciting environment.Besides this is the age group of maturity leading to full confidence in the making remarkable progress for one's own future.More-

over, a personal investment of going abroad would also be a worthwhile element to this endeavour, because the individual would invariably have the stamina to dedicate himself to a specifically defined purpose. Interrelated with this idea as of the upper limit in age of employment would be the question of retirement age. There should be a distinction between a seafarer who retires at the age of 50 having completed 23 years sea service and the lecturer (with seaman's background) who must follow a similar procedure of retirement. The matter should be considered with reference to the following concepts:

a) There is no correlation between these two professions. The seaman's vocation is more vigorous, dangerous and exhaustive than that of the lecturer.

b) The age of 50 is indisputably an active and productive one. Discarding people in their fifties is contrary to a progressive system. A man or a woman at this age has tremendous teaching and professional experience and his/her scientific knowledge can be exploited until he or she has reached 58/60 years in age or more.

c) The academic level is such as to qualify the person for the M.A.'s. Thus, the necessary steps should be taken to remedy this deficiency.

The second fundamental principle in dignifying the organization is the significance of employing the proper man or woman in the proper position with the highest possible qualifications.

Assessing the probabilities at this moment is not considered to be within the context of this dissertation, the reason being a Gordian knot of financial difficulties, in which the respective national law plays the major role. Therefore, such an endeavour would be feasible so as to reasonably pay those who merit such payment and reject those who show little interest.

We all should recognize and accept the fact that some of the following criteria could be our standards in the near future without any preconceived ideas. This project may be into force by the next academic year, 1988/89 and with a glimmer of hope it would gradually progress to its final state.

4.6. Entrance qualifications for teaching staff in nautical/marine engineering subjects.

1. Manager/principal.

For the position a manager or principal of a M.A should hold:

a) A master/chief engineer licence (later on a director's licence) and an additional degree in a scientific field relevant to maritime studies, preferably a Ph.D. or Master of Science degree. The main reason for making this proposal is that the concept at home dictates that the principal should have a seafarer's background.

b) Four years of didactic experience in maritime studies or five years at an institute of equivalent level, of which at least one year has been spent in nautical studies.

c). A proficiency in English at the level of the certificate of the University of Cambridge or equivalent.

2. Senior lecturer.

For a senior lecturer the following qualifications are recommended:

a) A master mariner or chief engineer licence (later on a director's licence) or electronic engineer licence with a Master's degree in his/her teaching/lecturing field.

b) Three years' lecturing experience in his/her specialised field and at similar level institute.

c) English knowledge similar to (c) above.

3. Instructor

An instructor may hold the following requirements provided that he/she accomplishes :

a) Master mariner/chief engineer's or electronic engineer's licence with Bachelor's degree in Nautical Science. Teaching experience of at least two years at a higher level institution.

b) Two years sea experience in any of the above occupations.

c) English knowledge similar to the other trainers.

With respect to the instructor's entrance qualifications one should bear in mind the individual will never be promoted as senior lecturer unless he fulfills the proper qualifications.

One function would be to assist the senior lecturer and be in charge of workshop/laboratory in the field of his knowledge. This means that an instructor employed for teaching practical seamanship must be capable of being in full command to deliver practical experience to the cadets in items as such knots, rowing and sailing.

4.7. Entrance qualifications for teaching staff in scientific subjects.

1. Senior lecturers should hold:

a) a Master of Science or Doctor's degree in their specialised field and have,

b) five years' lecturing experience at a similar level institution of which at least two years are spent at a nautical institution, and

c) English knowledge similar to the other staff categories.

2. Instructor's should hold:

a) a Master of Science degree of their specialization and have,

- b) Teaching experience in similar level institutions or five years in a secondary school and
- c) English knowledge similar to the senior lecturers.

3. Visiting professors.

Visiting professors should possess qualifications in the subject on which they deliver the lectures. Their appointment must be approved by the board members of each M.A. and their expenses will be covered by KNE (education fund).

4.8. Educators' wages.

The anticipated outcome of the above mentioned conditions would be a full success provided that the salaries are acceptable. The value and objectives of education becomes increasingly incompatible with the traditional approach to utilise the capabilities for little pay.

It is more and more untenable for a maritime nation like Greece to continue with these destabilising procedures. Such activities may destroy the power and the experience which has been obtained over the years and finally eliminate all the distinct advantages over non-maritime nations. Therefore, unanimous agreement should be reached in equalizing the wages of the maritime educators with those of the same level institutes.

Based upon the legal status of our constitution, which is pure democracy, the country which taught such merit to the whole world must initiate the proper legislation at once.

Thus, trainers' monthly wages should be as follows:

1. Manager/principal	Dr	180,000	equivalent	USD	1,350
2. Senior lecturer	"	150,000	"	"	1,180
3. Instructor	"	130,000	"	"	960

Likewise, an additional long service bonus of 5% for every three years of successful experience would be added to the above stated remuneration. These salaries have been

calculated in accordance with the standards of living in Greece. However, there should be an additional allowance to meet the needs of inflation.

The aforesaid wages are easily feasible when applied by means of a simple law in which an equation could be reached between the two sorts of higher education institutes. This would also mean that both students and lecturers have been recognised intellectually with these institutes.

In reality such an enactment exists, but has never been implemented due to the divergent interests of the two different ministries involved, the Ministry of Merchant-ile Marine and the Ministry of Education.

This problem may be sorted out with a mandate prepared by the Ministry of YEN and approved by the Ministry of Education, in order to avoid confusion and overlapping involvement between the two. In fact, such a proposal had provided a settlement for preliminaries which were utterly rejected two years ago (1986) by the Ministry of Education. The main reason was that some trainers with seafaring backgrounds did not have the proper prerequisite qualifications.

The problem arising out of this conflict necessitates a solution, so as to close the gap which has been widening between the two.

Thus, a decisive line should be drawn as follows:

First, those who have lectured for more than five years in M.A's and who have seafaring backgrounds, could be honourably given the title of senior lecturer and the salary of this position. This is based upon the concept that most of them are rather old and soon they will retire. A similar case with teachers of primary school had been settled in that way, in which the Ministry of Education increased the year of their studies from two to three in order to

properly arrange their role in the educational system. To counterbalance this facility they should be requested to complete a period of study at their own leisure time at the maritime university (M.U.). However, not much choice has been left to them. Either they have to follow progressive studies or a retire pension.

Secondly, for those with less than five years of training experience, having a seaman's background, the alternative solution of further studies at the M.U. should be superimposed. To facilitate this they should be enrolled as inaugural students of the M.U.. Otherwise they should remain at the level of instructors.

Thirdly, the same procedure should be followed for those with a scientific background, such as mathematicians, physicists and electronic lecturers. That is to say, five years of lecturing experience for senior lecturers and less as instructors. Besides, this category of lecturers is not posing a problem because they possess the necessary qualifications. However, if we conclude that the government should enclose all these expenses for the lecturers within the national educational budget, then the number of these instructors/ lecturers will be about 200 and is comparatively small when compared with the thousands of other educators all over the country. It is a social obligation for the education of the students and the burden is not particularly heavy. Besides such encouragement would be appreciated by all the concerned parties, namely the shipowners, trainers and students.

