

The UK economy's requirements for people with experience of working at sea 2003

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Executive Summary

This study estimates the demand for seafaring skills and experience in shore-based jobs in the UK, assesses the likely supply of ex-seafarers, and suggests how the expected shortfall might be addressed. Estimates are made also of the total employment in the maritime industry in the shore-based sectors covered by the study. Results are compared with those from a previous study carried out in 1996.

For the purposes of the study, the shore-based maritime industry was defined to include those industries where there is likely to be a demand for ex-seafarers e.g. classification societies, port services, marine lawyers, marine insurance, ships agents, maritime schools etc. It does not estimate total employment in the more widely defined maritime sector adopted in other work e.g. Sea Vision.¹

An important term used in the study is ‘jobs employers would *prefer to fill* with ex-seafarers’. This comprises two elements: those jobs where employers would normally only consider applicants if they had professional seafaring experience (the *essential* category); and those jobs where the applicants would not necessarily be required to have any seafaring qualifications or experience but where employers would consider it an advantage if they had (the *advantage* category).

Figures are given in terms of central estimates and likely ranges (based on 95 per cent confidence intervals). Alternative estimates have also had to be made to take account of the non-response to the survey by a major ex-seafarers employer, Lloyd’s Register.

Key Messages

- Since the earlier study in 1996 there has been some reassessment by shore-based employers as to which jobs they need to fill with ex-seafarers and this has led to some jobs being downgraded from the *essential* to the *advantage* category.
- There is a shortfall between supply and demand for UK ex-seafarers to work in shore-based jobs, where employers consider it essential to employ former ships’ officers. The current annual shortfall in supply is estimated to be 65 or 112 depending on assumptions.

The consequences of this projected shortfall are likely to be:

- a continuance of the trend to use non-seafarers in the essential category although this will not fill the shortfall completely. Reliance on non-seafarers to fill shore-based jobs may also lead to a degree of quality loss because, in some instances, they would be less than perfect substitutes; UK officers currently serving at sea will be encouraged by higher wages to move to onshore employment sooner in their careers; shipping companies currently employing UK junior officers at

¹ ‘Sea Vision’ is a public awareness campaign to promote the UK’s wider maritime sector, launched by the Chamber of Shipping in October 2002. For more details see web site <<http://www.seavisionuk.org>>

sea will have less incentive to train, and be more likely to employ foreign officers; firms could move their business to offshore centres or recruit foreign ex-seafarers.

Key Results

(Note: rounded figures are given except where numbers are small):

Total employment in the maritime sector

- Total employment in the shore-based maritime sector as defined in this study is estimated to be 132,000 (plus or minus 11,000) [*Appendix 2, Table A.4.*].

Jobs employers would prefer to fill with ex-seafarers

- 15,700 jobs were identified which employers would prefer to fill with ex-seafarers (13,600 to 17,700). These results are not significantly different from the 1996 study. [*Paras. 2.5., 2.6. and Tables 3, 4.*].
- The mean annual demand for jobs which employers would prefer to fill with ex-seafarers to fill shore-based jobs is estimated at 700 (plus or minus 92); apart from jobs in the essential category, this demand is likely to be met by filling vacancies with non-seafarers [*Para. 3.6.*].
- The projected employment requirement in five years' time is 16,100 and in ten years' time 16,800. These projections are not appreciably different to the estimated current requirement [*Para. 3.2. and Table 10.*].

Jobs employers regard as essential to fill with ex-seafarers

- Of the jobs which employers would prefer to fill with ex-seafarers between 47 per cent (7,300 jobs) and 62 per cent (9,800 jobs), depending on different Lloyd's Register assumptions, are estimated as falling into the essential category. This compares with 70 per cent of such jobs (11,800) in the 1996 study. This suggests that in the intervening years there has been some reassessment by employers as to which jobs they need to fill with ex-seafarers and that some jobs have been downgraded from the essential to the advantage category [*Paras. 2.8. to 2.10. and Tables 5, 6, 7.*].
- 8,800 jobs were identified where employers consider it to be essential to employ former ships' officers (plus or minus 950). The figure is 6,850 based on different Lloyd's Register assumptions. These include both UK ex-merchant navy and ex-Royal Navy officers, as well as foreign ex-merchant navy [*Para. 4.9. and Table 12.*].

- Of these, 6,650 (plus or minus 800) are jobs currently filled by former UK merchant officers, where employers consider professional seafaring experience essential. The figure is 5,650 based on different Lloyd's Register assumptions [*Paras. 4.9. - 4.11. and Table 12*].
- The mean annual demand for such officers to fill vacancies in these jobs is estimated to be 313 (plus or minus 37). The figure is 266 (plus or minus 37) based on different Lloyd's Register assumptions [*Paras. 4.9., 4.10., 4.11. and Table 12*].
- Based on current estimates of the seagoing pool of ships' officers in the relevant age band for onshore employment where their skills are in demand, and an assumption about the wastage rate (the number coming permanently ashore), the annual supply of UK ships' officers is estimated to be 201. Given the mean annual demand estimates above (313 or 266) the current shortfall in supply is estimated to be 65 or 112 (depending on different Lloyd's Register assumptions) [*Para. 4.15*].
- Given a natural wastage rate of 6 per cent and the present level of cadet intake of approximately 630, a steady state situation where shore-based demand for seagoing manpower is satisfied could theoretically be achieved after 2017 provided demand for such manpower does not exceed 265 annually. In practice, however, satisfying demand at this level is unlikely to be sustainable as it would imply intolerably high actual wastage rates in excess of 20 per cent for officers in the 30 < 45 age range. For actual wastage rates in a steady state situation not to rise above the natural level of 6 per cent for such seagoing officers, which clearly would be sustainable, shore-based demand, given the present level of cadet intake, should not exceed 160 annually [*Para. 4.20*].

Ex-UK seafarers employed in shore-based jobs unrelated to maritime

- An estimate of the number of UK ex-merchant navy officers and officer trainees who are currently employed in shore-based jobs where seafaring experience is not required was also made. The estimated number of such people is approximately 30,800. The vast majority of these are over the age of 47 years and this age structure makes it unlikely that this group would be able to meet the shortfall in supply in the shore-based sector [*Appendix 1 and Table A..3*].

Amplification of Some of the Key Messages and Results

Alternative estimates based on assumptions about Lloyds Register

The study was based on a sample postal questionnaire survey of companies. One of the largest employers of both UK and foreign ex-seafarers, Lloyd's Register, did not respond although they did respond to the 1996 enquiry. Lloyd's relative importance as an employer of ex-seafarers is evident from their survey return in the 1996 study which showed that in 1995 they employed almost 2,000 former seafarers. This figure of almost 2,000, represented 12 per cent of the estimated number of shore-based

jobs that employers in the 1996 study would have preferred to fill with former seafarers. Most of the 2,000 filled posts were in the essential category, accounting for 17 per cent of the total number of posts in this category. Given the non-response from Lloyds two separate estimates had to be produced based on alternative assumptions about Lloyd's Register recruitment policy in respect of ex-seafarers. The first estimate assumes that Lloyd's still consider it essential to recruit appropriately qualified ex-seafarers; the second estimate assumes that they now consider it to be only an advantage to recruit such people [*Paras. 2.8. to 2.13. and 4.6. to 4.8.*].

Reassessment by employers of jobs needed to fill the essential category

As summarised in the bullets above, of the jobs which employers would prefer to fill with ex-seafarers, between 62 per cent and 47 per cent, depending on the assumptions about Lloyd's Register, are estimated as falling into the essential category. In the 1996 study 70 per cent of such jobs were estimated as falling into this category. This suggests that in the intervening years there has been some reassessment by employers as to which jobs they need to fill with ex-seafarers and this has led to some jobs being downgraded from the essential to the advantage category. In the higher percentage share estimate (per cent share falling into the essential category), the business areas that are major employers of ex-seafarers regarded as essential are classification societies, ports and terminal operators, consultants and surveyors and shipowners and offshore companies (federated and non-federated). This is similar to 1996 [*see Appendix 6, Tables A.5, A.7 and A.9*] The position changes, however, in the lower percentage share estimate since most classification society employees are downgraded from essential to advantage, and the four major employers of ex-seafarers where experience is essential now become ports and terminal operators, consultants and surveyors, shipowners and offshore companies, and ship/crew management [*see Appendix 6, Tables A.6., A.8., and A.10.*].

Shortfall between supply and demand

The difference between supply and demand (estimated to be 65 or 112, depending on different Lloyd's Register assumptions) is considered to be robust. The demand estimate was derived using a conservative wastage rate (2 per cent) from the shore-based pool and demand would have been greater if a higher rate had been assumed. On the supply side, even if the estimate made in the United Kingdom Seafarers Analysis 2002 is accepted that 9 per cent of officer revalidations are assumed to be for shore-based work, rather than 21 per cent estimated in the current study (and which would increase supply estimates from 201 to 232), there would still be a shortfall [*Paras. 4.4., 4.15. and 5.10.*].

The estimated shortfall between supply and demand is largely a consequence of the low level of recruitment of cadets throughout much of the period since 1983 resulting from the decline in the UK shipping industry. [*Paras. 4.15 and 5.11.*].

Possible effects of the shortfall

Given that a shortfall in supply exists then there is pressure on shore-based employers to find a solution, either by finding substitutes who might be UK non-seafarers with suitable training or foreign ex-seafarers with suitable skills and experience willing to work in the UK (*demand adjustment*), or by inducing an increase in supply from the present source (*supply adjustment*).

For demand to adjust, the requirement for seagoing ships' officers in the 30 to 44 age range to fill job vacancies in the essential category ashore must fall from 266 to 201 in the present year, (assuming the lower demand estimate) and to 123 in 2011 [*Para. 4.19.*]. This implies an increasing number of vacancies in jobs traditionally filled by highly qualified former ships' officers must be filled by non-seafarers, and that employers would be willing to accommodate this by downgrading such jobs from the essential to the advantage category.

There is evidence that some adjustment of demand has taken place over the past eight years as a consequence of an increasing number of non-seafarers filling posts previously occupied by ex-seafarers. However, it is highly unlikely that the necessary adjustment could take place fast enough to prevent serious depletion of the pool of seagoing ships' officers in the relevant age range, even if a sufficient number of employers were prepared to act in an altruistic manner to try to achieve the necessary adjustment. This is because while it is certainly feasible that education and training programmes could be devised which would allow non-seafarers to fill most jobs currently filled by former ships' officers in the essential category, such programmes, unless already being implemented, would only be able to contribute towards reducing the demand for ships' officers over the medium term because of the lead times likely to be involved in training [*Para. 5.5.*]. Reliance on non-seafarers to fill the majority of shore-based jobs would in any case inevitably lead to a degree of quality loss because, in some instances, they would be less than perfect substitutes [*Section 5.6.*].

Hence, the more likely scenario is that without government intervention to induce employers to act otherwise, supply will adjust rather than demand, since most shore-based employers will still seek to fill jobs in the essential category by continuing to recruit from the diminishing pool of UK ships' officers in the relevant age range.

If supply responses predominate then consequences are likely to be:

- UK officers currently employed at sea will be encouraged to move to onshore employment sooner in their career than they otherwise would have done. If a shorter career at sea is expected to become the norm, companies currently employing UK junior officers will have less incentive to train them and less incentive to recruit UK officer cadets, and be more likely to employ foreign officers. Ultimately, they may even cease to employ UK junior officers after completing their cadetship because of the probable loss of whole age cohorts of

experienced ships' officers. Such a development would have implications for the government's support of seafarer training and for the longer term availability of people with suitable skills and experience for onshore activities requiring such skills and experience.

- Another possible consequence of a continuing shortfall, from the point of view of shore-based employers, might be that many firms which are footloose will move their business to offshore centres.
- Other firms will have no alternative, if they do not implement a training programme for non-seafarers, but to poach qualified staff from elsewhere or to recruit foreign seafarers.

Foreword

This report was commissioned by the Department for Transport, the Chamber of Shipping and the Marine Society. The Transport and Shipping Research Group of Cardiff Business School, Cardiff University, Cardiff was contracted to produce a report determining whether maritime related sectors of the UK economy are likely to face an insufficient future supply of people with experience of working at sea. This report follows up the report 'A study of the UK economy's requirements for people with experience of working at sea' published in 1996.

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Disclaimer

The views expressed in this report are the authors' and may not necessarily reflect those of the Department for Transport, the Chamber of Shipping or the Marine Society which funded this project.

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Background to the Study

Introduction

- 0.1. Concerns continue to exist regarding the long term decline in the level of UK seafarers. This concern was expressed in 1993 by the House of Commons Employment Committee (House of Commons Employment Committee, 1993). A number of studies have been carried out in both a national context (Moreby and Springett (1990); McConville (1995)) and an international context (University of Warwick, 1990 & 1995). However, following the Employment Committee's concerns a definitive study, 'A study of the UK economy's requirements for people with experience of working at sea' (the 1996 Study) was carried out by Gardner and Pettit (1996) which addressed the issue of the shore-based employment of ex-seafarers and the impact this might have on the UK economy.
- 0.2. Now, as in 1996, a number of land-based, marine-related industries habitually use employees with seafaring experience. Net vacancies in these land-based jobs can be filled by those UK merchant seafarers still currently working at sea, by foreign seafarers, Royal Navy personnel or non-seafarers.
- 0.3. This study focuses on the requirements of the maritime industry in terms of its requirement for seafarers and the skills they have, how trends are changing and the problems likely to be faced by the industry in the next decade and beyond. In the 1996 study it was suggested that due to the long-term decline in the numbers of cadets being recruited to the UK shipping industry the number of UK ex-merchant seafarers available to fill shore-based jobs in the UK would decline. The project therefore analyses the impact that this is likely to have.

Outline of project

- 0.4. The decline in the size of the United Kingdom direct owned and the UK registered merchant fleet was expected to create a shortfall in the number of people with sea-going experience who are able to fill vacant positions in marine related sectors ashore (Employment Committee, 1993). The 1996 study addressed this issue and predicted that there would be a shortfall in the number of ex-seafarers necessary to maintain the pool by the late 1990s. During the years subsequent to 1996 the likelihood is that there has been interaction between the demand for ex-seafarers to fill land-based jobs and the supply of active seafarers at sea. This would have created a scenario whereby the pool of UK seafarers at sea is declining and employers are beginning to fill jobs, where they would previously only have considered employing ex-seafarers, with other sources of labour. There is, therefore, still a need to consider the wider impact of the loss of labour possessing seafaring skills and the depth of experience which accompanies it.
- 0.5. In the period between the 1996 study and the current one the United Kingdom government introduced a tonnage tax for shipping in the year 2000. This measure also addressed the skills

shortage and requires companies, if they elect to join, to register for ten years and to accept a 'minimum training obligation' which involves sponsoring or providing the training of one new officer trainee each year for every fifteen deck or engineering officers of their existing sea staff complement. This policy has had some success in attracting tonnage to the UK flag (the volume of UK owned and registered tonnage is currently at its highest level for more than 12 years) but not enough time has elapsed since its introduction for it to have had any effect on the supply of skilled labour. Consequently the shortage of people with experience of working at sea continues and explains the reason for this study.

0.6. It was in the light of these continuing concerns that this project was commissioned. The principal purpose of this project is therefore to determine whether firms in the maritime related sector of the UK economy are likely to face an insufficient future supply of people with experience of working at sea.

Terms of reference

0.7. The objectives of the study are:

- a. To estimate shore-based employment in the maritime related sector where employers consider it essential or an advantage to employ former seafarers. This should also include shore-based overseas jobs with UK companies filled by UK employees with seafaring experience. The estimate should identify separately where such jobs are currently filled by UK nationals, foreign ex-seafarers, or non-seafarers.
- b. To estimate, approximately, the number of people in the UK with seafaring skills and experience employed in shore-based jobs (either in the maritime sector or in other sectors of the economy) where seafaring skills or experience are not required.
- c. To estimate, in broad terms, the future demand for people with experience to fill jobs identified in (a) above, 5 and 10 years ahead.
- d. To assess whether levels of recruitment and employment of seafarers of UK, and other nationalities identified as likely substitutes, are likely to be adequate to meet the demand estimated in under (c) above, taking into account the likely demand for such seafarers at sea, and, if not, how the industry might react to address that shortfall.
- e. In the light of the findings in (d) to indicate whether there might be an unresolved shortfall, or damaging quality loss, and if so, what further measures, if any, might be taken to remedy these.
- f. To derive links between the number of shore-based ex-seafarers in employment where their experience is considered to be essential or an advantage, and other employees in the maritime industry, by industry activity or group. The links should then be used to produce estimates of total shore-based employment in the maritime industry.

Section 1. The types of employment available for former seafarers in the land-based maritime related sector.

Introduction

1.1. When UK merchant seafarers leave the sea to seek employment ashore, they find jobs in many different occupations. While some of these occupations may have no connection at all with their former employment, others are maritime related. When ex-seafarers are employed by shipping companies, ports or other maritime related businesses in shore-based jobs, it is often because the expertise they have gained through their previous seafaring employment is considered to be of particular value by their employers. Where this is so, they are employed usually in a technical capacity and relevant seafaring experience is one of the factors considered necessary for employment in the job. This tends to be the case regardless of whether such former seafarers are employed in a maritime related activity such as pilotage or by a City based firm such as a marine insurance company.

The survey

1.2. In order to derive an estimate of the number of land-based jobs in the maritime related sector where employers would prefer to employ seafarers it was necessary to gather appropriate data. This was done by conducting a postal survey. The firms sampled in the survey were drawn from the entire population of firms identified as possible employers of former merchant seafarers within the sector. The sample was a stratified random sample. Stratification was on the basis of business category, so that the full range of business activities which might provide employment opportunities for ex-seafarers would be represented in the sample.

General methodological approach

1.3. In order to develop a profile of the structure of employment within the 'UK maritime industry' it was necessary to develop a research methodology which would provide clear statistical evidence. This methodology was developed in the 1996 study and was broadly replicated for this study. Additional modelling work was undertaken for this study relating to those shore-based jobs in the UK where former seafarers were employed but seafaring experience or skills are not required is discussed in Appendix 1. The approaches taken in other studies that were considered in the 1996 study are discussed in Appendix 3.

Research methodology

Selection of the sampling frame

- 1.4. The 1996 study identified which maritime related activities were likely to be employers of ex-seafarers so that a sampling frame could be drawn up. When the framework was devised for this study the starting point was the same categorisation as that used in 1996. However, the actual categorisation used in this study differs slightly to that used in the 1996 study, although it is broadly the same. Some alterations to the classification were made to reflect the nature of the sampling frame. This is because the way in which information about the various companies was collected was based on different groupings in the reference material used to compile the company information. This section and Appendix 4 describe how former seafarers are employed in the maritime related sector when they come ashore. Table 1 refers to the business categories in which they may be employed. The changes are highlighted below and in the appropriate paragraphs in Appendix 4.
- 1.5. In the 1996 study a sampling frame was established for the business categories which were to be surveyed in order to make a numerical assessment to fulfill the objectives of the study. One of the principal problems associated with this study was in providing a clear definition of the ‘maritime industry’. There are a vast range of organisations with a wide degree of interest and involvement in maritime related matters and to obtain a comprehensive list of companies operating in the ‘maritime industry’ in the UK, and to devise as detailed a list as possible, a number of directories were consulted. For this study a similar range of directories were used and these were supported by information provided by the Chamber of Shipping.

These directories were:

- Containerisation International Yearbook 2002 (Containerisation International, 2002)
- Fairplay Marine Computing and Internet Guide 2000 (Fairplay, 2000)
- Lloyd’s Shipping Connections (Lloyd’s, 1994)
- Lloyd’s Maritime Directory (Lloyd’s, 2002)
- Lloyd’s List Ports of the World Vol.2. (Lloyd’s, 2002b)
- Lloyd’s Register Fairplay Ports and Terminal Guide Vol. 4. (Lloyd’s Register- Fairplay, 2002)
- IAPH Membership Directory 2002 (IAPH, 2002)
- Various professional organisation membership directories

1.6. The main differences between the categories used in the 1996 study and the current study are as follows:

- In the 1996 study Cargo Surveyors / Consultants / Survey and Inspection were all treated as individual categories for the purpose of the survey. Now, however, many of these companies are listed in directories under the more general categories of consultants and surveyors. The most

practical option therefore was to create one new group of consultants and surveyors which encompassed the four groups used previously.

- In the 1996 study Port Services and Pollution Control were treated separately. For the purpose of this study the two categories were combined to form a general Ports Services category.

Table 1.	Comparison of groupings between the 1996 study and the 2003 Survey
Category [1996 study]	Category [2003 Survey]
Classification Societies	Classification Societies
Cargo Surveyors / Consultants / Survey / Inspection	Consultants / Surveyors
Port Services / Pollution Control	Port Services
Ports	Ports
-	Terminal Operators
Towage / Salvage / Dredging	Towage / Salvage / Dredging
Legal	Maritime Lawyers
Insurance / P&I Club / Loss Adjusters	Marine Insurance / P&I Club
Banking	Ship Finance
Ship Broking / Cargo Broking / Ship Chartering	Broking / Chartering
Ships Agents	Ships Agents
Marine Equipment	Marine Equipment / Marine Information Technology
Shipbuilders/Repairers	Engineering (Shipbuilders / Ship breakers /Ship Repair / Engine builders)
Non Federated Shipping Companies	Non Federated Shipping Companies / Offshore
Offshore	-
Federated Shipping Companies	Federated Shipping Companies / Offshore
Ship Management / Crew Management	Ship Management / Crew Management
Education / Training	Education / Training
Charitable Institutions / Publishing / Miscellaneous	Charitable Institutions / Publishing / Representative Organisations / Public Sector / Non Profit / Miscellaneous

- A sufficiently large group of terminal operating companies exist and were therefore allocated to a new group which did not exist in the 1996 study.
- In the 1996 study Insurance / P&I Clubs and Loss Adjusters were all treated as separate groups. For the purposes of this study these were combined to form a single group of Marine Insurance and P&I Clubs.
- Ship and Cargo Broking and Ship Chartering were combined to form a Broking and Chartering group.

- Marine Equipment is broadly the same as the 1996 study, although many companies are now specifically listed under the category of Information Technology. Such companies were treated as Marine Equipment companies.
- For the purposes of this study Shipbuilding and Repair in the 1996 study was extended to include all forms of Marine Engineering such as Engine Building.
- The Chamber of Shipping includes Offshore Companies in its membership. It was therefore decided to group Offshore companies with either Federated or Non-Federated shipping companies as appropriate.
- The 1996 category of Charitable Institutions / Publishing / Miscellaneous was extended to include Representative Organisations, Public Sector organisations and Non Profit organisations not included elsewhere.

Selection of the sample

- 1.7. A composite list of organisations was compiled and discussed with the Steering Group to ensure that it was as comprehensive as possible. The list was then used as the basis of the questionnaire survey undertaken as the principal means of data collection.
- 1.8. The groups which were to be surveyed regarding their future requirements for ex-seafarers are detailed in Table 2 which also indicates the total number of organisations in each group. The sampling frame for each group was dependent on the numbers of organisations operating in each sector.

Questionnaire survey

Questionnaire design

- 1.9. In order to make a numerical assessment of the requirements of the UK maritime industry as a whole for seafarers coming ashore three questionnaires were devised, one for each of the ports industry, shipping companies and other companies. The same basic questionnaire was used for each group but for shipping companies an additional part was added to Question 1. The only other difference between the questionnaires was the reference to ports, shipping companies or companies at appropriate points in the questionnaire.
- 1.10. The questionnaires were discussed with the steering group and a number of changes made before they were piloted with a number of organisations. The feedback for the port and company questionnaires indicated that the survey could be undertaken without further amendments. For the shipping company questionnaire none of the pilot questionnaires were returned due to the reluctance of the companies

approached to become involved in the study. It was therefore decided on the basis of the other returned questionnaires to proceed. The questionnaires are included as Appendix 5.

Table 2.		Questionnaire Distribution by Business Category					
No.	Categories	No. of co. in category	No. sent	No. sent as %age of total	Response Nos.	Response Rate as % of no. sent	Response as % of total population
1	Classification Societies	9(1)	9(1)	100.0	4(0)	40.0	40.0
2	Consultants and Surveyors	537	362	67.4	118	32.8	22.1
3	Port Services	153	153	100.0	51	33.3	33.3
4	Terminal Operators	254	144	56.7	52	36.1	20.5
5	Towage/Salvage/Dredging	214	142	66.7	40	29.2	19.4
6	Ports	176	176	100.0	115	65.5	65.5
7	Maritime Lawyers	178	147	82.6	36	24.5	20.2
8	Marine Insurance and P & I Clubs	166	148	89.2	27	18.2	16.3
9	Ship Finance	86	86	100.0	20	23.3	23.3
10	Ship Brokers and Charterers	222	222	100.0	66	29.7	29.7
11	Ship Agents	529	141	26.7	31	22.0	5.9
12	Marine Equipment and Information Technology	1975	289	14.6	83	28.7	4.2
13	Marine Engineering:	317	143	45.1	39	27.3	12.3
14	Non-Fed Shipowners and Offshore	559	254	45.3	64	24.9	11.1
15	Federated Shipowners and Offshore	68	68	100.0	31	45.6	45.6
16	Ship and Crew Management	156	145	92.9	36	24.8	23.1
17	Maritime Schools	94	94	100.0	31	33.0	33.0
18	Miscellaneous	325(3)	148(3)	45.9	62(3)	42.0	19.3
	Total	6018 (4)	2871(4)		906(3)	31.6	15.1

Source: 2003 Survey; Figures in Brackets indicate Special Cases

1.11. In order to undertake a statistical analysis of the demand for UK ex-seafarers it was necessary to devise an appropriate sampling frame that was representative of the various business categories in the maritime related sector. The population was therefore stratified on the basis of business category and the selection of organisations on a random basis was made in most categories. The minimum number of organisations to be selected in each category was set at 150. Where the numbers in an individual category were less than 150 questionnaires were distributed to all organisations in the category.

Response rate

1.12. An initial response rate to the survey of approximately 20 per cent was obtained. It was felt by the steering group that, in order to obtain the strongest possible results, the non-respondents should be contacted a second time. This resulted in a further 10 per cent responding, leading to an overall response rate of 31.6 per cent. Table 2 provides details of the number of questionnaires distributed, the number of responses received and the response rate as a percentage of the number of questionnaires sent and of the total population of firms within each business category. In total, questionnaires were distributed to 2875 firms and responses were received from 909. Response rates in individual categories and response rates as a percentage of the total population are also shown in this table.

1.13. Overall the number of responses were:

Company Survey - 699 respondents across all sectors of maritime industry except ports and shipping companies. This compares to 515 respondents in the 1996 study.

Port Survey – 115 respondents. This compares to 138 respondents in the 1996 study.

Shipping Company Survey – 95 respondents. This compares to 51 respondents in the 1996 study.

Questionnaire analysis

1.14. Analysis of the responses to the sample was on the basis of the three categories outlined above: Shipping Companies, Ports and All Other Companies. The data derived from the questionnaires were coded and input into a statistical package: SPSS for Windows. A variety of statistical analyses and transformations were undertaken which allowed an in-depth view of the structure of employment for ex-seafarers to be made.

1.15. As already indicated the sample was stratified in order to ensure that there were companies in each of the business categories. If a non-stratified random sample had been undertaken then some categories may have been missed. The response to the survey resulted in sufficient responses in almost all categories so that it was not necessary to group responses from individual business categories as had occurred in the 1996 study.

Section 2. Estimating the requirement for people with seafaring skills in land-based jobs

2.1. This section explains how an estimate of the number of land-based jobs in the maritime related sector where employers would prefer to employ former seafarers was made. This estimate includes UK organisations' overseas jobs which have been habitually filled by UK employees. An estimate is also provided of how many of these jobs employers considered essential to be filled by former seafarers; how many of these jobs are filled by ex-deck and ex-engineer officers; and the extent to which such jobs are currently filled by ex-naval personnel, foreign ex-seafarers and non-seafarers. The procedure for arriving at these estimates was the same as that used in the 1996 study. The only difference from the 1996 study was that data were collected in such a way that there was no need to group categories according to response rate.

The estimation procedure

2.2. Data relating to the number of former seafarers employed by firms in the various business categories and the jobs which employers would prefer to see filled by them is not normally distributed. This is because many of the firms sampled either do not employ former seafarers at all or just a few. Only a few firms are 'moderately large' employers and even fewer are large employers. Consequently, the underlying frequency distributions were heavily skewed. To estimate the total number of jobs where employers currently prefer to employ former seafarers estimates were made on an individual business category basis.

2.3. Mention is made in Table 2 of special cases and four companies were treated as such. This was because they were judged to be either exceptionally large employers of former seafarers or because they were unique institutions which had been pre-selected for sampling. Although information relating to such firms was incorporated in the estimate, it was not used in making projections and therefore excluded from scaling-up. The estimation procedure entailed first using the sample data to derive estimates of population means and attaching 95 per cent confidence limits to these means for each of the eighteen categories shown in Table 3. Estimations were then derived by scaling up. This entailed multiplying the derived means and limits by the number of firms in their group.

2.4. Data were also collected in the survey on the age structure of the workforce. Figure 1 shows the actual age profile of this sample. A breakdown of this profile between those employed in jobs where it is considered essential to have seafaring experience, jobs where such skills are considered advantageous and jobs filled by non-seafarers is provided in Appendix 6. Such data were not collected in the 1996 study. The age profile for the population derived from this sample is shown in

Figure 2. It should be noted that this total includes all jobs which employers would prefer to fill with ex-seafarers irrespective of the type of person actually filling them.

The results

2.5. The estimation procedure yields a central projection of 15,682 as the number of jobs in the maritime related sector which employers currently would prefer to fill with former seafarers. The estimate is shown in Table 3. The confidence interval attached to the central estimate indicates there is 95 per cent probability that the actual number of jobs lies somewhere between a lower limit of 13,620 and an upper limit of 17,744.

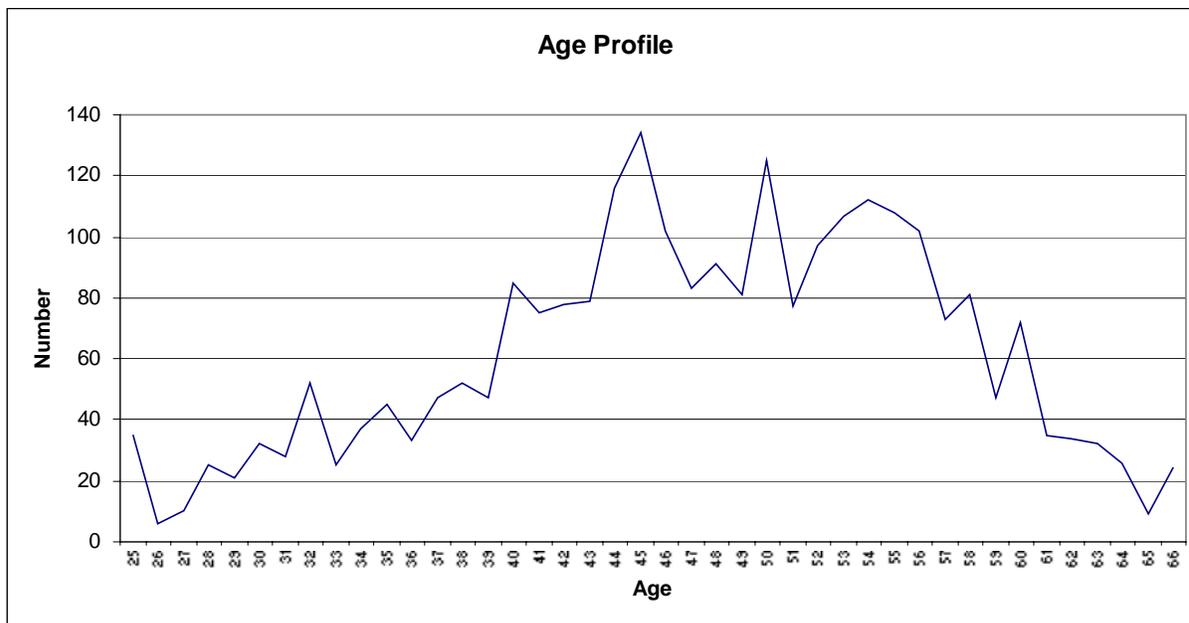
Table 3.	Estimate of the number of jobs where employers prefer to employ former seafarers, by business category.	
	Estimation	95% c.i. +/-
Classification Societies	2645	276
Consultants and Surveyors	1611	532
Port Services	156	88
Terminal Operators	411	331
Towage/Salvage/Dredging	552	262
Ports	1966	422
Maritime Lawyers	183	76
Marine Insurance and P & I	430	337
Ship Finance	13	23
Ship Brokers and Charterers	122	58
Ship Agents	101	149
Marine Equipment and Information Technology	1896	1411
Marine Engineering:	447	315
Non-Fed Shipowners and Offshore	1957	1068
Federated Shipowners and Offshore	440	127
Ship and Crew Management	945	467
Maritime Schools	409	237
Miscellaneous	1398	195
Total	15682	2062

Source: 2003 Survey

2.6. In the 1996 study the estimated total number of jobs was calculated as 16,825 with a 95 per cent confidence interval of 1,969 thus giving a range of 14,856 to 18,794. (This interval was incorrectly calculated in the 1996 study as 4,072, giving a range of 12,753 to 20,897). There has therefore been

a reduction in the estimated number of jobs which employers would prefer to fill with ex-seafarers. The 2003 estimate is lower but the difference is not statistically significant.