This action will dissipate the detrimental reputation which has been created over the years against these institutes. It would please the educators and the students who could benefit from the fact that integrated studies is now being offered in these schools. Moreover, KNE which, after having completed its project in equipment procure-

ment could lighten the shipowners' contribution to this fund would be released from such an obligation .From the government's point of view, it would be a political achievement to have settled the outstanding difficulties and reduced strikes and malfunctions, which have destroyed the entire system over the last years.The compliment of such a successful action will be the provision of well trained personnel to occupy proper administrative positions within the government infrastructure.

4.9.Additional inducements for lecturers.

Upgrading trainer's knowledge.

It is of critical importance for a trainer to keep abreast of today's modern technology.There is now a clearer understanding of what paths should be taken to invest in that field in order to uplift his knowledge. Among the measures which may be taken to provide for self studies are the enrichment of libraries and subscription nautical and scientific magazines.The conduct of seminars domestically or internationally will also help to keep lecturers abreast of developments in their field of expertise.Another approach which should be taken into consideration is the possibility of sending the lecturer back to sea from time to time,so that he will be able to cope with new developments in shipping practice.It is highly recommended that within a four year period,three months at sea should be mandatory for every lecturer/instructor.This can be established through contact with EEE (Union of Greek Shipowners UGS).

The culmination of such upgrading measures would be that of fellowships and attendance at conferences and symposiums.

Our lack of awareness over the years with respect to libraries and the subscription for relevant magazines

could be reformed by using funds from those which would be saved in closing down the minor academies. Textbooks written in English would be purchased, as well as nautical magazines, such as Fairplay, Seaway and Lloyd's publications just to mention a few. These, first of all, would serve to create awareness of what are the latest developments in the nautical/scientific field. Secondly, there would be a good incentive for both students and educators to improve their English standards which are considered very low as compared with our European partners. The sum of Drs 27m, which is 5% of these savings should be dedicated on an annual basis for the above-mentioned purpose.

With reference to fellowships, acquisition of such could only be accomplished from the EEC and our own funds, since all donations will have been withdrawn from the time Greece received its full membership within EEC (developed country). Therefore, one should only refer to those which may be obtained from certain projects within the European community.

Moreover, for those who have qualified from the Greek M.U., a small number of them should be sent abroad in an attempt to improve the quality of maritime education.

Another important element in integrating an instructor/lecturer is that of attending of seminars, conferences and symposiums. In this field, no decision has been arrived at, either because of lack of communication between our maritime schools and the international world, or the inelegibility of our educators. An interrelation of our administration should be conducted with certain international organizations, such as IMO, WMU and IMLA (International Maritime Lecturers Association) in order to form a cooperative body. Moreover, the development of good relationships with all maritime institutes of the

EEC countries or even internationally should be unfolded, so as to circumvent all the barriers which have interfered with real progress. The fruitfulness of these international contacts is the alpha and omega of the successful upgrading of our MET. Constructive plans should be formalized by the administration or through individual scientists/professors, who could represent the country efficiently on the most important maritime meetings which are held globally. Furthermore, the obtained knowledge could be transfused as feedback inside the country by a process of conducting domestic seminars. Lastly, the invitation of well-known professors specialized in their own fields could inject into our MET an enormous amount of knowledge and experience.

4.10. Textbooks.

The last recession in shipping business apart from causing high unemployment, has also resulted in a decline in the publication of valuable nautical textbooks. Another reason may be attributed to this development is the intake of prospective students and a consequent reduction in the demands of books. Moreover, the innovation of using photocopies (illegally) in copying books, where the cost is considerably less, has inevitably led to a similar result.

Authors are not willing to write books when there is no profitable market or the cost is not encouraging.

To remedy this the following proposal is made:

Every lecturer should provide his/her notes of their respective speciality. These notes could be typed by the secretarial administrative staff of the M.A within their working hours. Then, with use of word processors they could be printed in the form of original copy. These manuscripts should be presented to the academic council of every M.A.

for approval, correction or improvement.

The following step should be the photostat procedure within the educational center. These copies would be distributed to the students at a minimum cost being that of publication. Undoubtedly the benefit should be three-fold :

- a. The student would acquire textbooks at very low prices.

- b. The instructors would be the authors of these notes, gaining knowledge, therefore increasing possibilities for promotion, notwithstanding the fact that notes could be written by senior lecturers, if they feel the need to fill the gap.

Apart of the moral gain the instructor will have an financial remuneration on notes sold in a book format through nautical bookshops. The best of these notes could be chosen by a nautical institute in Greece, "EVGENIOS EVGENIDES", which could purchase the rights of publication and distributes the books to nautical students free of charge.

- c. The overall gain of this would be that the quality of of publication would be upgraded, while the instructors will gain knowledge, with a final result being the advantage to the students and MET on the whole.

CHAPTER FIVE (5) .

5.1.A proposal for the necessity of the establishment of a maritime university in Greece.

Shipping, ship construction and maritime law were some of the core elements of the destiny, prestige and prosperity of our ancestors. Having realised the necessity to discover a new world they sailed even further than the known world in those days.

Nowadays, we as well merited descendants of those admirable pioneers have kept a remarkable position in shipping activities over the years. Is it enough that somewhere along the line there are signs of backward steps having been taken ?

There is no doubt that the Greek merchant fleet has decreased in number of ships during the last recession, but at the same time it has gained from the point of view of replacing the older units by new ones. New ships, either as second hand (less than eight years old) or as newly constructed ones with advanced technology, have registered under the "blue and white" (the Greek flag). It means that the practice and experience which were strongly recommended a few years ago have been completely removed, making way for scientific education which may not be obtained under the prevailing conditions in Greece.

However, to provide such scientific education, a well defined center is needed. So far, there is sufficient proof that such a scientific institute, which would provide for high level education, does not exist in Greece. This has resulted in demoting the entire MET system to such an extent that a great effort should be made at once to regain the previously existing high degree of achievement. Additionally, a great number of nationals have gone abroad for further studies resulting in an enormous drain in

foreign currency .In this respect,the remarkable thing is that few of these expatriates are governmental employees. As a consequence ,there is a lack of proper personnel within the public sector.Moreover,those of the private sector who are well educated are not willing to be associated with an organization in which salaries are very low.

The necessity for an integrated maritime institution seems to be of vital importance to educators,administrators and managerial personnel in the shipping industry.The Greek government will gain efficient lecturers and administrators, while the shipowners will be supplied with highly qualified personnel to man their ships and offices.Lastly,seafarers and the Greek society will benefit from the overall infrastructure. Accordingly this is the present aim of the government for the establishment of a maritime university (M.U.).

Apparently,it is not only merely a necessity of setting up a high institute,but a demanding obligation to transmit the light of this candle to the generations to come. The founding of the university would benefit not only the shipowners, but also the government itself.One would therefore expect that shipowners could have a great interest in funding the M.U. .This step would be probably followed up by the government as it would then minimize the drain in foreign currency as mentioned above.

It may be noted that Greek shipowners are known to be prone to give large donations to philanthropic causes.

5.2.Incitements.

The problem of qualitative upgrading high level marine personnel has long been recognised.But it has never been confronted to a degree that would provide a satisfactory solution for today's needs,possibly by the establishment

of such an institution in Greece.

1. Such a case had first been introduced during the political leadership of the Greek Merchant Marine Ministry in FES 1860/29-11-82-TYDIS. In this declaration, it was stated that the YEN is not properly structured. However, the following questions arise. Who would be those specialists of shipping? What should be their speciality which they could pass on, and lastly which would be the institute from which prospective students could acquire such expertise?

2. There was the announcement by the Secretary General (S.G) of YEN, that a special committee had been investigating the possibility of enlisting the M.A's in TEI (Higher level institutions) and that the establishment of a M.U. from which high level personnel could be provided (Newspaper, MESIMVRINI, 10/5/ 84). In another publication (VIMA, 4/3/84) it was proclaimed that the Aegean University will start functioning in 1985-86 and a section of it would produce personnel for technical management with specialization in the management of shipping and tourist activities. This has raised the following questions for the author.

a. What would be the form of studies determined by the ministry with reference to this university?

b. Which one of the two branches will provide for the actual needs of shipping for which the ministry is responsible?

It seems that the establishment of a high level economic institution, with an association to shipping will not be the proper one to pave the way for a prosperous shipping, which is the ultimate task of the government. In fact, there is no such intention on the part of the ministry, if the proclamation of the S.G of YEN is examined. In the announcement it was emphasized that only graduates of the

M.A's may enroll in this university.

3.The establishment of the World Maritime University (W.M.U.) resulted in a pioneer movement which led to the revolutionary programmes and syllabuses.

4.The official announcement by the S.G of YEN in a reception for the W.M.U. TMS (Technical Management of Shipping) students which was held on the cruising ship "HERMES" (November,1986).The writer attended that reception in which the S.G of YEN officially declared on behalf of the government the establishment of a maritime university in Piraeus,very soon.

5.3.Possibilities.

The shipping background which exists in Greece has made our technology productive and this in turn has influenced the Third World countries.Of course,it has presented certain problems and weaknesses.Nevertheless, there is the well-founded basis upon which such further development could be sustained in shipping construction and repairs.There are shipping construction and repair establishments with a variety of drydock facilities,as well as installations for breaking up ships.Beyond that point there is further development and promotion of the present productive potentiality within the goals and the pursuits of the five year predicted programmes.

The possibilities of shipping knowledge and experience within the Greek community are very wide.The event of the successful management for decades of one of the biggest fleets in the world has established an enormous amount of expert personnel either on board or as managing staff in shipping companies.Besides, it is well known that in recent years, foreign flag vessels and shipowners have been utilising Greek officers onboard ships and ashore.As a result, Greece has been recognised as a genuine

maritime nation which possesses maritime knowledge and professionalism with the possibility of exporting high level qualified personnel.

For such marketable production in Greece, there is only one basic shipping setting, which begins with the network of M.A's and tried out in KESEN. On the other hand today's technological evolution indicates that our MET is not enough. The experience which governed the functioning of shipping matters has shifted aside, giving room to "science".

5.4. Incentives.

The tremendous development of the Greek shipping was due to the managerial aptitudes of the shipowners, who, with sometimes a leap in the dark, made productive advancement. In those days the environment was "sluggish" and experience had been more than enough. But because of the continuous modifications due to advancing technology, knowledge was critical and the shipowner himself became less self-reliant. He therefore sought the assistance of experts whose knowledge was solely attainable from specialised studies. Thus, he invoked the support of specialists.

To attraction of such specialists in this field, resulted from a demand on behalf of the shipping companies. In this respect, present indications in the Greek market have substantiated that there is a high demand. Moreover, on certain occasions private enterprises encourage and subsidize their employees to further increase their knowledge. However there will not be any difficulty in securing work for those who would have graduated from the maritime university (M.U), as technical management personnel.

An additional incentive for prospective candidates would

be to secure an administrator's occupation within the infrastructure of YEN. Presently, it has been proposed by the government to hand over to civilians certain departments of YEN as a settlement of some of their demands. Without objection, the existing personnel is considered incapable of qualifying and quantifying these occupations, unless they will further develop their administrative and managerial ability. The current demand in personnel is roughly 400 in number, of which only 170/180 are identified as effective units to undertake such obligations. It is estimated that a rate of production 30-40 annually would be the minimum requirements for such occupations only in the government's sector. Therefore, a certain allowance should be made for private enterprise.

The culmination of all incentives would be the elevation of the maritime studies to a level equivalent to that of other institutions would have been agreed upon.

This would allow the expectations of those who demand a further education to become realised. Moreover, it would provide personnel with enhanced experience and knowledge to MET which is the uppermost significant item in upgrading the system.

To create a balance between the drainage of personnel from shipping activities and other scientific fields, the following proposal should be taken into consideration. The Bachelor of Science degree, will not be given unless candidates qualify with the master's/chief engineer/ A.O. licence and later on, in accordance with the relevant requirements that have been described in Chapter Two. This should not discourage shipowners to invest in shipping business or to be dissolutioned by assuming that a weapon has been provided which will nullify the whole idea.

Seafarers and prospective candidates should not object to

this concept for some of the reasons listed below:

a. For the recognition of a scientific degree, which would equate with students of similar level.

b. The possibility will still exist for the enrollment into a university for a second degree, through which they may be employed as management personnel in shipping companies, government administrators, trainers, and/or in any vocation within shipping and/or an ancillary industry or ports and multimodal transportation.

5.5. The structure.

The organizational set up of the M.U. should reflect the sectors which would be covered. Thus, the process of blindly copying existing and established institutions should be avoided, the rationale is that the aim of its establishment is not to create an additional university amongst so many, or an institution whose objectives overlaps with others, but a unique unit which would only be dedicated to maritime activities.

Therefore, the idea of the introduction of a university with tourist and maritime studies the so-called "Aegean University" should be abandoned.

Similarly, the idea of a high maritime academy with four or five years of studies for candidates from secondary school is wrong and should be entirely rejected.

On the contrary, an allowance should be made for the graduates of the Greek universities or coast guard officers to become specialised in general maritime administration and technical management of shipping.

With respect to the above provision the following structure is considered as being the most appropriate. Its composition will include subjects in conjunction with international conventions and IMO requirements. Hence, it will be in accordance with the purpose for which it has

been designed.

5.5.1. Entrance examinations.

There should be a great interest amongst the seafaring community to enroll in this university. However, all candidates for admission will be required to sit a series of papers conducted by the Ministry of Education. Papers will be prepared by the faculty board of the M.U. in accordance with the relevant course of attendance.

Due to the high demand for attendance at this institute the number of entrants will be limited in accordance with the demand in a particular field of studies. Hence, the government should specify a limit as is the case with the other institutes of the country.

5.5.2. Lecturers' sector.

In order to reinforce and replenish their knowledge the entry qualifications, year of studies, curriculum and degree below listed should be acquired:

a. Entrance qualifications.

Master mariner's or chief engineer's licence and/or electronic engineer's licence and the Bachelor of Science degree will be required.

b. Years of studies.

Courses will be divided into two major categories:

The first category will consist of attending intensive morning and afternoon sessions for two academic years. Within two (2) years, 1,680 lectures will be delivered (28 weeks X 6 hours X 5 days a week = 840 annually X two years = 1,680 lecturing hours).