Figure 1. Age Profile of Ex-seafarers employed by Respondents



2.7. To provide more details about the composition of the total job estimate two versions of the disaggregation are provided based on two alternative estimates used in respect of Lloyd's Register. The reasons for having to make these alternative estimates relate to Lloyd's decision not to participate in the present study and are explained in paragraph 4.7. The assumptions they are based on are as follows:

Estimate 1

This estimate is derived by assuming that Lloyd's still considers it to be essential to recruit people with seafaring experience. The estimate is based on the survey return provided by Lloyd's for the 1996 study. It assumes that Lloyd's fills any vacancies in posts where former seafarers have retired since 1995 with people with seafaring experience.

Estimate 2

This estimate is derived by assuming that Lloyd's now only considers it to be an advantage to recruit and employ former seafarers. The estimate is again based on their return to the 1995 survey (the 1996 study) and assumes that since then they have not recruited any former UK seafarers.

Table 4: Original and Revised estimation of confidence intervals for the 1996 Study			
Business Category	Estimation	1996 95% c.i. +/-	Recalculated 1996 95% c.i. +/-
Group 1 Ports	2567	242	242
Group 2 Federated Shipping Companies	1096	263	263
Group 3 Non Federated Shipping Companies, Shipbuilders/Repairers, Offshore, Consultants, Marine Equipment	5045	1665	1665
Group 4 Ship/Cargo Broking, Legal, Towage/Salvage, Banking, Insurance, Ship Management	1885	747	747
Group 5 Loss Adjusters, Ships Agents, Education/Training	1204	720	720
Group 6 Crew Management, Dredging, Ship Chartering	186	85	85
Group 7 Port Services, Cargo Surveyors, P and I Clubs	602	160	160
Group 8 Surveyors/Inspection, Pollution Control, Classification Societies	2881	168	168
Group 9 Publishing, Charitable Institutions, Miscellaneous	1359	22	22
Total	16825	4072	1969

Source: 2003 Survey

2.8. In Appendix 6, Tables A.5., A.6., A.7. and A.8. disaggregate the estimated jobs in the central estimate in the present study into those for which seafaring experience is considered to be essential and those for which it is considered to be an advantage. The jobs are further disaggregated in these tables on the basis of type of employee and business category. Tables 5 and 6 in this section provide a broad analysis of the estimated jobs which are not disaggregated on a business category basis.

2.9. Under Estimate 1, 62.4 per cent of jobs now fall into the essential category, while under Estimate 2 the proportion falls to 46.7 per cent. When compared to the 70 per cent recorded in the 1996 study (see Table 7), it is clear that there has been some reassessment by employers as to which

jobs they need to fill with ex-seafarers, and this has led to some jobs being downgraded from the essential to the advantage category.

- 2.10. Jobs in the essential category tend to be of a highly technical nature and may require additional training. They are usually filled by former seafarers holding at least an unlimited certificate of competency for either Master or Chief Engineer under the STCW 1995 Regulations (formerly a Class 1 certificate) or an equivalent qualification. Former naval officers, apart from those who are engineers, are seldom employed in such jobs; they are usually employed either as general or personnel managers. Foreign ex-seafarers within this category are predominantly engineers and are largely employed in posts abroad. Lloyd's Register was, and probably still is, the principal employer of such foreign ex-seafarers. Many of the jobs filled by former officers in the advantage category are also held by ex-seafarers with an unlimited certificate of competency or equivalent qualification, although such jobs, apart from those held by engineers, may not require the same degree of technical competence.
- 2.11. Under Estimate 1, of the 9,784 jobs estimated to be in the essential category, 90.0 per cent are filled by former ships' officers (UK and foreign ex-merchant navy officers and ex-RN officers). Under Estimate 2, of the 7,322 jobs estimated to be in the essential category 93.5 per cent are filled by such officers. This compares to the 87.5 per cent of essential jobs being filled by former officers recorded in the 1996 study.
- 2.12. Mention should also be made of the greater proportion of non-seafarers which now fill jobs where ex-seafarers were previously been employed. In the 1996 study only 4.6 per cent of such jobs were filled by non-seafarers. In both versions of the current estimate, this proportion has substantially increased. Under Estimate 1 the proportion increases to 13.6 per cent and under Estimate 2 the proportion is even higher at 16.2 per cent. The likely reason for this is that as employee requirements are adjusted to accommodate the decrease in the number of ex-ships' officers and other seafarers available, so non-seafarers are recruited to fill vacancies in jobs where seagoing experience is only considered to be an advantage. This also probably explains the fall in the proportion of ex-RN petty officers and ratings employed from 4.2 per cent in the 1996 study to 1.7 per cent now under both estimates.

Revalidation

- 2.13. Information was also requested from respondents to the survey employing former ships' officers whether they required them to re-validate their certificates of competency. On the basis of the information collected it is estimated that, excluding Lloyd's, 3,196 jobs require those in post to revalidate their certificates of competency. This equates to approximately 20 per cent of the total number of jobs. The estimate of the total numbers required to revalidate their certificates in each business category is given in Table 8.

Foreign seafarers

2.14. Information was also requested from respondents to the survey employing former ships' officers in respect of their employment of foreign ex-seafarers. On the basis of the information collected it is estimated that 1,788 jobs are filled by such people which equates to approximately 11.4 per cent of the total number of jobs. The breakdown of the total number of jobs between business categories is given in Table 9.

Table 5.	Estimated number of jobs which employers would prefer to fill with former seafarers (LRS Estimate 1)	
	Number	Percentage
Jobs where seafaring skills are considered essential	9784	62.4
Jobs where seafaring skills are considered an advantage	5898	37.6
Total Jobs	15682	100.0
Jobs filled by:		
UK ex-MN deck and engineer officers	9634	61.4
UK ex-MN other personnel	732	4.7
Ex-RN officers	1133	7.2
Ex-RN petty officers and ratings	272	1.7
Foreign ex-seafarers (mostly former deck and engineer officers)	1788	11.4
Non-seafarers	2117	13.6

Source: 2003 Survey

Table 6.	Estimated number of jobs which employers would prefer to fill with former seafarers (LRS Estimate 2)	
	Number	Percentage
Jobs where seafaring skills are considered essential	7322	46.7
Jobs where seafaring skills are considered an advantage	8360	53.3
Total Jobs	15682	100.0
Jobs filled by:		
UK ex-MN deck and engineer officers	9260	59.0
UK ex-MN other personnel	732	4.7
Ex-RN officers	1096	7.0
Ex-RN petty officers and ratings	272	1.7
Foreign ex-seafarers (mostly former deck and engineer officers)	1788	11.4
Non-seafarers	2534	16.2

Source: 2003 Survey

Table 7	Estimated number of jobs which employers would prefer to fill with former seafarers on the basis of the central projection (1996 Study)	
	Number	Percentage
Jobs where seafaring skills are considered essential	11778	70.0
Jobs where seafaring skills are considered an advantage	5047	30.0
Total Jobs	16825	100.0
Jobs filled by:		
UK ex-MN deck and engineer officers	10988	65.3
UK ex-MN other personnel	2044	12.1
ex-RN officers	884	5.3
ex-RN petty officers and ratings	715	4.2
Foreign ex-seafarers (mostly former deck and engineer officers)	1422	8.5
Non-seafarers	772	4.6

Source: 1996 Survey results

Table 8	Estimate of the number of ex-seafarers required to re-validate certificates of competency (by category)	
BusinessCategory	Estimation on Validation	
	Central Estimate	95% c.i.
Classification Societies		
Consultants/Surveyors	5	10
Port Services	287	95
Terminal Operators	30	17
Towage/Salvage/Dredging	289	232
Ports	225	106
Maritime Lawyers	759	163
Marine Insurance/P&I Club	0	0
Ship Finance	49	37
Broker/Charterer	0	0
Ship Agents	3	2
Marine Equipment / Information Technology	34	50
Engineering [Ship/Port-breakers, repair/engine builders	0	0
Non Fed Shipowner/offshore	163	115
Fed Shipowner/offshore	419	228
Ship/Crew Management	177	51
Maritime Schools	429	212
Miscellaneous	55	32
Total	271	50
	3196	461

Source: 2003 Survey

Table 9	Employment of foreign seafarers	
Business Category	In UK	Overseas
Classification Society	0	896
Consultants/Surveyors	73	82
Port Services	0	0
Terminal Operators	0	0
Towage/Salvage/Dredging	0	0
Ports	55	7
Maritime Lawyers	9	6
Insurance/P&I Club	6	42
Ship Finance	4	9
Brokers/charterers	3	14
Ship Agents	0	0
Marine Equipment / Information Technology	77	103
Engineering	15	0
Non Fed Shipowner/offshore	110	130
Fed Shipowner/offshore	6	5
Ship/Crew Managemnt	63	21
Maritime Schools	10	7
Miscellaneous	11	24
Total	442	1346

Source: 2003 survey

Section 3. The demand for people with seafaring skills to fill vacancies in shore-based jobs in the maritime related sector of the UK economy in five/ten years²

Introduction

3.1. In this section estimates are provided of those shore-based jobs which employers in the maritime sector of the economy would prefer to fill with former seafarers in five and ten years' time. Then the problem of estimating the annual demand for former seafarers to fill net vacancies in such jobs is addressed.

Future requirement projections

3.2. Respondents to the survey were asked to provide information on how many shore-based personnel, whom their company would prefer to have seafaring experience, did they expect to employ in five and ten years' time as well as provide information on their present requirement. Table 10 provides estimates of these future requirements and compares them with the current requirement. The former were derived using the scaling method described in Section 2 and thus were made on the same basis as the estimate for the current requirement.

3.3. Clearly, all three estimates are broadly similar, although they increase slightly with the passage of time. This is perhaps to be expected as companies are seldom publicly pessimistic about their future prospects. In general, the confidence intervals for the various business categories tend to widen as the time horizons are extended which may be explained in most instances by the increase in the number of missing cases.

Annual demand estimates

3.4. In order to convert requirement estimates into mean annual demand estimates, assumptions must be made about the average length of service of personnel in the sector and the rate of wastage. For the assumptions to be realistic, information is required on the normal age of recruitment and retirement and on the annual wastage rate. In the previous study information on these key factors was gathered in a telephone survey. This information is supplemented in the present study by information that has been collected in the survey on the age distribution of employees in sectors where employers would prefer to fill posts with former seafarers (See Appendix 7). An estimate of the present age distribution of employees in the sector derived from that sample is shown in Figure 2. The results of the telephone survey are reproduced in Table 11.

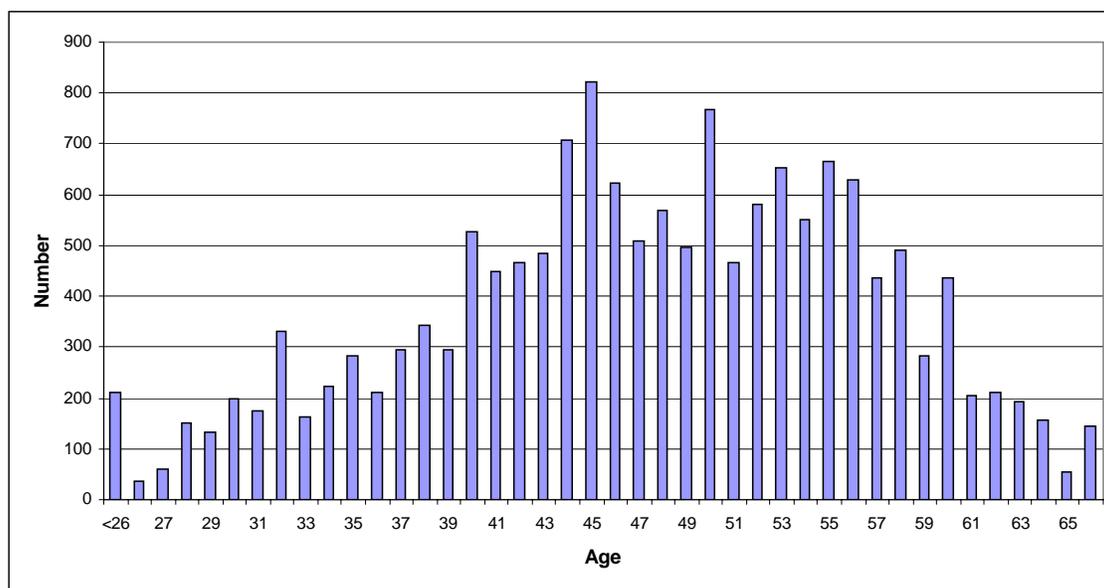
² In this section and the following sections where 95 per cent confidence intervals are attached to estimates these are shown enclosed in brackets immediately following the central estimate.

Table 10. Projected employment requirements in future (5 Years and in 10 Years)						
Business Category	Current Requirement	95% c.i. +/-	5 Years	95% c.i. +/-	10 Years	95% c.i. +/-
Classification Societies ##	2645	276	2543	164	2543	164
Consultants and Surveyors	1611	532	1632	584	1837	761
Port Services	156	88	107	70	116	80
Terminal Operators	411	331	457	358	457	358
Towage/Salvage/Dredging	552	262	529	256	550	245
Ports	1966	422	2126	584	2244	664
Maritime Lawyers	183	76	173	108	215	146
Marine Insurance and P & I	430	337	460	378	518	425
Ship Finance	13	23	13	23	22	39
Ship Brokers and Charterers	122	58	138	55	124	70
Ship Agents	101	149	69	148	101	149
Marine Equipment and Information Technology	1896	1411	2350	1507	2449	1645
Marine Engineering:	447	315	342	275	298	266
Non-Fed Shipowners and Offshore	1957	1068	2029	1137	2057	1294
Federated Shipowners and Offshore	440	127	500	147	607	197
Ship and Crew Management	945	467	1023	494	1108	627
Maritime Schools	409	237	300	151	271	187
Miscellaneous	1398	195	1298	248	1285	252
Total	15682	2062	16089	2208	16802	2489

Source: 2003 Survey

includes an estimate for Lloyd's Register of Shipping (LRS)

Figure 2. Age profile of people employed in jobs which employers would prefer to fill with former seafarers



Category	Age distribution	Normal recruitment age	Normal retirement age	Annual wastage rate
Ports	mid 30s - 65	Mid 30s	65	not known
Cargo Survey	40 - 63	25 - 35	60 - 65	Low
Port Services	47 - 65	45+	65	Nil
Towage	low 20s - mid 50s	low 20s	65	< 5%
Survey/Inspection	35 - 65	35 - low 40s	65	1 - 2%
Offshore	30 - 50	30	60	10%
Marine Services	28 - 62	30 - 35	65	Nil
Dredging	low 50s	30+	62 - 65	10%
Pollution	mid 40s - 50s	18	62 - 65	Low
Insurance	late 20s - 50s	low 30s	65	Nil
Ship Broking	38 - 58	30s	60 - 65	max 5%
P and I	30 - 59	low - mid 20s	65	Low
Ship Chartering	40 - 53	late 20s	55 - 60	Low
Classification	26 - 62	26 - 45	62	3 - 4%
Consultants	30 - 50	No minimum age	65	< 10%
Legal	30 - 57	late 20s - 40	60	Low
Marine Equip't	mid 20s - mid 50s	mid 20s	62	Low
Ship Building	40 - 50s	late 30s -early 40s	65	< 5%
Ship Agents	35 - 60	30s	65	< 10%
Education	30s - 40s	late 20s	60 - 65	1 - 2%
Publishing	20 - 50	low 20s	65	Low
Miscellaneous	late 20s - 65	late 20s	60 - 65	Low

Source: 1996 Telephone survey results

-
- 3.5. As ascertained from the telephone survey (see Table 11), most individual businesses prefer to recruit people with some experience and the normal age for recruitment of seafarers is around 35 years and the retirement age of such employees is about 65 years. In other words, once recruited, they are active in the sector for around 30 years. The actual ages of recruitment and retirement vary between companies but wastage rates for businesses within the sector are relatively low. As these reflect largely people moving between jobs within the sector, wastage from the sector is likely to be low, perhaps no more than 2 per cent.
- 3.6. Using the parameters of a 2 per cent wastage rate and length of service of thirty years a mean annual demand estimate may be derived from the current requirement estimate by dividing it by the calculated annuity factor.³ This is estimated as 700 (plus or minus 92) people. The estimate implies that the average outflow rate from the sector is 4.5 per cent and that around 55 per cent of those leaving the sector in any year will be people who have reached the normal retirement age of 65. While the remaining 45 per cent will represent net wastage from relatively younger people who leave the industry because of premature retirement for health or other reasons, death, or transferring from the sector.
- 3.7. Figure 2 suggests that the sector recruits from the age of 25 years and that recruitment rises more or less progressively until the age of 45 years. Subsequently the net recruitment rate becomes negative (i.e. the wastage rate exceeds the recruitment rate each year). From 56 years onwards there is a sharp increase in the wastage rate so that by the age of 65 most people have left the sector. Despite these different profiles the outflow rate from the sector can be considered similar.

³ Annuity Factor = $1 - (1+r)^{-n} / r$, where r = the percentage rate of wastage and n = the average length of service in years

Section 4. The possibility of a shortfall in supply of people with seafaring experience to fill shore-based jobs in the maritime sector

Introduction

4.1. This section is concerned with the problem of making current and future supply estimates and the possibility of a shortfall in supply. It describes how these estimates have been made and then considers the present and future supply and demand situation with respect to those jobs filled by former seafarers that fall into the essential category.