The second one will consist of evening classes only, attended by trainees who are willing to participate in this project (see Chapter Four/4.8 re: educators' wages) or alternatively for those who seek an instructor's position. For this, the following proposal is put forward.

Four (4) years of studies which would consist of three evening sessions, Monday through Friday. The three and half years should be employed at studies and the last semester for "thesis" preparation. Within three and half years about 1,680 lectures would be given (3.5 years X 32 weeks X 5 working days X 3 lectures daily = 1,680 hours). Classes should begin September 1st (the official opening for maritime institutes) and would be completed June 30th.

c. Syllabus.

The following degrees will be awarded:

1. Master's degree in nautical science.
2. Master's degree in engineering science.
3. Master's degree in nautical instrumentation science.

However, in relation to the stated awards their curriculum should consist of:

1. Degree in nautical science.

Main subjects.

- 1.1. Navigation (passage planning and electronic navigation) including bridge automation.
- 1.2. Seamanship (ship stability, shipbuilding, securing of cargoes and ship's dynamics).
- 1.3. Mathematics.
- 1.4. International conventions.
- 1.5. Computer science.
- 1.6. Teaching modern equipment (simulators e.t.c).

Supporting subjects.

Automation, rules of the road including casualty investigation, teaching techniques, marine meteorology.

2. Degree in engineering science.

Main subjects.

- 2.1. Marine engineering (motors and auxiliary systems).
- 2.2. Automation (engine room automation, control systems and remote controls).

2.3. Mathematics.

2.4. Applied physics.

2.5. Physics.

Supporting subjects.

Chemical technology, computers digital techniques,
teaching techniques.

3. Degree in nautical instrumentation.

Main subjects.

3.1. Electronics.

3.2. Navigation instruments.

3.3. Automation.

3.4. Mathematics.

3.5. Telecommunications.

Supporting subjects.

Computers, physics, teaching techniques and electricity.

5.5.3. Management in shipping transportation.

In this course the emphasis is to be placed on the managerial role which personnel who are engaged in the relevant duties of a shipping company, shipbuilding and ancillary industry have.

a.). Entrance qualifications.

Master mariner's or chief engineer's licence (later on director's licence) and the Bachelor of Science degree, degree in economics or law.

b.). Years of studies: Two (2).

c.). Award: Master of Science degree in shipping transportation, after having passed all exams and on completion of a "thesis" in a subject relevant of their studies.

d.). Syllabus.

Main subjects.

1.1. Management.

1.2. Maritime transportation.

- 1.3. Maritime economics.
- 1.4. International conventions.
- 1.5. Maritime law.
- 1.6. Marine insurance.

Supporting subjects.

Ship surveys, ship propulsion systems, elements of naval architecture and computers.

5.5.4. Maritime administration.

This course would be set up to upgrade the knowledge of the government personnel who are responsible for matters related to shipping, cargo and machinery. The idea is to ensure that these marine administrators understand the requirements of conducting surveys, inspections and casualties investigation.

Award: Master of Science degree in administration (marine).

In order to achieve this award, entrance qualifications, years of studies and syllabus must be oriented as follows

a.). Entrance qualifications.

Master mariner or chief engineer and/or the rank of lieutenant of the Greek Coast Guard and the Bachelor of Science degree, either nautical or with an equivalent degree approved by the university board (e.g. naval architect).

b.). Years of studies two (2).

c.). Syllabus.

Main subjects.

- 1.1. The IMO conventions, protocols and codes.
- 1.2. Maritime transportation.
- 1.3. Maritime law and marine insurance.
- 1.4. Shipbuilding, design and ship stability.
- 1.5. Casualty investigation. Ship dynamics and man-oeuvring of ships.
- 1.6. Ship machinery and electrical installations.

Supporting subjects.

Machinery control and electrical installations, principles of shipping management, dangerous goods and strength of materials.

Admittedly, some of the theoretical subjects are uniform in some of the courses. This does not mean that a repetition or a separation would take place in attending these lectures. But common subjects should be lectured at the same time for different courses and for economic reasons. However, practical experience gained in such topics as ships surveys strength of materials and automation would be provided for every group separately.

5.5.5. Location.

The selection of a location for the establishment of the M.U. will be guided by the existence of relevant installations and other maritime oriented industries.

In the absence of any proposed siting, one should consider the possibility of promptly installing it within the establishment of the M.A of Aspropyrgos (Piraeus/Athens) and in particular the new building which has been designated for deck cadets.

This proposition is based on the existence of the maritime and shipbuilding installations which are already situated in this area.

5.5.6. Expenses.

All expenses should be fully covered by government funds, as is the case of every higher institution in Greece. This avenue with the great prospects in the maritime field advocates that the beneficiaries of this project will not be the shipping but the entire Greek society.

5.5.7. Faculty.

In the establishment of the highest educational institution one of the most important components is that of

the faculty. Through its rapid development will result from the enthusiasm of postgraduate students in the maritime field and the Alumni association. Indeed it is the core element of performing in all educational activities, the magnitude of which will be appreciated both nationally and internationally.

In view of this the following qualifications shall be required:

1. A minimum academic requirement of Master of Science.
2. Sufficient number of publications in shipping journals, scientific reports, conference proceedings and the author of nautical books.
3. Extensive industrial experience in his/her specialised field.
4. Four years' of lecturing experience in higher institutes
5. Mastery of the English language at such a level as to be able to represent the country at conferences or in delivering lectures.

5.6. Evaluations.

With the establishment of such an M.U., based purely on the mentioned specialities, it is hoped that this will attract the attention of the maritime community.

Evidently, this involves new investment in Greek shipping activities for some of the following noteworthy goals:

- a. To upgrade the quality of lecturers/instructors through which the foundation for a sound education in M.A's and an excellent calibre of educated students will be provided.
- b. To internationally project and raise the standing of the Greek MET in relation to the volume of its operational ships.
- c. To respond to the need of those who wish to further develop their knowledge either as seafarers and/or

management or administrative personnel.

d.To meet the needs of the current shipping companies, of which the organization and the management substantiate a team of skilful experts.

e.To support hopes and visions of those who strongly believe that such a big change in shipping should bring about a different philosophy and a complete revision of the present status.

On the other hand ,the arrangement of a few nautical lectures or the establishment of a minor branch within another university should be entirely rejected.

f.To limit the attrition of seafarers towards land vocations due to the incapability of enrolling in a university.Such an action should offer then an excellent career ,which when combined with better working and remuneration conditions,would keep seafarers within the shipping field.Furthermore,levers would be initiated to attract new entries with the ultimate target of infusing new blood into the system.

g.To encourage and push forward the research and technology in cooperation with other institutes.

i.To engage and inspire fruitful collaboration with shipbuilding,ship's management and maritime administration, out of which useful results would be derived.

j.To offer and provide the international maritime community with knowledge and expertise,through exchange of information by which the entire world may gain.

k.To transfuse into the minds of the Greek seafaring society the great necessity to upgrade the safety of navigation and to protect and conserve the marine environment,which is a substantial factor for future generations.

CHAPTER SIX (6) .

GENERAL CONCLUSIONS.

The simple plan for the economic development of Greece, as shown in the monograph of H.Haralambides(Ref:7),cannot be successful if shipping is not taken into account not only as an economic activity, but also as an extremely valuable national resource (see Appendix Seven).

The future of Greek shipping, not only has no bearing on the termination of the "Gulf War", neither on the re-allocation of the world's wealth to include Third World countries or the cessation of the construction of national fleets by the same countries ,but on the preservation of first class seafarers.To succeed in the long run the MET should be upgraded so that its graduates will become more competitive worldwide.

The present minister of YEN has accepted publically (1) that the MET is faltering.Furthermore,he has stated that quick actions should be taken to restore the calibre of Greek officers.Amongst these measures which are to be adopted and pursued,the following are recommended by the author:

- 1.To adopt by 1989-90 the basic and advanced education versus the present status.This proposal shall undoubtedly save money and increase efficiency through which the objective of furnishing the M.A's with advanced equipment will be accomplished.It is obvious that it would be more feasible to supply only 5 instead of 15 centers with the needed facilities.On the other hand,figures of unemployment,of officers not fully acquainted with the modern technology,could be easily reduced through reeducation.

This at the same time would solve the socio-economic

(1).In a special TV presentation,which was held on June the 1st,1988-the author was present.

problems of the deck, R/O and electricians.

The adoption of these proposals will cause less political embarrassment to any elected government than the direct reduction of five centers as a first step. Admittedly, the short term plan leans favourably towards the five main centers more easily, due to the fact that the entire shipping community would be prepared with this smoother change.

2. Undoubtedly the acceptance of the aforementioned should be the foundation for the long term plan to be accepted by 1992 through 1996. It is extremely important to realise the difference between the "well experienced" master/chief engineer of 10 or 20 years ago with today's "electronic director".

3. To adopt more stringent regulations in the internal function of M.A's, through which graduated students would have self-respect and the acquired discipline to satisfactorily carry out their future duties as officers or as shore-base managers. The present status is too "slack" or "sluggish" to provide them with the effective discipline required. The shipowners' proposal to restore the uniform dress is not the only measure which should be taken, even though the burden of expenses for these is too heavy. Additional positive actions should be imposed in a full agreement with the representatives of the concerned parties (administration, shipowners, lecturers, unions and students) This could be less time consuming and the desired results, barring strikes, would not be negative.

4. The provision of shipowners with certain incentives, so as to eliminate the present situation of vessels flagging out from the Greek registry. The formulation of such an eagerly demanded policy is beyond the scope of this study. But among other incentives would be the relief of a shipowner in the knowledge that he has an efficient and

effective seafarer which would offset certain claims and damages, which may result from the activities of the incompetent seaman. Furthermore, an increased contribution by the government to MET is a social obligation. A step in the right direction will be taken on January 1st, 1989 by the government when it provides NAT with sufficient funds for paying pensions (YEN minister announcement in public 01/06/88). Similarly, a further positive step would be that of increasing the finance to MET.

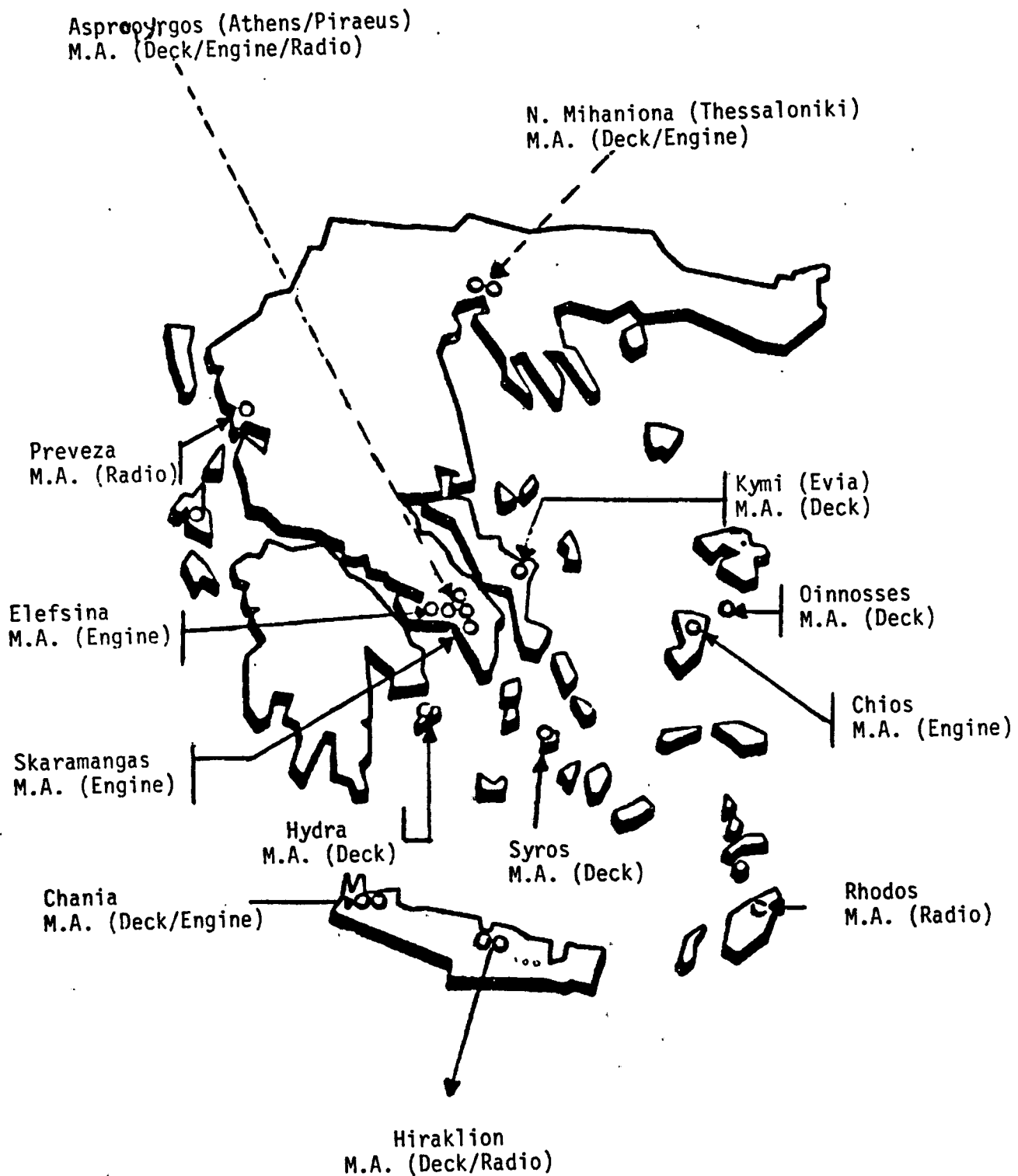
5. It is not only the duty of the government and the ship owners to do their part in upgrading the MET, but it is a prerequisite duty of lecturers, students and unions to contribute within the system showing their willingness to accept something which will be long lasting. This is the basis of survival of shipping and its competitiveness, either internationally or within the EEC.

6. Presently the shipping industry is changing in its methods of operations and procedures so rapidly, that personnel with more advanced qualifications are desperately needed. However, the required demand for highly qualified lecturers/ shipping personnel within the Greek seafaring community results in a mandatory obligation on the part of the marine society to provide them. The acquisition of such suitably qualified personnel may be accomplished with the establishment of the proposed Greek maritime university.