Supply estimates

4.2. Historically, net vacancies in shore-based jobs in the maritime sector of the economy have been filled largely by wastage from the seagoing pool of UK merchant navy officers who lie within the age range of 25 to 45. For many jobs within the essential category, however, where employers seek to employ former officers who hold either an unlimited Master's or Chief Engineer's certificate the age band for recruitment is narrower (see Table 10).

4.3. In the previous study, current and future estimates of the number of seagoing officers in the 25 to 45 age range were derived from past cadet intake numbers assuming a wastage rate of 10 per cent. Subsequent research, namely, the United Kingdom Seafarers Analysis 1997 carried out by the Centre for International Transport Research at London Guildhall University, showed that an assumed wastage rate of 10 per cent was much too high and that a wastage rate of around 6 per cent would have been more appropriate. In the present study, therefore, we considered it sensible to make use of data from the United Kingdom Seafarers Analysis 2002 on officer age distribution to estimate the number of officers in the current seagoing pool from which employers in the maritime sector could recruit people to fill net vacancies in the essential category. The age distribution data were kindly provided by David Glen, one of the authors of the 2002 Analysis, before its recent publication.

4.4. The United Kingdom Seafarers Analysis bases its estimate of the active officer stock on the issuing of certificates of competency and their revalidation. It, therefore, includes officers who need to update their qualifications for shore-based rather than sea based work, and this is estimated as 9 per cent of the active officer stock. In the present study, in order to confirm this estimate, respondents to the survey were asked, if they employed former ship's officers, whether holding a valid certificate of competency was a condition of their employment. Based on their replies, it is estimated that 3196 former officers working in maritime sector in shore-based jobs are required periodically to update their qualifications. This represents over 21 per cent of the estimated active officer stock in the 2002 Analysis.⁴

⁴ The discrepancy between the two estimates of what proportion of the active officer stock is in shore-based rather than sea-based work may be explained partly in the definitions of what constitutes shore-based work, and partly by the fact that the 'United Kingdom Seafarer Analysis' estimate is based on the findings of a survey of NUMAST members (Glen and McConville, 2001) and therefore would not cover non-NUMAST members whereas the present study does.

Consequently, in estimating the current pool of seagoing officers we have taken account of this factor and adjusted the age distribution data accordingly.

- 4.5. The adjusted age distribution data together with intake figures for cadets over the past five years, adjusted for subsequent wastage where appropriate, provides the baseline data for a spreadsheet simulation model that can be used to make supply projections and investigate the dynamics of any interaction between shore-based demand and sea based supply that might occur (see discussion below).

Derivation of demand estimates: essential category

- 4.6. The 1995 survey showed Lloyd's Register to be a major employer of former seafarers in the essential category. Many of these seafarers were former ships officers who were employed almost entirely by Lloyd's as surveyors. Most had seagoing experience as Chief Engineer and held an Extra-Chief Engineer's Certificate. Lloyd's regarded them to be a core business resource and most had attained Chartered Engineer status.
- 4.7. Lloyd's Register's decision not to participate in the present study on the grounds that their current personnel database does not allow them to distinguish between employees who are former seafarers and those who are not, although understandable, was disappointing and a major setback. However, their subsequent reluctance to co-operate either by providing an estimate of the information we required based on their 1995 survey return or by providing at least some qualitative information on the current recruitment policy in respect of former ships' officers was a much greater setback. Nevertheless, given their importance as a major employer of former ships' officers in the past, an estimate had to be made, with or without their co-operation, so we were forced to make it ourselves based on their 1995 return.
- 4.8. To cover the range of possibilities two alternative estimates were, in fact, made. Both estimates assume that there has been an increase in the number of jobs that Lloyd's Register would prefer to fill with former seafarers over the past eight years, from 2,097 in 1995 to 2,500 in 2003, and that the extra jobs (403) have been filled by non-seafarers. The increase in the number of jobs is in line with that estimated in Lloyd's Register's 1995 return for 2005. Whereas the first estimate assumes that Lloyd's Register still consider it to be essential to employ people with experience as a senior ship's officer as surveyors and that the number of posts filled in the society by UK ex-merchant navy officers (1045), ex-RN officers (102) and foreign ex-merchant navy officers (850) is the same as in 1995, the second assumes that Lloyd's Register no longer consider it to be essential to employ people with such experience as surveyors, so it is only an advantage for them to do so. It also assumes that the number of posts filled in the society by foreign ex-merchant navy officers (850) has not changed since 1995, but the number filled by UK ex-merchant navy officers (677) and by ex-RN officers (66) has fallen over the past eight years from 1,147 (1045 + 102) in 1995 to 743 (677 + 66) in 2003.
- 4.9. The effect of these alternative estimates for Lloyd's Register on the estimate of the total number of jobs where employers in the maritime sector consider it is essential to employ former ships' officers is shown in Table 12.

Table 12.	Estimate of the number of jobs where employers consider it is essential to employ former ships' officers		
Jobs filled by:	1996 Study Estimate	2003 Survey. Estimate 1: Lloyd's Register seafaring expertise considered essential	2003 Survey. Estimate 2: Lloyd's Register seafaring expertise considered an advantage
Ex-MN officers (UK)	8750	6670 +/- 797	5655 +/- 797
Ex-RN officers	407	577	475
Ex-MN officers (Foreign)	1155	1566	716
	10312	8813 +/- 969	6846 +/- 969

Source: 1996 study and 2003 survey

- 4.10. It is likely that employers in the maritime sector who are currently employing either ex-RN officers or foreign ex-merchant navy officers in jobs where they consider seafaring skills and experience are essential will continue to do so when vacancies in such shore-based posts occur because of the likely shortage of UK merchant navy officers to fill such posts. Therefore it seems reasonable to assume that it is only vacancies in jobs filled currently by UK ex-merchant navy officers that should concern us when estimating the demand for such officers to fill net vacancies in jobs in the essential category. Consequently, the discussion that follows is concerned with solely deriving a mean annual demand estimate for the jobs in the essential category that are currently estimated as being filled by UK merchant navy officers. Since there are two alternative estimates for this (see Table 12), it will be necessary to derive two estimates for mean annual demand: one reflecting the assumption that Lloyd's Register still consider employing people with experience as a senior ship's officer to be essential and the other reflecting the assumption that Lloyd's Register now consider such experience to be only an advantage.
- 4.11. Employing the methodology described in Paragraph 3.6 and using an average service length of 28 years and a wastage rate of 2 per cent to calculate the annuity factor, mean annual demand estimates were derived from the alternative estimates in Table 12 of the number of jobs in the essential category currently filled by UK ex-merchant navy officers by dividing these requirement (stock) estimates by the calculated annuity factor. Thus mean annual demand is estimated, as being either 313 (plus or minus 37) where the estimated number of jobs filled by such officers is 6,670 or 266 (plus or minus 37) where the estimated number of jobs filled by such officers is 5,655. Both estimates imply that the average outflow rate from the sector is 4.7 per cent and that 57.43 per cent of those leaving the sector in any year will do so on reaching the normal retiring age of 65 years.
- 4.12. The use of an average length of service of 28 years to derive these demand estimates instead of 30 years as in paragraph 3.6 may be justified on the grounds that the age band for recruitment for many jobs in the essential category is narrower than 25 to 45 years. This is because experience of serving at sea at a senior officer level may be required in order to obtain such a post ashore, but not many officers will have this experience before they are in their 30s, since they cannot gain such experience until they are fully qualified and, nowadays, as the 2002 Seafarers Analysis shows, very few obtain an unlimited Master's or Chief Engineer's Certificate before they reach the age of 30 years. Thus it

may be argued that a realistic age band for recruitment of seafarers to fill job vacancies in the essential category is 30<45 years and that the mean of recruitment is 37 years, implying an average length of service of 28 years if retirement take place on reaching the age of 65 years.

- 4.13. The use of a 2 per cent wastage rate is justified from the evidence in Table 10 which suggests that wastage from the sector is likely to be low, given the relatively low rates of wastage for businesses within the sector which will largely reflect people moving between jobs in the sector. This will particularly be so in a situation where demand for labour with seafaring experience is tightening within the sector.
- 4.14. Information on the age of former ships' officers filling jobs in the essential category was gathered in the present survey. Figures 3 and 4 show the results of scaling up this sample on the assumption that it is representative of the estimated population which in this case is either 6,670 or 5,655. So the figures relate to the estimates in Table 12 of the number jobs filled by UK ex-merchant navy officers. If the sample is, indeed, representative, then the age distribution profile of such officers filling jobs in the essential category differs somewhat from that which is suggested by the calculations in 4.11 above and indicates that from the age of 55 onwards there a tendency to retire early, so fewer people than predicted reach the expected normal retirement age of 65 years. However, this does not imply that the predicted average outflow rate of 4.7 per cent from the sector will change nor that the mean annual demand should be re-estimated.

The current balance of supply and demand

- 4.15. An estimate of the number of ships' officers in 30<45 age range in the current pool of seagoing UK ships' officers (i.e., the active sea based stock) from which employers of former seafarers in the essential category recruit to fill net vacancies in jobs where such seafarers are employed may be derived from the age distribution data in the 2002 Seafarers Analysis that has been adjusted to allow for those already in shore-based jobs (see discussion in paragraph 4.4 above). This estimate is 3,300 and was derived by projecting forward one year and assuming that the natural rate of wastage from the pool is 6 per cent per annum. The assumption of a 6 per cent wastage rate is considered to be realistic on the basis of the findings of previous research (see paragraph 4.3 above). It follows, therefore, that the supply of officers available as a consequence of natural wastage to fill net job vacancies in the essential category this year is estimated to be 201 ($3,354 \times 0.06$). Given that the mean annual demand for such officers has been estimated as either 313 or 266 then the probability that there will be a shortfall in the supply this year is thus clearly high. This predicted shortfall in supply is the consequence of the low level of recruitment of cadets throughout much of the period since 1983 resulting from the decline in the UK shipping industry. Thus it is likely to persist in the immediate future with the gap between demand and supply widening.

Figure 3. Age profile of ex merchant navy officers in shore-based jobs in the essential category (Estimated Population 6,670)

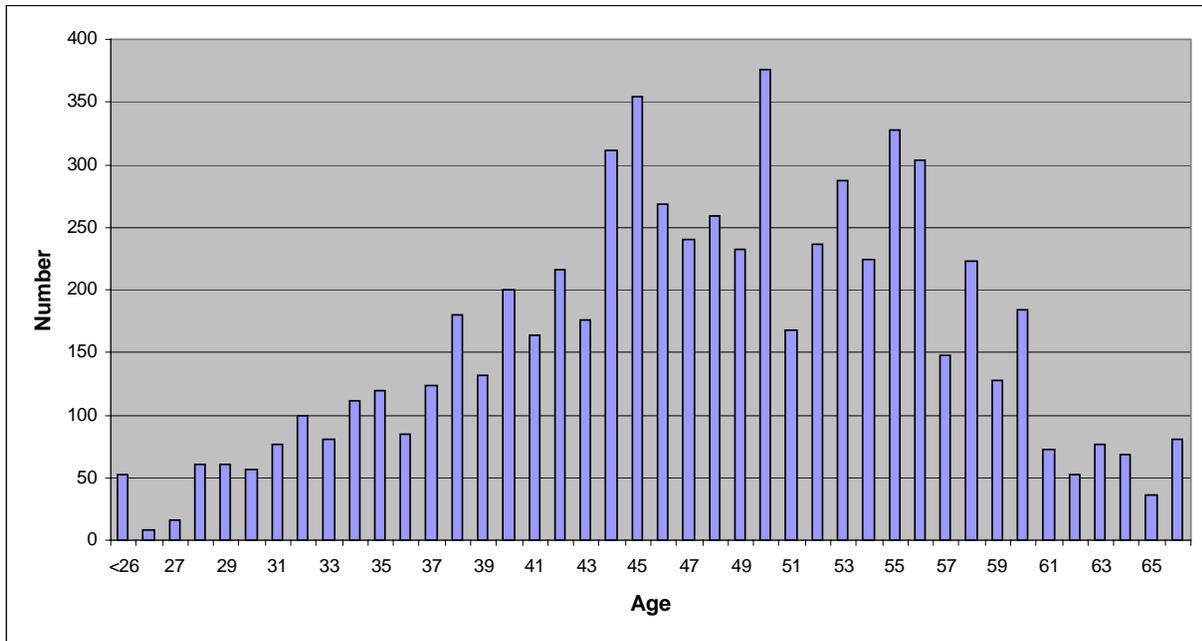
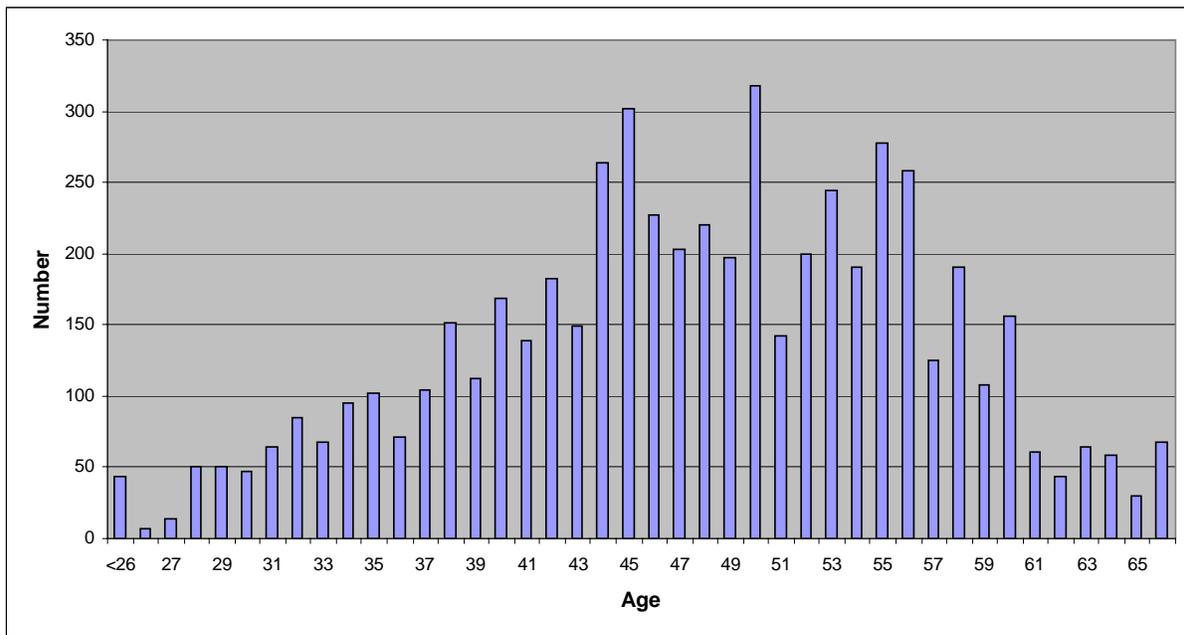


Figure 4. . Age profile of ex merchant navy officers in shore-based jobs in the essential category (Estimated Population 5,655)



The effects of the shortfall in supply

- 4.16. The effects of the predicted continuing shortfall in supply may be assessed by examining two scenarios that cover the range of possibilities. The first assumes that employers of UK former ships' officers who are employed in jobs in the essential category seek to make good the shortfall by recruiting more officers in the 30<45 age range from the pool of seagoing officers and are successful in their effort to do so, thus increasing the yearly rate of wastage from the pool above its natural rate. The second assumes that demand adapts to supply and thus is determined by the number of ship' officers in the 30<45 age range leaving the seagoing pool as a consequence of natural wastage. The outcomes of these alternative scenarios will now be investigated by simulation using the spreadsheet model that has been constructed for the purpose (see paragraph 4.5 above).
- 4.17. The controllable variables in the model are cadet intake numbers, the yearly rate of cadet wastage during training, which is assumed to be four years, the rate of natural wastage from the seagoing pool of ships' officers, the demand for officers in the 30<45 age range to fill job vacancies ashore in the essential category and the age profile of demand. The output from the model shows the number of officers in the seagoing pool of officers in the 30<45 age range and the percentage rate of increase or decline in their numbers at yearly intervals from 2003 to 2117; and, in addition, on a separate chart the age profile of the pool of ships' officers in the 21-45 age range in 2002, the base year, and the resultant age profile in 2003 and three other key years after demand has been satisfied.
- 4.18. Figures 5 and 6 show the outcome of the simulation of the first scenario assuming that cadet yearly intake remains at the present level of 631, cadet wastage during training is 10 per cent per annum, the rate of natural wastage from the seagoing pool of officers is 6 per cent per annum, demand for officers in the 30<45 age range to fill vacancies in shore-based jobs in the essential category is the estimated lower figure of 266 and the demand age profile pattern is level. The results show that the number of officers in the pool of seagoing ships' officers in the 30<45 age range is projected to decline from 3,288 in 2003 to 738 in 2011 after which recovery should take place so that by 2017 the projected number is 1,100. However, the worrying prospect of this scenario, as Figure 6 shows, is the projected disappearance of four age cohorts of experienced seagoing officers in the 40<45 age range in 2012, a situation that is projected to become even more serious by 2017 when only age cohorts below 37 years of age remain. Moreover, the results are robust. They are unaffected by changing the assumptions about cadet intake, cadet wastage rate or the natural rate of wastage from the seagoing pool and are not significantly affected by changing the demand age profile assumption. In fact, to do so makes the situation described above worse. Increasing demand, of course, to the higher estimated figure of 313 would affect the results, but it would clearly not lead to any improvement, so does not need to be considered.