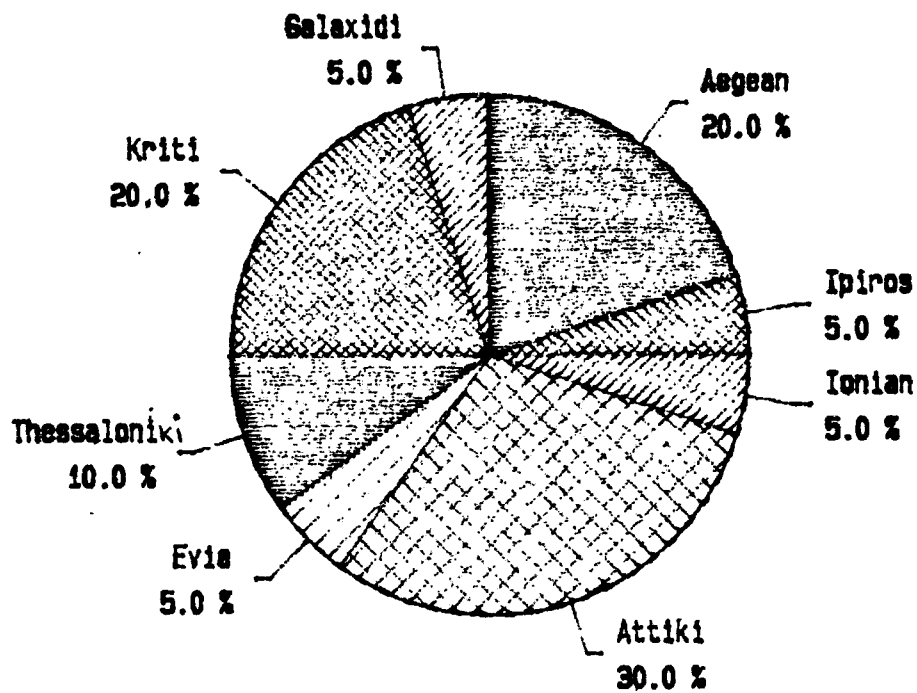
Therefore, the establishment of such a unit will cultivate the roots of a well defined instrument, through which the continued success of a maritime nation could be provided for.

APPENDIX: ONE (1)

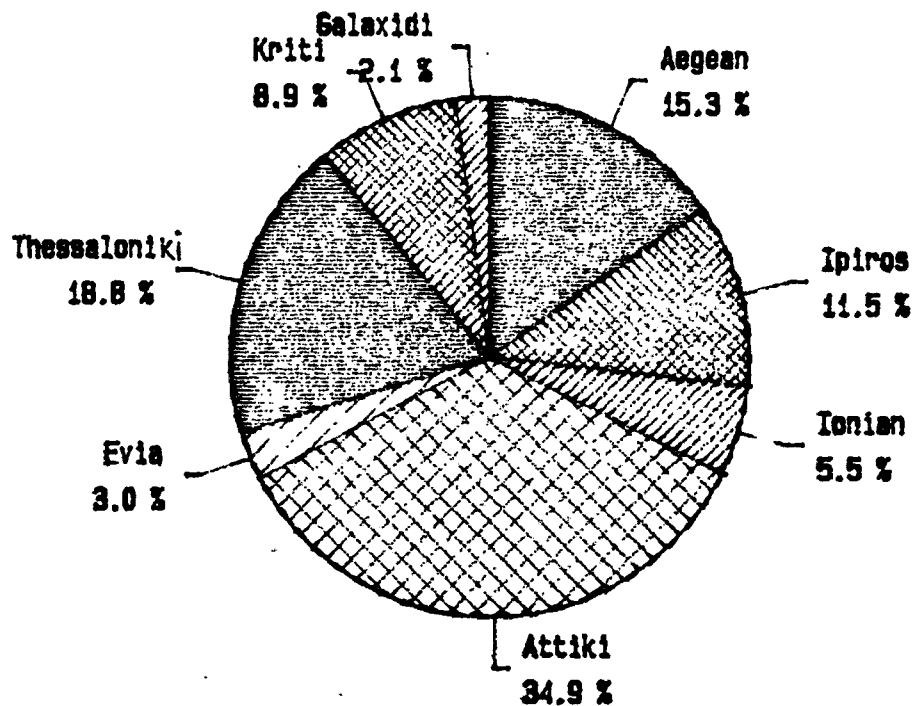
THE NETWORK OF THE GREEK MARITIME ACADEMIES (YEN/1988)



APPENDIX TWO : A
In association with the No of M.A's



APPENDIX TWO:B In accordance with
the capacity for the intake students.



APPENDIX three (3)

ALLOCATION OF FUNDS FOR MARITIME ACADEMIES.

For the allocation of funds to M.A's in Greece the following procedure holds:

1. Standard requisition forms for educational materials are completed and sent to the respective department concerned in the ministry.

2. In parallel to the above mentioned standard forms supplementary requisitions are forwarded to the relevant departments in the ministry.

3. These are forwarded after preliminary reviewal by the respective department concerned to a budgetary control committee.

The said committee is composed of coast guard officials, shipowners' representatives and administrative personnel, who are appointed by a ministerial decree.

The budget forerforecast for each M.A. is generally estimated on the basis of the previous expenditures, the needs and the amount of money currently available.

Illustrated below in "A" and "B" are example of expenditures of two units for the year of 1987.

Appendix three(3)-"A"

AN EXAMPLE OF THE TOTAL EXPENDITURE OF A MINOR M.A.

The table below indicates the expenditure of the M.A of Syros, for the year of 1987.

Wages for permanent personnel	Drs 9.984 m
Wages for non-permanent personnel "	1.549 "

Wages for cleaning staff	" 0.220 "
Maintenance expenses	" 0.115 "
Expenses for educational materials	" <u>11.242 "</u>

Total Drs 23.110 m

Source:YEN/DOLS4 ,July 1988

Appendix three (3)-"B"

AN EXAMPLE OF THE TOTAL EXPENDITURE OF A MAJOR M.A.

The table below indicates the expenditure of the three M.A's (deck/engine/radio) of Aspropyrgos, for 1987. It should be noted that, although the three M.A's are physically separate entities, they are underneath the jurisdiction of one command, being a coast guard officer. For this reason the accounts are treated as one.

Wages for permanent personnel	Drs 77.983 m
Wages for non-permanent personnel	" 17.975 "
Wages for cleaning staff	" 0.247 "
Maintenance expenses	" 0.400 "
Expenses for educational materials	" <u>38.127 "</u>

Total Drs 134.732 m

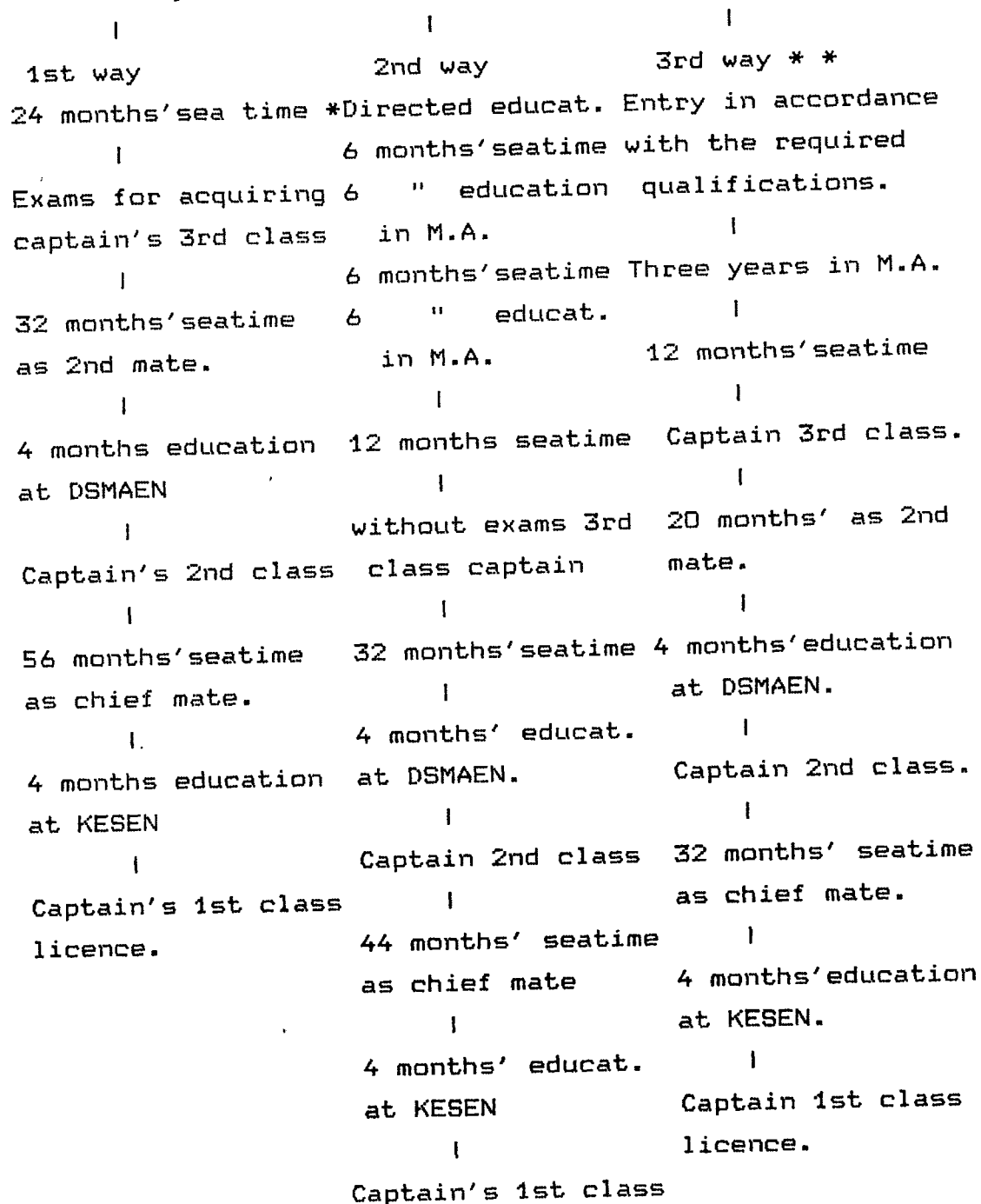
Source:YEN/DOLS 4, July 1988.

APPENDIX:FOUR(4) "A".

Flow chart for unlimited certificate of competency.

DECK/ENGINE (EXISTING).

12 years of general education.



*Note:The 2nd way in the evolution of officers/engineers, has been abolished by the presidential decree 996/ 79, but there is a number of prospective seafarers of this category, either within the M.A's or at DSMAEN/KESEN.

**Note:Similarly for the evolution of the engineers in obtaining the 3rd, 2nd & 1st class engineer licences, but with the only exception that their studies in M.A's are of four years' duration, where as they are only three years for deck officers.

APPENDIX:FOUR(4)-"B".

RADIO OFFICERS (EXISTING).

12 years of general education

1st way	2nd way

* Directed education	Entry at M.A's in accordance
	with the required entrance
6 months' sea service	qualifications.

6 " education in M.A.	
6 " sea service.	3 year studies in M.A.
6 " education in M.A.	

12 months' seetime, without exams R/O 2nd class

|

20 months' seetime.

|

4 months' education at KESEN.

|

R/O 1st class licence.

*Note:Similarly, the same concerning the evolution of DECK/ ENGINE officers, is in force for R/O (Presidential decree 996/79).

APPENDIX:FOUR(4)-"C".

SHORT TERM (PROPOSED).

12 years primary and secondary education.

| |

1st year of study (In peripheral academies/BASIC).

| |

2nd year of study.Sea service with directed education (9-12 months).

| |

3rd year of study in deck or engine M.A (ADVANCED).

| |

4th year of course (3rd year of studies within the M.A) and completion of a satisfactory thesis (ADVANCED).

Completion of 12 months' actual sea service.

| |

Certificate of competency of 2nd mate or 3rd engineer.

| |

18 months' net sea service (STCW/78 requirements).

| |

Refresher courses for four weeks (oral exams).

Completion of a satisfactory project work (he must have had two years of sea experience before being granted the Bachelor's degree).

| |

Chief mate 2nd engineer licence.

| |

Two years' actual sea service.

| |

Refresher courses for four months at KESEN.