Figure 5. Estimated pool of seagoing UK ships' officers: first scenario

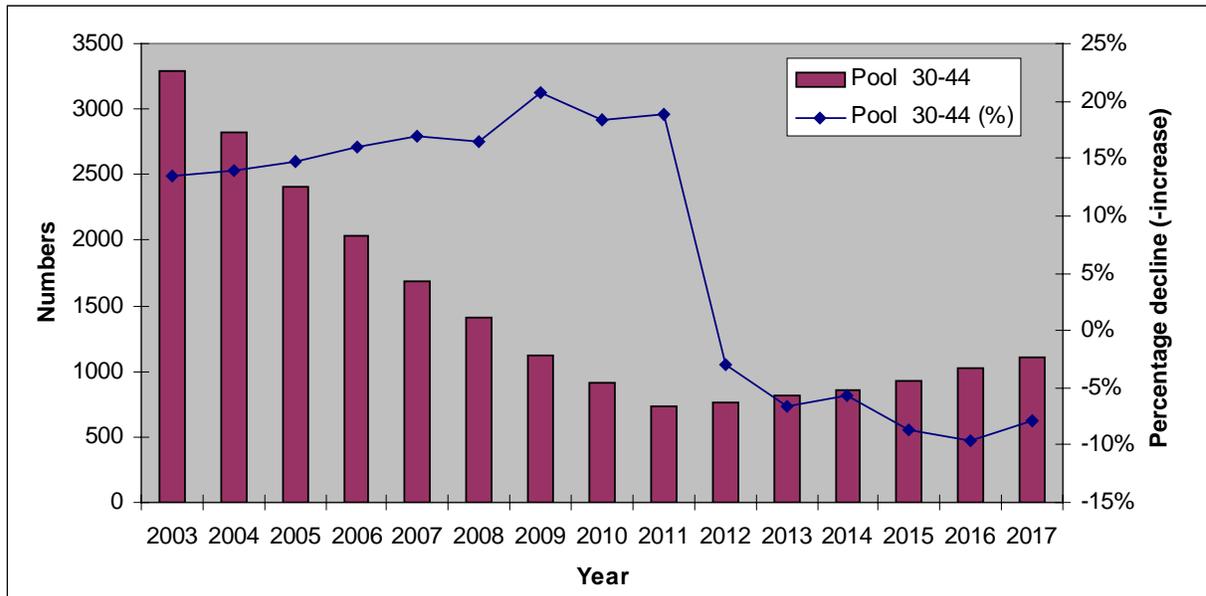
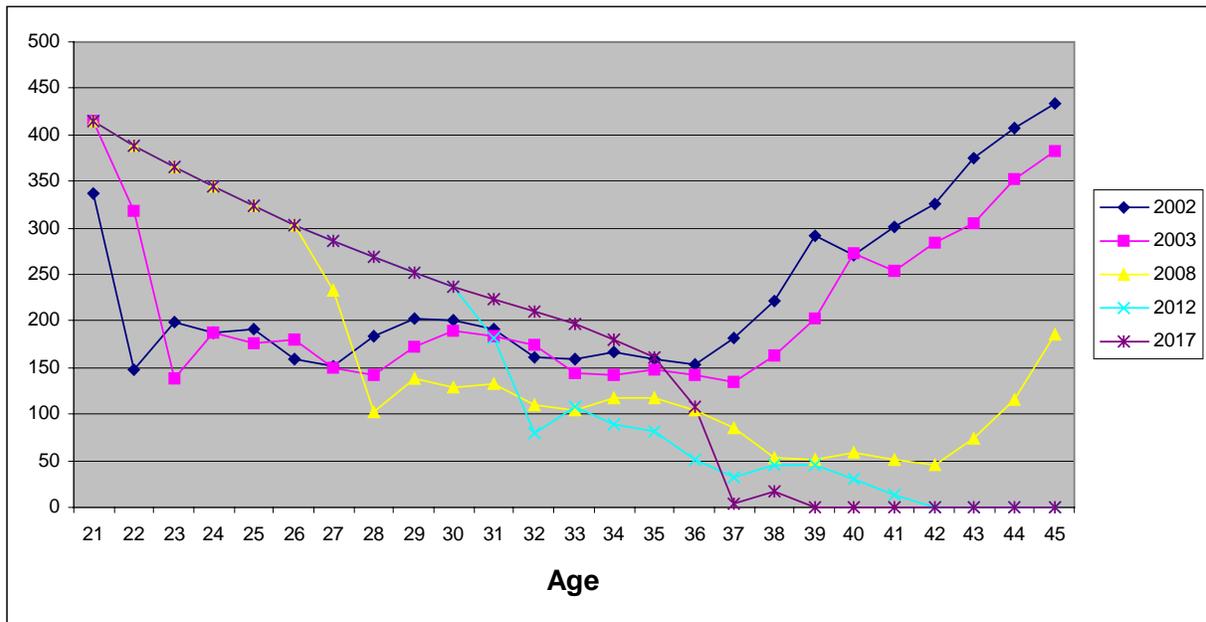


Figure 6. Estimated age profile of the pool of seagoing UK ships' officers – 21-45 age range for selected years: first scenario



4.19. Figures 7 and 8 show the outcome of the simulation of the second scenario assuming that cadet intake, cadet wastage during training and the rate of natural wastage from the seagoing pool of ships' officers are the same as in the first scenario. The results, which were achieved by setting demand at zero, show that the number of officers in the seagoing pool of ships' officers in the 30<45 age range is projected to decline from 3,354 in 2003 to 2,044 in 2011 after which there should be a gradual rise in numbers so that by 2017 the projected number in the pool is 2,280. This implies that under this scenario the demand for seagoing ships' officers in the 30<45 age range to fill job vacancies in the essential category ashore should fall from 201 ($3,354 \times 0.06$) in 2003 to 123 ($2,044 \times 0.06$) in 2011 as it adjusts to supply. The results are unaffected by changing the

assumptions about cadet intake and cadet wastage, but are affected if the natural rate of wastage from the pool of seagoing officers is assumed to change. Perversely, any decrease in rate of natural wastage would not improve the situation as it would reduce supply and thus increase the amount of adjustment in demand that would need to be made for it to match supply.

4.20. It is perhaps worth mentioning that, although the results of the simulation under both scenarios were unaffected by changes in the assumptions about cadet intake numbers, over the longer term this would not be so. Theoretically, given a natural wastage rate of 6 per cent and a cadet intake of approximately 630, it would be possible to achieve, eventually, a steady state situation where shore-based demand for seagoing manpower is satisfied provided that demand does not exceed 265 annually. However, in practice, satisfying demand at this level is unlikely to be sustainable as it would imply intolerably high actual wastage rates in excess of 20 per cent for officers in the 30 < 45 age range. For actual wastage rates in a steady state situation not to rise above the natural level of 6 per cent for such seagoing officers, shore-based demand, given the present level of cadet intake, should not exceed 160 annually.

Figure 7. Estimated pool of seagoing UK ships' officers: second scenario

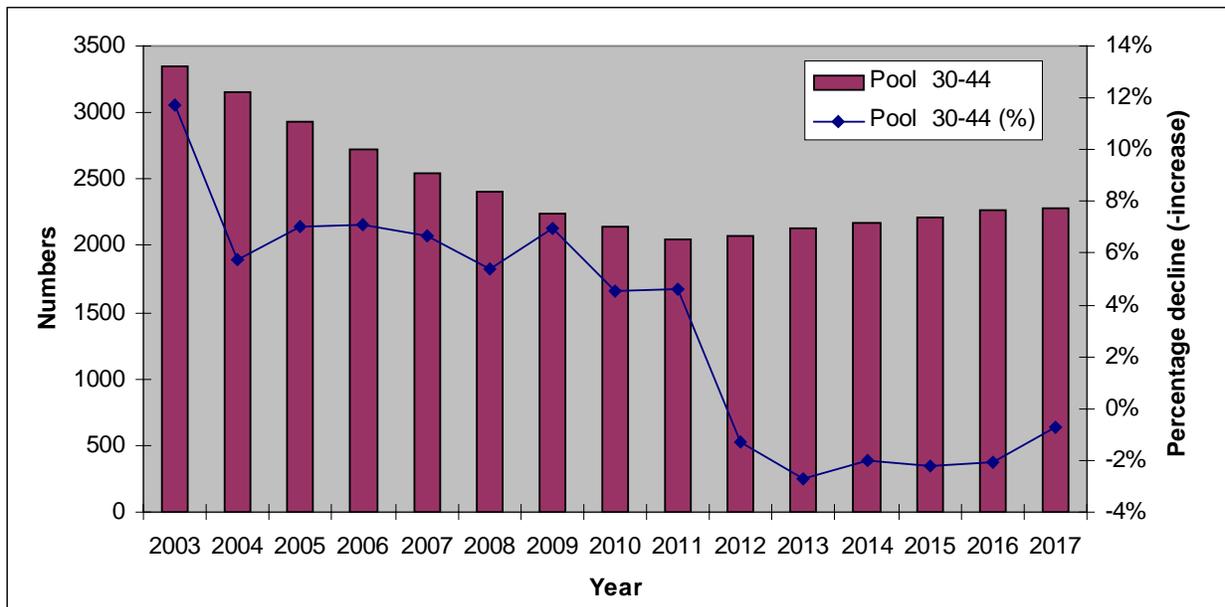
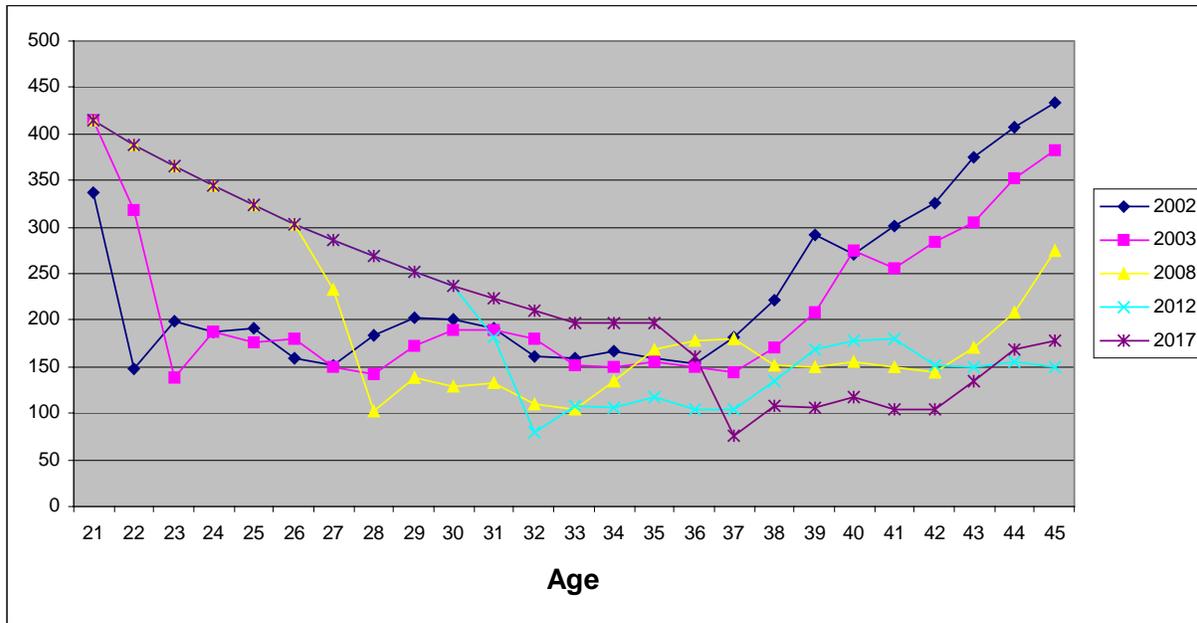


Figure 8. Estimated age profile of the pool of seagoing UK ships' officers – 21-45 age range for selected years: second scenario



Section 5. The consequences of the shortfall and the options for action

Introduction

5.1. This section begins by explaining why the shortfall in supply, forecast in the 1996 study, did not occur as expected. It then discusses the consequences of the shortfall predicted by the present study and considers what actions might be taken in response.

Shortcomings of the 1996 study

5.2. The previous study estimated that the shortfall in supply of UK ships' officers to fill job vacancies ashore in the essential category would occur at around 1996/1997 and would grow thereafter to approximately 280 unfilled vacancies by 2003/2004. Estimates of the stock of ships' officers in the seagoing pool in the relevant age range of 25 to 45 years in the 1996 study were, however, based on past cadet intake numbers and an assumed natural wastage rate of 10 per cent. Subsequent research has shown the figure of 10 per cent to be too high and a rate of 6 per cent to be more appropriate, so the size of the pool of seagoing ships' officers in the 1996 study was an underestimate. This largely explains why the shortfall in supply did not occur as expected in the 1996 study.

5.3. Furthermore, the 1996 study did not allow for the dynamics of the labour market on the demand side and thus the possibility of demand adjusting to supply. As the present study shows there is clear evidence that this has occurred to some extent over the past eight years. As supply conditions in the market have tightened, some employers have reassessed the status of their requirements in respect of the employment of ships' officers for certain jobs and some jobs where, previously, seafaring experience was regarded as essential have been moved into the category where such experience is merely regarded as advantageous (para. 2.9.). Consequently, vacancies in such posts are likely to be filled by non-seafarers given the tightening market supply situation.

Possibility of training non-seafarers for jobs in the essential category

5.4. Lloyd's Register, the British Ports Association and the UK Major Ports Group indicated, in their memoranda to the House of Commons' Environment, Transport and Regional Affairs Committee inquiry into "The future of the UK shipping industry" (1999), that the supply of skilled labour was important to them. Lloyd's were, and perhaps still are, a major recruiter of skilled seafarers but, as their supply has faltered, it is likely that they have been recruiting larger numbers of young graduate engineers and naval architects to a four year training scheme leading to chartered engineer status. Notwithstanding this scheme, the recruitment of experienced people from the UK shipping industry was extremely important to Lloyd's in 1999; obviously for their practical experience but also to provide on-the-job training for the new graduate recruits.

5.5. As the Lloyd's scheme shows it is certainly feasible to devise educational and training programmes which would allow non-seafarers eventually to fill most of the jobs that are currently filled by former seafarers in the essential category. Moreover, by identifying sub-sets of skills regarded by

different employers as essential and then providing more focused training to non-seafarers to equip them with these specific skills would enable demand and supply adjustments to be accomplished in a much shorter time frame than it takes ships' officers at present to become fully qualified. Nevertheless, devising schemes to provide non-seafarers with appropriate substitute experience and training can only make a contribution to resolving the problem caused by the shortfall in supply of former merchant navy officers to fill vacancies in the essential category over the medium term. This is because of the lead times involved in training unless such schemes are already being implemented, which we have assumed to be the case for Lloyds under Estimate 2. Furthermore, the usual caveat applies to such schemes in that companies, who provide training, risk having their employees poached by companies who do not train theirs. As it is less costly to poach than to provide training the viability of this approach as a solution is unclear. The situation could eventually resemble that currently faced by shipping companies who often see themselves as a source of skilled (i.e. trained) labour for "free-riding" shore-based companies.

- 5.6. Training non-seafarers to fill posts currently filled by former ships' officers in the essential category would undoubtedly result in some quality loss, although to what extent such loss would be damaging to a particular organisation or firm is difficult to assess. It is clear, in some circumstances, that a suitably qualified and trained non-seafarer would be an inappropriate substitute for a former seafarer. In such circumstances the loss would be damaging as it would affect business opportunities, for instance, where the latter was required to act as an expert witness in an arbitration or court case where both knowledge of, say, surveying and extensive seagoing experience was required. Consultancy or surveying firms reduced to employing non-seafarers would find themselves forced to forgo some work of this nature which they would have previously sought and, consequently, could be considered to have suffered a damaging loss. Moreover, it should be noted that for most firms the costs of training non-seafarers would be greater than that of former seafarers, since the cost of training the latter currently is largely borne by the shipping industry with Government assistance. This could have implications for a firm's competitiveness, especially where its activities are vulnerable to competition from overseas sources.
- 5.7. Clearly, where substitute practical experience can be gained through in-house on the job training, as in the case of Lloyd's Register's graduate training programme, the difficulties of implementing an educational and training programme for non-seafarers will not be as great as where gaining such practical experience entails involving third parties and consequently getting their co-operation. It would appear that training programmes for non-seafarers which entail spending some time at sea in order to gain the appropriate practical experience will prove more difficult to implement than those that do not, unless this experience can be gained in-house, which only firms with maritime water based operations may be able to provide. Training programmes for non-seafarers to fill jobs currently filled by former deck officers are more likely to fall into this category than those filled by former engineer officers. This is because the value of the experience deck officers gain at sea is more job specific than that which engineers gain which, incidentally, means that the range of jobs where their technical know-how is of value is much more limited and probably does not extend beyond the maritime sector.
- 5.8. The main factor, which is likely to frustrate efforts to establish education and training programmes for suitably qualified non-seafarers of graduate status, however, is not the difficulty of providing appropriate practical experience, but the fact that many firms are either too small to support such

programmes financially on their own or do not employ enough people in the relevant jobs to justify the expense.