| |

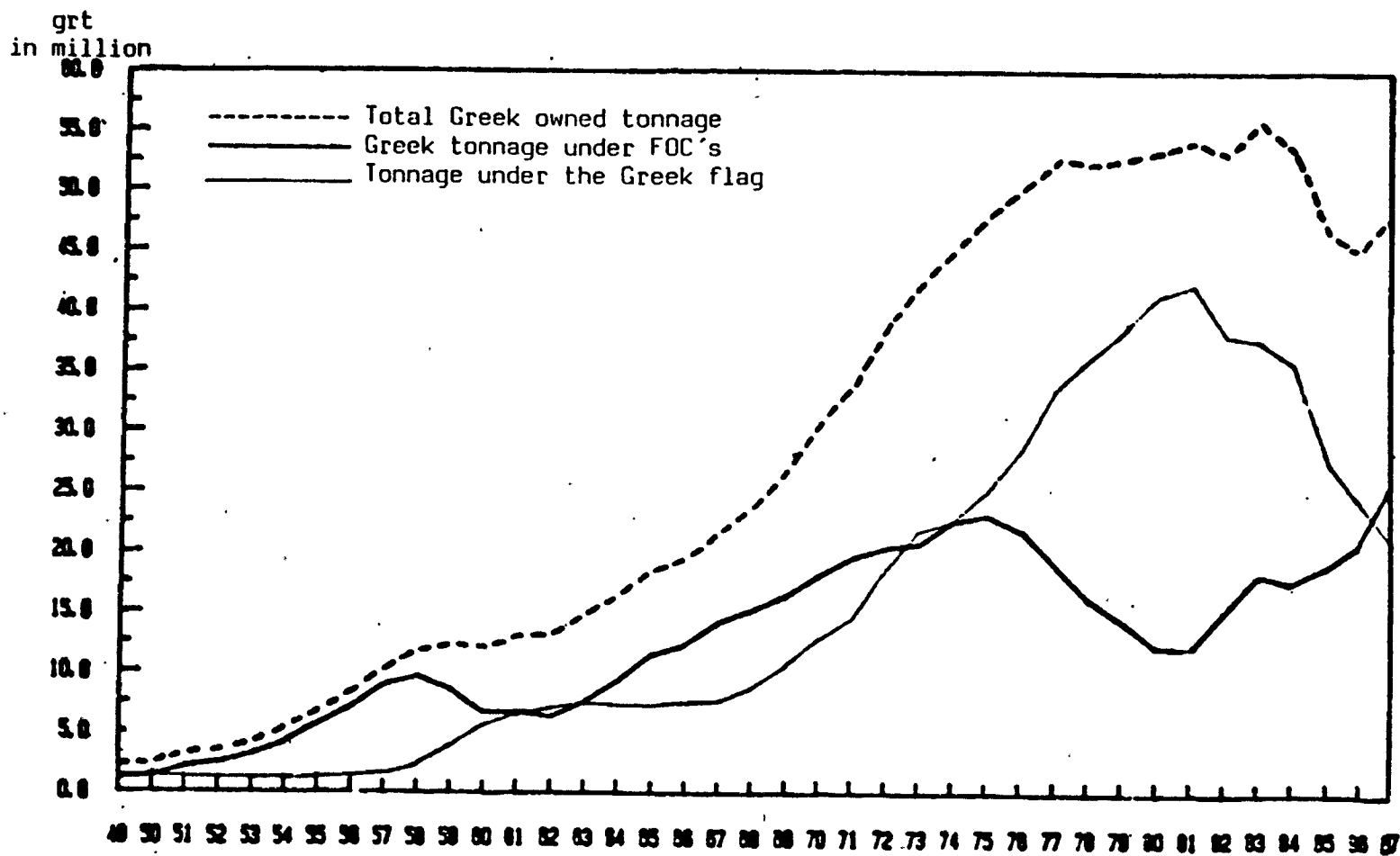
Master's or chief engineer certificate of competency and the Bachelor's degree in nautical/engineering Science.

| |

Entrance examinations for the maritime university.

APPENDIX: FIVE (5)

GRAPHS SHOWING THE EVOLUTION OF THE GREEK MERCHANT FLEET
(Greek & FOC's Vessels)
1949-1987



Source: Naftika Chronika, January 1988

APPENDIX:SIX(6).

TOTAL GREEK OWNED TONNAGE (1987).

Flag	No of ships	Grt	%
Greek	1,010	21,006,751	46.13
Panamanian	400	4,707,433	10.33
Liberian	195	7,778,311	17.08
Cyprus	783	11,798,506	25.90
Malta	60	508,329	1.11
English	7	112,208	
Bahamas	29	1,037,569	2.27
Philippines	9	196,660	0.43
Lebanon	15	212,609	0.46
Honduras	16	86,663	
Ceylon	5	35,019	
Madvilles	2	4,323	
N.Zeeland	3	52,307	
	2,534	47,546,688	

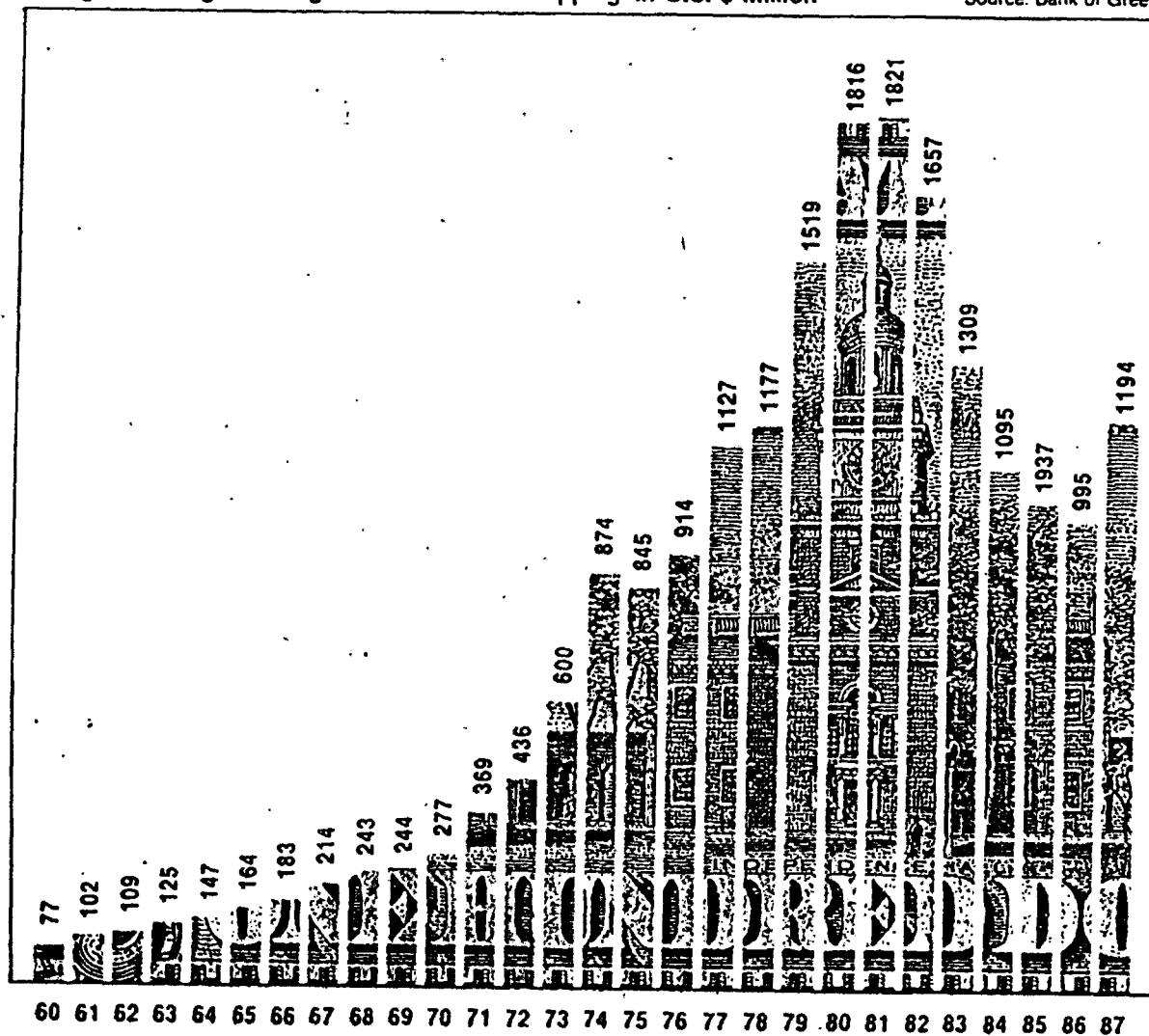
Source:NAFTIKA CHRONIKA 15/1/88

NOTE:This list consists only of dry cargo ships and tankers (bulkers,tankers and general cargo) with a capacity in excess of 1,000 grt and donot include ships of the same category of 100-1,000 grt,passengers and the rest regardless of their tonnage.

APPENDIX SEVEN(7)

Foreign Exchange Earnings of Greece from Shipping in U.S. \$ Million

Source: Bank of Greece



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