- 5..9. It seems probable, therefore, that small firms that require to fill job vacancies in the essential category and which do not participate in a graduate training programme themselves will prefer to poach non-seafarers from those firms that do undertake training, even if they have to bid up salaries to do so, rather than pay the relocation costs involved in bringing foreign seafarers to the UK, particularly as wastage rates for foreigners are likely to be greater than those for UK nationals. On the other hand, larger firms with worldwide interests which employ too few seafarers in the essential category to justify setting up a graduate training programme themselves for non-seafarers are more likely to relocate their relevant business activities to their branch offices abroad. This is because they can employ foreign seafarers locally if they consider this to be a cheaper solution to the problem than poaching non-seafarers from firms which have a graduate training programme.

The present situation

- 5.10. The United Kingdom Seafarers' Analysis that is published annually, bases its estimate of the active officer stock on the issuing of certificates of competency and their revalidation. This includes those officers who need to update their qualifications for shore-based rather than sea-based work – this was estimated to be 9 per cent of the active officer stock in the 2002 Analysis. In the present study, however, (see paragraph 4.4.) as a consequence of information gathered on revalidation required by employers who responded to the survey, it is estimated that more than 21 per cent (plus or minus 3 per cent) of the estimated active officer stock who are required periodically to revalidate their qualifications are in shore-based jobs. Hence, a large proportion of officers are already in such employment. It should be emphasised that this figure is the result of asking employers whether they require staff to revalidate certificates and does not include any former ships' officers who have recently come ashore and are continuing to revalidate their certificates independently in order to keep open the possibility of returning to sea-based employment in the event of not finding satisfactory permanent shore-based employment. As such, this figure may understate the true position. The effect of this difference in the two percentages is that the active stock of seafarers currently at sea (i.e. the pool from which employers can draw to meet shore-based demand) is smaller than previously thought. In the relevant age range the estimated difference is 500 approximately.
- 5.11. In paragraph 4.15 it was shown that the mean annual demand has been estimated at either 313 or 266. The supply of officers available, as a consequence of natural wastage (at a rate of 6 per cent per annum), to fill these "essential" posts this year is thus estimated at 201. Even taking the smaller demand estimate, that is, the most optimistic scenario, it is clear that the probability of a shortfall this year is high. The predicted shortfall is the consequence of the low level of recruitment of cadets throughout much of the period since 1983 resulting from the decline in the UK shipping industry and, as such, is likely to persist, with the gap between demand and supply widening in the immediate future. The results of different simulation scenarios that explore the possible consequences of this were presented in paragraphs 4.18 and 4.19.

- 5.12. It is clear from the analysis in Section 4 that it is inevitable that a shortfall in the supply of UK ex-merchant navy officers to fill vacancies in shore-based jobs for which their seafaring experience is considered essential, will occur between now and the year 2011. Since the pool of UK ships' officers to fill these positions was determined by recruitment levels over the past fourteen to twenty nine years, the die was cast long ago and there are only a few measures that can be taken to increase supply in the short term without increasing wastage from the pool above its natural level. Such measures include providing additional training for those former officers who came ashore in their 20s in the past and have already been absorbed into shore-based jobs in the maritime sector where their skills and experience are considered an advantage. While this might appear, *prima facie*, to be a considerable reservoir of untapped talent, it is unlikely to be the case as many of these people, even those who before coming ashore were only partially qualified professionally, have subsequently gained non-maritime professional as well as academic qualifications and are now well established in their present careers, holding positions equivalent to those in the essential category in terms of prestige and pay, and thus probably would not have any incentive to change their jobs to take advantage of such training. The same logic applies to former officers now working in non-maritime sectors of the economy (see Appendix 1). There is also the possibility that companies might extend the upper age limit of 45 years for recruitment beyond that assumed in our supply projections but that seems unlikely too, since there is a tendency in many business categories for companies to recruit over a narrower age range than that assumed in our projections and, furthermore, there is still an existing pool of UK seagoing labour, in the relevant age range, in excess of 3,000 people, from which to recruit. This latter point also explains why foreign seafarers are unlikely to be a partial solution to the problem.
- 5.13. On the demand side, the number of vacancies to be filled could be reduced temporarily by such measures as extending the normal age of retirement of 65 and by providing financial inducements to encourage former seafarers in key positions not to retire prematurely for other than health reasons. Raising the retirement age to 70, however, would only have the effect of reducing the mean annual demand (for ships' officers to fill shore-based jobs) by about 33 jobs per annum.
- 5.14. The measures discussed in the previous two paragraphs, if implemented, may reduce the estimated shortfall to some extent, but do not in themselves provide a solution. Two possible scenarios were considered in paragraphs 4.16 - 4.19 which provide a solution: either demand adjusts to supply, as has already been discussed when examining the possibility of filling posts in the essential category with non-seafarers, or, if this does not happen quickly enough, which seems likely given the evidence collected in the present study, then firms will induce a larger proportion of UK merchant seafarers of the relevant age group to come ashore than previously, so supply in the seafaring labour market will adjust to demand. In our opinion this is the most likely solution to the problem posed by the shortfall. It suggests that, without government intervention, the shortfall will be resolved by the market; in which case the salaries of former seafarers employed in jobs where their experience is still considered essential are likely to rise relative to people of similar professional status in the shore-based sector because replacements are in short supply. Such rises in salaries will induce higher wastage rates among UK officers at sea in the relevant age range. The impact of this was explored in paragraphs 4.17 - 4.18 (see Scenario 1). It will, therefore, encourage many UK officers currently at sea to switch to onshore activities earlier in their career than they otherwise might have done. If employers of UK officers believe that this shorter employment duration at sea will henceforth apply to UK cadets and

junior officers, the anticipated present value of the benefit of their employment to their employers will be reduced, while the training costs remain constant. Thus the probability of training UK junior officers and recruiting UK officer cadets will reduce in favour of foreign nationals. The degree of reduced training and recruitment will depend on the scale of the reduction in years of employment duration and the degree to which foreign nationals can substitute for UK nationals.

- 5.15. Due to the lead times of up to 14 years involved in cadet entrants to the shipping industry becoming fully qualified professionally, any attempt, including government action, to find a solution to the current problem should now focus on the demand side, since a viable fast-track programme for graduate entrants to the shipping industry has not yet materialised. On the other hand, programmes for non-seafarers, as Lloyd's has demonstrated, could train a graduate to a sufficient standard in key areas in 4 years, at best.
- 5.16. There is evidence that demand in the past has adjusted partially to supply since some adjustment has clearly taken place during the past eight years (para. 2.9). As supply conditions becomes tighter, this trend is expected to continue, but the key question still remains: will such adjustment take place fast enough to save the maritime skills base without government intervention in the market place? Moreover, how much scope is there for further adjustment?
- 5.17. Lloyd's have stated that without the infrastructure provided by a strong UK shipping industry it would have to consider moving the core of its operations elsewhere. This suggests that these core operations could reasonably be described as a footloose activity. On the other hand, the port industry, which is also a major recruiter from the pool of skilled seafarers, is clearly not footloose and it has not yet needed to adjust to the same extent as we assume Lloyd's has, in ensuring the future supply of labour.
- 5.18. If supply responses predominate then the consequences are likely to be:
- UK officers currently employed at sea will be encouraged to move to onshore employment sooner in their career than they otherwise would have done. If a shorter career at sea is expected to become the norm, companies currently employing UK junior officers will have less incentive to train them and less incentive to recruit UK officer cadets, and be more likely to employ foreign officers. Ultimately, they may even cease to employ UK junior officers after completing their cadetship because of the probable loss of whole age cohorts of experienced ships' officers. Such a development would have implications for the government's support of seafarer training and for the longer term availability of people with suitable skills and experience for onshore activities requiring such skills and experience.
 - Another possible consequence of a continuing shortfall, from the point of view of shore-based employers might be that firms which are footloose move their business to offshore centres.
 - Other firms will have no alternative, if they do not implement a training programme for non-seafarers, but to poach qualified staff from elsewhere or to recruit foreign seafarers.
 - Reliance on non-seafarers to fill the majority of shore-based jobs will inevitably lead to a degree of quality loss because in some instances they would be less than perfect substitutes.

Appendices

Appendix 1
Shore-based jobs in the UK where former
seafarers are employed but seafaring experience
or skills are not required

The number of people in the UK with seafaring experience and skills employed in shore-based jobs where such skills or experience are not required

Introduction

1.1. One of the additional requirements of the present study, that was not part of the previous one, is to estimate, approximately, the number of people in the UK with seafaring skills and experience employed in shore-based jobs where such skills or experience are not required. This appendix attempts to provide such an estimate, which excludes former ratings, foreign ex-seafarers living and working in the UK and former Royal Naval personnel. Therefore, it only provides an estimate of the number of UK ex-merchant navy officers and officer trainees who are currently employed in such shore-based jobs. For the sake of clarity and brevity, in the following discussion this population of former seafarers will be referred to as the ‘target population’. Moreover, it is defined here as excluding ex-officers employed in jobs where their seafaring skills or experience are considered to be an advantage but not essential.

Estimation methodology and associated problems

1.2. Since wastage from the active seagoing stock of UK ships’ officers, adjusted for leakage caused by emigration and death, would provide an estimate of the total number of former ships’ officers in shore-based jobs, it would be a straightforward task to construct a model that would provide an estimate of the target population and its age profile (given that estimates have already been made in the present study of the number of former ships’ officers in shore-based jobs where their seafaring experience and skills are required) if statistics on annual officer recruitment since 1954 were available. This, however, is not possible because statistics for the UK shipping industry relating to officer recruitment before 1975, with the exception of a single year, namely, 1970, no longer exist. Records kept by the Chamber of Shipping, formerly the General Council of British Shipping (GCBS), on recruitment were destroyed as a consequence of the IRA bomb in central London in 1992 and no other source providing detailed statistics on officer recruitment before 1975 has been found.

1.3. An alternative modelling approach that can be employed to derive an estimate of the target population, and one that we have adopted, is to construct a spreadsheet simulation model that projects backwards instead of forwards. The model uses the age distribution data in the 2002 UK Seafarers Analysis relating to the active officer stock that has been adjusted to allow for those officers who are shore-based as the baseline data for its projections. The basic model provides estimates of officer recruitment since 1954 as its output. The controllable variables in the basic model are wastage rates for different age categories: 55-64, 50-54, 20-49, and 16-19. The model provides for three streams of entry, namely, deck and engineer cadets, and entry at uncertificated junior engineer officer level. It assumes that cadet entry takes place at sixteen years of age and junior engineer officer entry at twenty-two years of age.

1.4. The model’s projections are sensitive to changes in the assumptions about wastage, so a range of different projections about what annual officer recruitment numbers were between 1954 and 1974 can be generated by altering the input assumptions in the 55-64 and 50-54 age categories. In order,

therefore, for the model to be a good estimator of the target population, an informed assessment has to be made as to which of the possible alternative projections is likely to be the best estimate. Such an assessment can only be made after considering the available historical evidence.

- 1.5. Clearly, an important piece of historical evidence is the statistical information mentioned above relating to recruitment numbers for cadets in 1970 which was provided to the House of Commons' Transport Committee in 1988 by the GCBS and published in the Committee's first report (House of Commons' Transport Committee, 1988). This shows that, according to GCBS's statistical records that were subsequently destroyed, 1,220 deck and 846 engineer cadets were recruited by shipping companies in the Federated Sector of the UK shipping industry in 1970.

Table A.1.		Number in the Effective Section of the Central Register of Seamen at 31st December				
Group	1948	1952	1958	1962	1966	1968
Masters and Deck Officers (Certificated)	13817	12739	12734	12267	10927	10248
Masters and Deck Officers (Uncertificated)		1923	1616	1607	1210	1197
Deck Apprentices and Cadets	4494	4692	4708	4447	3777	3218
Engineer Officers (Certificated)	5399	6963	6495	6122	5148	4908
Engineer Officers (Uncertificated)	14879	15311	17352	17189	14893	14177
Engineer Apprentices and Cadets	-	-	751	1038	975	1441
Radio Officers	2839	3015	3086	3028	2589	2575
Catering Department	34721	39482	35903	32138	26484	22110
Deck Ratings (including General Purpose Ratings)	30547	31181	28150	25094	20052	17749
Engineroom Ratings	21936	17958	14021	11906	8719	7744
Miscellaneous	2446	2666	2579	2087	1858	1383
All Groups	131078	135930	127395	116923	96632	86750

Source: Rochdale Report, 1970

- 1.6. The Report of the Committee of Inquiry into Shipping (1970), the Rochdale Report, is, however, the main source of historical evidence as it covers the period between 1954 and 1968. Paragraph 843 of this report indicates that in 1968 'some 1220 deck and 800 engineer cadets' were recruited for training. Moreover, it implies that around 3,200 uncertificated junior engineer officers were also recruited in 1968 'after having served appropriate apprenticeships in shore engineering industries'. This latter figure appears much too high, despite the fact that this was the main route of entry for those seeking a career as an engineer officer at the time, given that the number of people of all ages serving as uncertificated engineer officers in the UK shipping industry in 1968 was only 14,177 according to the Effective Section of the Central Register of Seamen at 31 December (see Table 13.1, Rochdale Report, the contents of which have been reproduced here as Table A.1). A more realistic figure is, therefore, probably half that number, that is, 1600. It should be noted also that entry at junior engineer level was phased out after 1970 so that by 1975 entry by this route was no longer possible and that numbers entering by this route were probably falling from 1962 onwards following, as Table A.1 shows, the trend in the total uncertificated engineer officer stock. At its peak, annual entry by this route between 1960 and 1970 probably never exceeded 2,500. The numbers for total deck cadet numbers in Table A.1 were on a downward trend between 1952 and 1968, but it is unlikely that annual recruitment numbers were ever more than 1,350 during this period, given that in 1968 they were around 1,200. On the other hand, the numbers for total engineer cadets in Table A.1

were on a rising trend between 1958 and 1968, so annual recruitment numbers probably increased throughout the period from about 400 in 1958, given that they were about 800 in 1968.

Initial results

1.7. Figures A.1, A.2 and A.3. show the estimated annual officer recruitment numbers for the three streams of entry that were derived from the output of the model that best fits, in our judgement, the historical evidence relating to recruitment numbers between 1954 and 1974 and the subsequent statistical information on recruitment numbers. Table A.2 shows the input assumptions that were made on wastage rates to derive these results.

Figure A.1. Officer Recruitment Numbers: Deck Cadets : 1954 - 1996

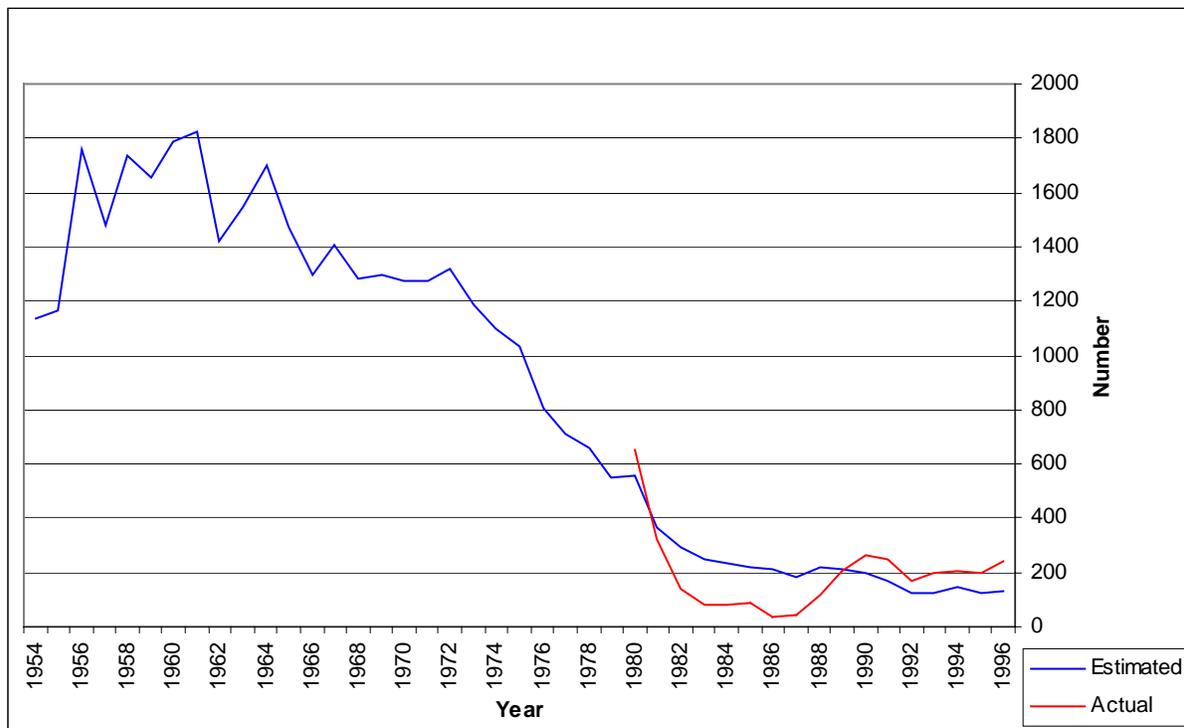


Figure A.2. Officer Recruitment Numbers: Engineer Cadets : 1954 - 1996

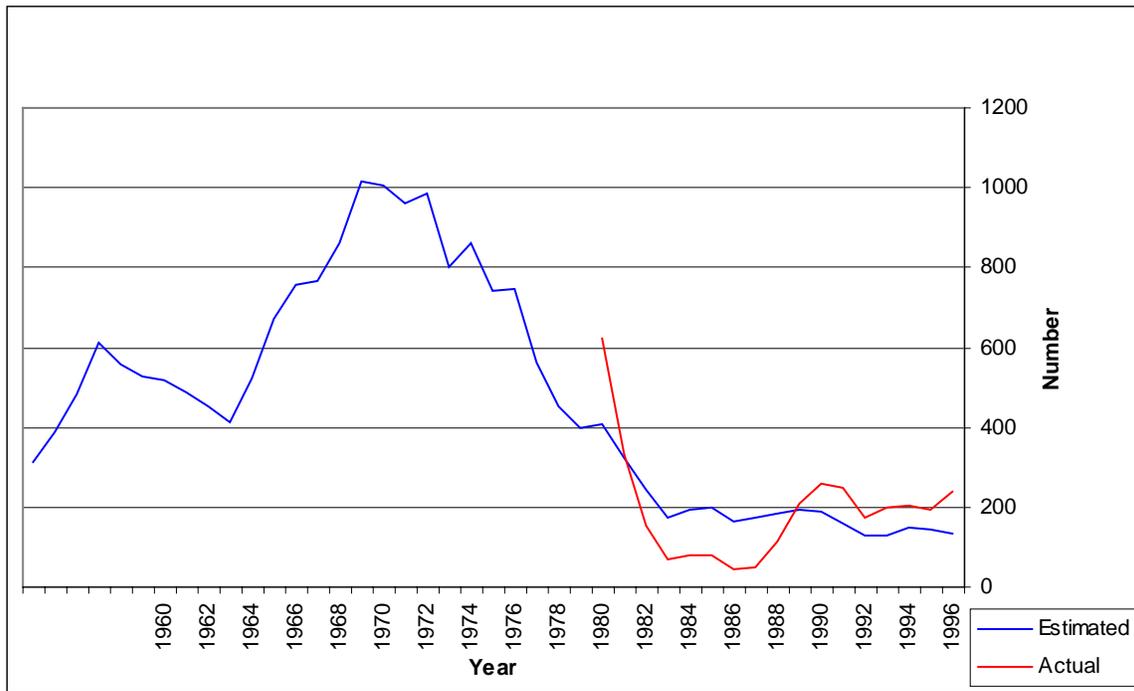


Figure A.3. Officer Recruitment Numbers: Junior Engineer Level: 1960 - 1974

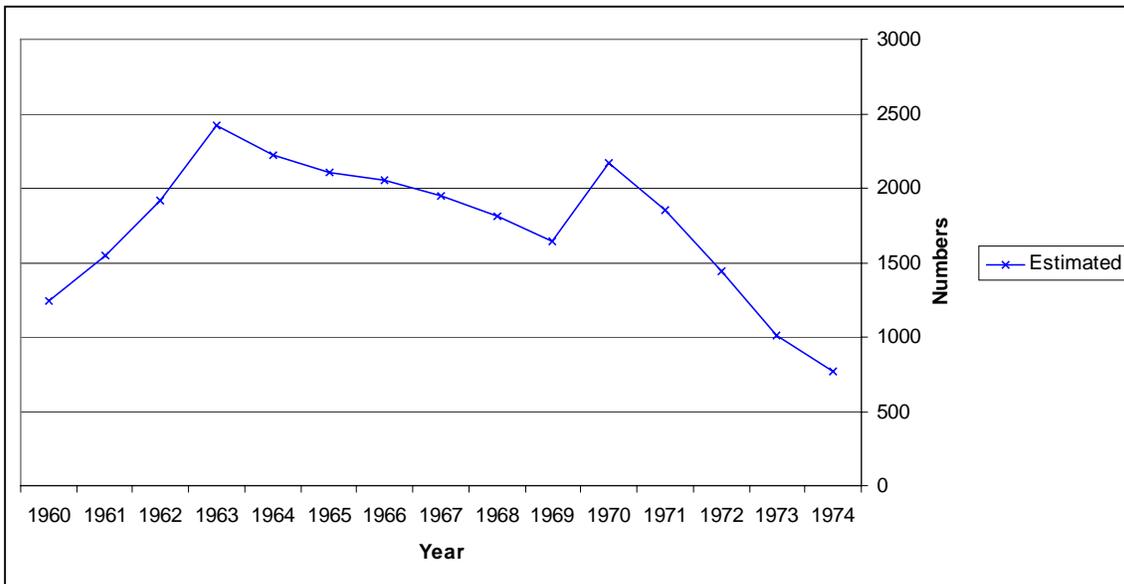


Table A.2.	Wastage Rates (%)			
	Cadets	20-49	50-54	55-64
Engineer cadets	5	6	5	25
Junior Engineers	-	10	1	25
Deck Cadets	5	6	1	20

Model refinements

1.8. Refinements were made to the basic model that allows the output to be adjusted so that an estimate of the target population may be derived directly from the model. These refinements involved incorporating into the model three additional input variables that allow for changes to be made in emigration and mortality rates and in the present stock of ex-merchant navy officers in shore-based jobs where their experience or skills are required. The current estimated age profile of this officer stock in percentage terms has also been incorporated into the structure of the model, allowing an estimate of the target population's age profile to be derived. The model assumes a retirement age of 65 years and that the stock of ex-merchant navy officers in 2002 is equivalent to the present stock of such officers.

Required estimates

1.9. Table A.3 shows the estimated target population and related estimates. In deriving the estimate of the target population, a mean emigration rate of 0.5 per cent per annum and a mean mortality rate of 0.75 per cent per annum have been assumed. These assumptions are, however, only informed guesses and thus need to be justified.

Table A.3.	Target Population	
Total recruitment (cadets and junior engineers, excluding current cadets in training)		84,245
Emigrated (emigration rate 0.5% per annum)		-13,173
Deceased (mortality rate 0.75% per annum)		-18,941
Pool of seagoing UK officers		-11,890
Stock of ex-officers in shore-based jobs in the UK		40,241
Stock of ex-officers in jobs where seafaring experience and skills are required (Higher Estimate)		-9,634
Stock of ex-officers in jobs where seafaring experience and skills are not required (Lower Estimate)		30,607
Stock of ex-officers in jobs where seafaring experience and skills are required (Lower Estimate)		-9,260
Stock of ex-officers in jobs where seafaring experience and skills are not required (Higher Estimate)		30,981

1.10. According to national statistics, approximately 0.22 per cent of British citizens emigrate nowadays each year. However, emigration rates per annum for former UK ships' officers, at least in the not too distant past, are likely to have been much higher than this. This is because there was a surplus of such officers coming ashore each year and seeking jobs in the maritime sector of the UK economy. On the other hand, there were plenty of shore-based job opportunities in the maritime sector for such people abroad, particularly in South Africa, Australia, New Zealand and Canada, where traditionally the UK had provided most of their shipping services. Consequently, it may be argued that there is

some justification for assuming a higher mean emigration rate of 0.5 per cent for ships' officers when deriving an estimate of the target population.

1.11. There is evidence that suggests that mortality rates for UK seafarers are much higher than those for population in general (see for example, Li *et al* , 2002). However, mortality rates for ships' officers, particularly deck officers, other than cadet trainees, are likely to be much lower than those for ratings, as the nature of their work does not usually expose them to the same risk of accidental death. Moreover, the seafaring careers of the majority of officers are relatively short and once they have come ashore there is no reason to believe that their mortality rates will differ significantly from those of other people of a similar age. National statistics show that the mean mortality rate for people aged between 35 and 65 years is, approximately, 0.66 per cent per annum. As most ships' officers have come ashore by 45 years of age, it may be argued that an assumption of a mean mortality rate of 0.75 per cent per annum for ships' officers has some justification when deriving an of the target population.

1.12. Figures A.4, A.5 and A.6 show the output derived from the model that relates to the estimated target population's age profile. The figures are based on the lower of the two alternative estimates for the estimated population and thus on the assumption that Lloyd's Register still considers it to be essential to recruit and employ UK ex-merchant navy officers as surveyors. The picture these results paint is almost identical to that which the corresponding results for the higher estimate would paint if shown. This is because the two estimates differ by only 374, which is very small in comparison to the size of the estimates themselves, so the impact it has on their age profiles, when compared, is hardly discernible. Accordingly, figures showing the results for the higher estimate are not displayed.

Figure A.4. Age Profiles of Ex-Merchant Navy Officers in Shore-Based Jobs

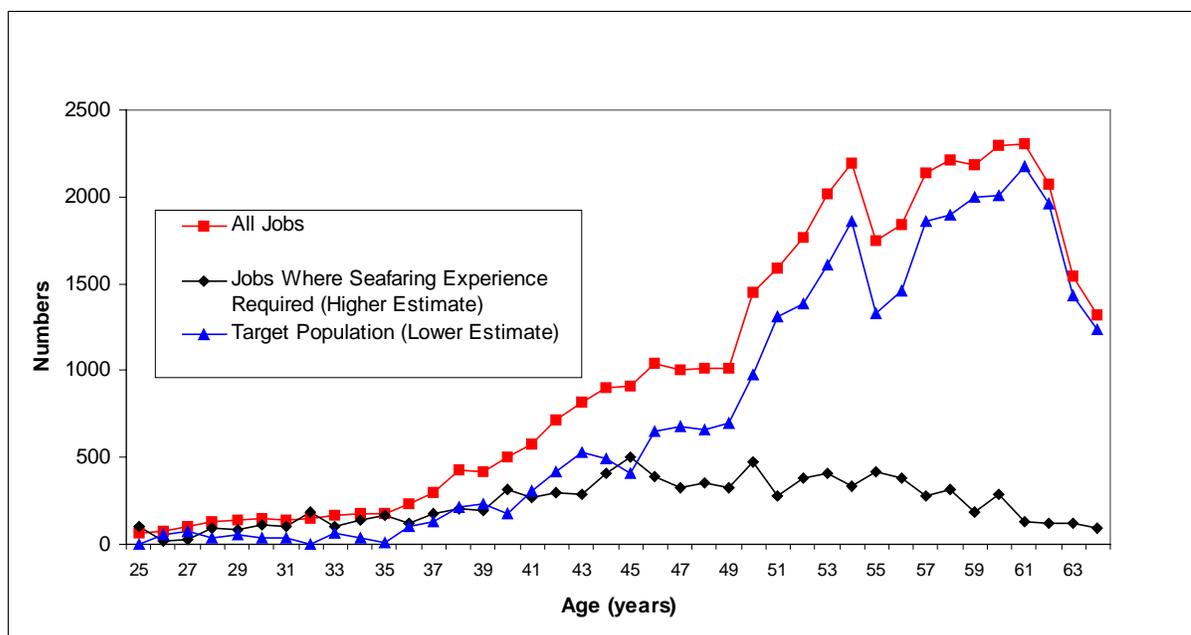
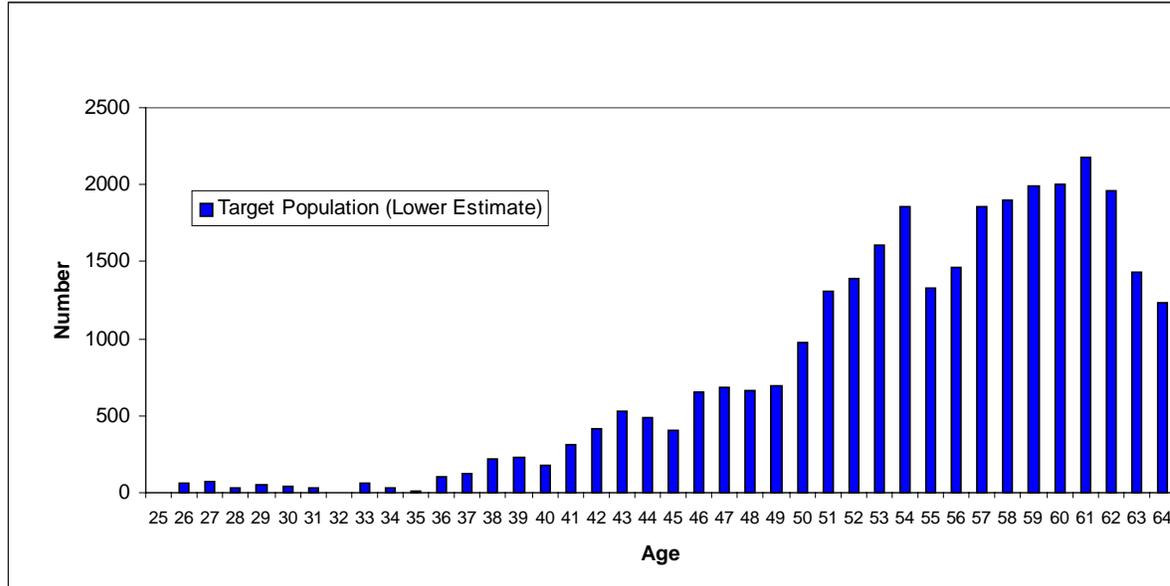
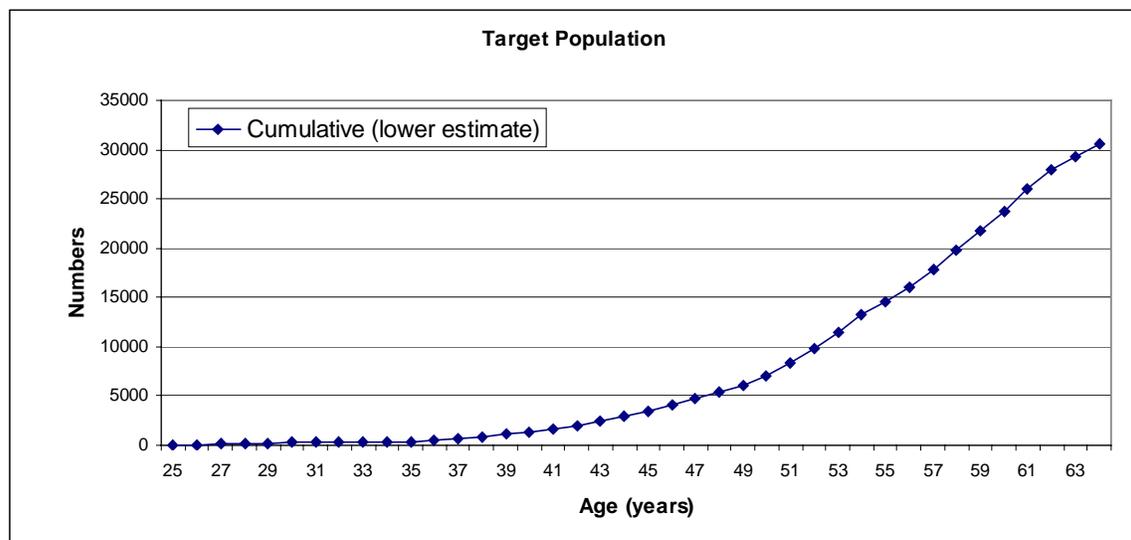


Figure A.5. Age Profile of Target Population (Lower Estimate: 30,607)**Figure A.6. Cumulative Count of Officer Stock Numbers: Target Population Lower Estimate**

1.13. Figure A.4 provides information in graphical form not only of the age profile of the target population, but also of the age profile of all ex-merchant navy officers employed in shore-based jobs in the UK and of the age profile of the sub-set of ex-merchant navy officers employed in jobs where their seafaring skills and experience are required. Hence, it indicates how the model derived the target population's age profile, namely, by deducting the latter from the former. Figure A.5 presents the resultant target population's age profile as a histogram, and Figure A.6, shows the target population as an ogive, thus providing cumulative totals by age from 25 to 65. Note in all three figures numbers for people below the age of 25 are not shown.

1.14. Figure A.6 is very revealing because it clearly shows that below 40 years of age, there are likely to be very few ex-merchant navy officers employed in shore-based jobs in the UK where seafaring experience or skills are not required. The vast majority are those employed in such jobs, some 25,000, are estimated as being over 47 years of age. It should be noted also that this stock of former officers, the target population, is likely to include a high proportion of people who did not complete their initial training as cadets or only served as junior officers and, as a consequence, many of these will not be fully qualified professionally, unlike those former ships' officers who are employed in jobs where their seafaring experience and skills are required, including those who have emigrated. Nevertheless, given the large number of former officers estimated as being in the target population, there will still be many who are fully qualified professionally, although most of these will be over 50 years of age and some no doubt will have retired early.

Appendix 2
An estimate of shore-based employment in
the maritime industry

Methodology

- 2.1. In the questionnaire survey carried out in the main study respondents provided data not only on employment of ex seafarers but also on their total employment. It was clear from the replies that the total employment figure could not be indicative of the employment in the shore-based maritime sector. In order therefore to determine this employment, it was decided to carry out a telephone survey on respondents in various business categories contained in the main study.
- 2.2. In this telephone survey respondents were requested either to estimate the number of employees that were working in activities related to the maritime industry or to indicate the proportion of their output or workload relevant to this industry. The estimates provided the basis on which to adjust the figure on total employment and thus to quantify employment relevant to the maritime sector in all the business categories.

Basis for estimating employment

- 2.3. Telephone interviews were carried out with respondents in all business categories. In some categories the respondents' employees were found to work almost exclusively in the maritime sector and these included port services, terminal operators, towage/salvage/dredging, ports, companies providing ship and crew management services, marine engineering companies, both Federated and Non-Federated shipowners and /offshore companies. In the latter category, however, there was the problem of how to treat non-maritime transport employment in the offshore oil and gas exploration industry, in terms of whether or not to include them in the maritime sector. During the interviews respondents in the oil and gas industry stated that only between 1 per cent and 5 per cent of their employees were directly involved with maritime transport in the offshore sector. Therefore estimates were made on the basis of excluding those employees who were not working in transport operations.
- 2.4. In other categories, for example, consultants and surveyors, respondents, particularly the larger ones, were able to indicate the numbers of their employees who worked in the maritime sector. Marine lawyers either provide maritime law services as part of a general legal practice or provide specialist maritime law work. Smaller law firms, for example usually those with less than 12 staff stated that up to 95 per cent of their work was in the maritime law field, whereas larger firms would be engaged in a variety of work which would include both maritime and general legal work. Marine insurance and P&I clubs were usually companies providing services almost exclusively in the maritime sector. Finance companies were involved in both shipping and other areas of finance. As this group were unable to give figures on the number of employees employed in shipping work, they gave estimates of the proportion of their loans directed to the maritime sector. Ship broker / charterers and ship agents clearly came within the group that employ people almost exclusively in the UK maritime sector. Marine equipment and information technology companies were a category that had a wide variation in terms of their actual involvement in the maritime industry. This group comprises companies whose output was exclusively for the maritime sector, such as a manufacturer of protective suits for use in rescue or survival situations, and others whose output was destined for several sectors including the maritime sector.

Estimated total employment

2.5. The telephone interviews provided an indication of the extent of the respondents' involvement in the maritime sector. The data they provided for the questionnaire survey were adjusted to reflect the views expressed in these interviews. These data then formed the basis for scaling up to arrive at a total employment estimate for the maritime sector after making an adjustment to allow for special cases such as Lloyd's Register, RNLI, MCA and Trinity House. Incidentally, as in the main study, an estimate for Lloyd's Register had to be made as they declined to participate in the study and consequently were not among those contacted in the telephone interviews.

2.6. Table A shows that the central estimate for total employment in the maritime industry is 131,850 employees. The confidence interval attached to the central estimate indicates there is a 95 per cent probability that the actual number in the sector lies somewhere between a lower limit of 120,433 and an upper limit of 143,267 employees.

Table A.4. Total Employment in the Maritime Industry			
Code	Nature of Business	Central estimates	95% c.i +/-
1	Classification Societies	2896	122
2	Consultants/surveyors	9150	1770
3	Port Services	3526	614
4	Terminal Operators	7228	1675
5	Towage/Salvage/Dredging	4727	1761
6	Ports	8909	304
7	Marine Lawyers	2344	713
8	Marine Insurance and P&I	3375	1256
9	Ship Finance	834	572
10	Ship Brokers and Charterers	2511	495
11	Ship Agents	8482	3552
12	Marine Equipment and Information Technology	39266	9616
13	Marine Engineering	7321	2036
14	Non-Fed Shipowners and Offshore	14637	3501
15	Federated Shipowners and Offshore	5012	366
16	Ship and Crew Management	2488	784
17	Maritime Schools	1962	404
18	Miscellaneous	7182	1064
Total		131850	11417

Source: 2003 Survey

Comparison with IFIS study

2.7. The data on total employment differ in some areas and are compatible in others to the Maritime Services Survey of November 2001 contained in the report of the International Financial Services (IFIS), London. The total employment in the IFIS report for the year is 13,800 whereas in this study the estimate is 131,684 and this is explained by the additional categories that are included in this survey, which were not included in the IFIS survey. For example, this survey includes ports, port services, terminal operators and companies providing towage, salvage and dredging operations and companies in the category of equipment and information technology, which were not in the IFIS survey. However, there are figures in this survey that may be compared with those in the IFIS study such as those relating to employment of marine lawyers and their support workers. In this study the number estimated under the category of lawyers is 2,344 persons whereas in the IFIS it is 2,400 persons, which includes law firms, barristers and maritime arbitrators. In the case of shipbrokers, the IFIS study shows 2,300 persons employed including support staff, whereas in this study it is 2,511 persons employed. With regard to insurance, the IFIS study provides separate estimates for underwriters, insurance brokers and P&I clubs and average adjusters, whereas this study does not and treats marine insurance and P&I clubs as a single category. The IFIS estimates give a total of 3,700 persons employed, whereas the estimate in this study for a comparable group is 3,375 persons.

Appendix 3

Previous studies

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- 3.1. To set this report in the correct context it is necessary to relate the current findings to previous studies which have been undertaken in this area. A number have been carried out; some of which relate specifically to the employment of ex-seafarers while others have had a broader remit, but with specific sections devoted to employment within the shore-based maritime industry.
 - 3.2. A **Review of Non-advanced Marine Education and Training** carried out in 1986 suggested that there were 1,998 posts in UK ports which required deck officer experience and 303 posts which required engineer officer experience. 1,404 posts were determined as requiring Merchant or Royal Naval seafaring experience. (MSC, 1986)
 - 3.3. The Nautical Institute in its evidence to the Transport Committee: **The decline in the UK registered Merchant Fleet**, considered shore-based positions which would require the level of expertise of Master Mariner, although the estimates derived in this study did not relate to all shore-based industries. The total estimate projected in this evidence indicated around 2000 positions of which 1500 would still be required even if no UK Merchant Navy existed. This situation was considered to be mirrored in the engineering disciplines (Nautical Institute 1987)
 - 3.4. The British Ports Association and the British Ports Federation have assessed marine and management staff levels in the UK ports industry in a number of reports: **Report on manpower in the UK ports industry**. The 1991 study identified a total of 31,667 employees of which 4,225 were Marine Grades. These reports did not, however, specify in which jobs it was essential that such people were employed. (British Ports Association, 1983 & 1986), (British Ports Federation 1988 & 1991)
 - 3.5. A study has also been carried out into the consequences of the decline in the UK shipping industry. This study had a much broader remit than the current project but is still of relevance in terms of the findings relating to the employment of seafarers in shore-based jobs. The report: **The UK shipping industry critical levels study (Critical Levels Study)** was undertaken by Moreby and Springett on behalf of the British Maritime Charitable Foundation (Moreby, 1990)
 - 3.6. The Critical Levels Study consider a range of implications for the UK maritime infrastructure resulting from the decline in the UK merchant fleet. One aspect was the support that the UK shipping industry provides to the wider maritime infrastructure. Part of this support is the number of seafarers which are employed in the shore-based maritime infrastructure and the ongoing movement of seafarers into shore-based positions which is required to maintain those industries which use such people. The study thus sought to provide estimates of the numbers of people employed in such jobs and as a result predict the annual requirement for ex-seafarers in order to sustain shore-based industry. (Moreby, 1990)
 - 3.7. The finding of the Critical Levels Study was that 10,915 positions ashore required seafaring experience. Based on an annual turnover of 10 per cent per annum this suggested that annually 1,092 seafarers have to move from the sea to shore in order to sustain maritime related industry. (Moreby, 1990)

- 3.8. The Critical Levels Study used a technique known as the “Delphic Forecasting Technique”. This approach uses a questionnaire based survey of a group of senior informed people. The information obtained can then be analysed and sorted into a range of opinions. The questionnaires are then returned to the participants in order to review their individual answers in the light of the opinions obtained in the first round. The aim is to obtain a consensus or narrow range of views on each issue raised.
- 3.9. The forerunner to this report was commissioned by the Department of Transport, The Chamber of Shipping and the Marine Society in 1995. The study, released in 1996, **A study of the UK economy’s requirements for people with experience of working at sea** determined whether maritime related sectors of the UK economy were likely to face an insufficient future supply of people with experience of working at sea.
- 3.10. In order to provide verification of the results of the Critical Levels Study in respect of the requirement for seafarers in shore-based positions it was decided to use a different data collection technique. A postal questionnaire survey was used in order to obtain data across the spectrum of maritime related industries and with as large a sample as would be possible within the constraints of such an approach. The sample was based on all sectors of industry which are known to employ ex-seafarers as a requirement as opposed to those which might employ such people but without requiring seafaring experience as a prerequisite.
- 3.11. The findings of this study were that there were approximately 17,000 jobs where employers would prefer to employ ex-seafarers with seafaring experience being considered essential for 70 per cent of those jobs (Gardner and Pettit, 1996).
- 3.12. Further work has subsequently been carried out by the Inter-Agency Committee on Marine Science and Technology (IACMST) (Pugh and Skinner, 2002) and International Financial Services London (IFSL, 2003). The IACMST report considered the contribution of marine-related activities to the UK economy and confirmed the importance of marine activities to the UK economy. The IFSL report specifically addressed the contribution of Maritime London and provided estimates of employment in the City of London relating to maritime activities.

Appendix 4
How former seafarers are employed in the
shore-based sector

Classification Societies

4.1. This category was used in the 1996 study. Classification Societies such as Lloyd's Register, Bureau Veritas and the American Bureau of Shipping set structural standards for ship and machinery design which must be attained before a vessel is registered in order for it to get its appropriate classification. They ensure that vessels are built and equipped to a required standard and are maintained at this standard throughout their lives if they are to retain their classification. Classification societies mainly employ former seafarers who are ex-engineer officers. Such people are usually employed as surveyors and in the past will most likely have had seagoing experience as a Chief Engineer and hold an Extra Chief Engineer's certificate. Consequently, they will have attained Chartered Engineer status. Lloyd's Register, which was, in the past, a major employer of such former seafarers in the UK, regarded them as a core business resource.

Consultants and Surveyors

4.2. In the 1996 study consultants, survey and ship inspection and cargo surveyors were analysed in three separate categories. As much of the work that is undertaken in these categories is, in many cases, very similar it was decided that the three categories should be combined. Firms in this category are involved in a wide range of maritime related work. They may be engaged in surveying activities such as marine surveys, statutory surveys, condition surveys, cargo surveys and classification surveys or in providing technical advice to the legal profession or in arbitration cases.

4.3. Some firms specialise in economic related maritime consultancy work. They will often undertake work on behalf of third parties such as insurance companies, P and I clubs, average adjusters and vessel charterers. Some surveying firms also provide technical advice to insurance companies, legal firms, banks and other companies operating within the maritime related sector. Surveyors working for these firms, therefore, may find themselves acting as expert witnesses, involved in maritime arbitration work, assessing the physical standard of vessels against which capital is being loaned and investigating possible maritime fraud.

4.4. Some firms specialise in marine casualty work. The role of the surveyor here is to assess the state of the vessel at the time of loss and ensure that repair work, where carried out, is of the required standard.

4.5. Cargo surveyors generally work for third parties. They are often engaged to provide advice to marine cargo insurance underwriters in matters relating to liability claims and loss assessment. They undertake loss and damage surveys in the event of cargo sustaining damage during transport and may also provide advice on loss prevention measures prior to the dispatch of cargo. They may also be required to act as expert witnesses

4.6. Marine Surveyors are usually former merchant navy deck officers with an unlimited Masters or Chief Engineers certificate. Over 90 per cent of the present members of the Institute of Marine Surveyors hold this qualification. Some ship surveying firms also conduct draught surveys, bunker surveys and marine engineer repair surveys. For the latter two types of work they generally employ former

merchant navy engineers, usually with a an unlimited Chief Engineers certificate but sometimes with an unlimited Second Engineers certificate.

- 4.7. Most firms in this business category are small, often ten or fewer employees, including clerical staff. Professional staff are largely ex-seafarers, usually former deck officers with a an unlimited Masters or Chief Engineers certificate.

Port Services

- 4.8. This category is the same as that used in the 1996 study. Businesses in this category are firms supplying stevedoring and cargo handling services and firms providing pilotage services which have not been included under ports.
- 4.9. Very few former seafarers are employed by stevedoring or cargo handling firms. Where they are, however, they tend to be ex-deck officers holding an unlimited Masters or Chief Engineers certificate. Such people are employed either as cargo superintendents or in general management. Businesses providing pilotage services, on the other hand, are major employers of ex-seafarers. Former deck officers are employed as pilots and are usually required to hold an unlimited Masters or Chief Engineers certificate. Former ratings are employed as launch or pilot cutter crews.
- 4.10. Ex-seafarers are employed by pollution control companies as oil pollution vessel crews and in a wide range of other jobs. Former deck ratings are employed as boat handlers; former deck and engineer officers with Officer of the Watch (formerly Class 3 or 4 certificates) as oil spill technicians and unlimited Masters or Chief Engineers certificate holders as marine and engineer superintendents and as technical, sales and commercial managers. Some former seafarers are directors of such companies.

Ports

- 4.11. This category is the same as that used in the 1996 study. The port industry remains a major employer of ex-seafarers, particularly former merchant navy deck officers and ratings. Former deck officers employed as harbour masters and pilots are generally required to hold an unlimited Masters or Chief Engineers certificate.

Terminal Operators

- 4.12. In undertaking the research for this study Terminal Operators were recognised as forming a sufficiently large group of companies to warrant consideration in their own right. Terminal operators operate as separate businesses within a port but do not own the port infrastructure and in many cases the port superstructure.

Towage, Salvage and Dredging Companies

- 4.13. Two categories from the 1996 study were combined to form this group. The towage companies included in this category are those with tugs working in river estuaries such as the Humber. Such companies employ former seafarers as officers and ratings on their tugs and some as shore-based personnel. The requirement for shore-based personnel is, however, limited. Salvage companies employ former seafarers as marine and engineer superintendents, safety officers and salvage masters.

Such employees are generally required to hold an unlimited Masters or Chief Engineers certificate, although some may hold an unlimited Chief Officers of Second Engineers certificate.

- 4.14. Dredgers can either be employed in capital or maintenance dredging within a port area or in aggregate dredging offshore. Essentially, dredging companies, like towage and salvage companies, are specialised shipping companies. Their requirements for shore-based personnel with seafaring experience are, consequently, similar. Former seafarers, therefore, are employed as marine and engineering superintendents and in other technical capacities. Some are also employed as dredging superintendents where they have gained the necessary experience on leaving deep sea employment. Ex-naval personnel are employed as hydrographic surveyors by some companies. Where former seafarers are employed, they will usually hold the appropriate qualification for the level of the job. Marine and engineering superintendents will, therefore, normally have an unlimited Masters or Chief Engineers certificate.

Maritime Lawyers

- 4.15. This category is the same as the Legal category used in the 1996 study. Firms within this category provide legal advice and services covering a wide range of maritime activities. Small legal firms tend to buy-in their non-legal technical expertise from consultants, but larger firms, fifty or more employees, may employ former seafarers to provide such expertise in-house. Former seafarers working for them may be employed on casualty investigation work or, if appropriately qualified, as legal executives or lawyers.
- 4.16. Marine lawyers, who are also ex-seafarers, are usually former deck officers an unlimited Masters certificate. In addition to their professional legal qualifications, they often hold a maritime related degree. Some former seafarers are partners in legal firms carrying out maritime work.

Marine Insurance, Protection and Indemnity Clubs and Loss Adjusters,

- 4.17. The Marine Insurance, Protection and Indemnity and Loss Adjusters categories from the 1996 study were combined into one category for this study. The marine insurance market in the UK is composed of various insurance companies and Lloyd's of London. Former seafarers are seldom employed as marine insurance underwriters. Where their technical knowledge is required, it is usually bought in..
- 4.18. Some companies, though, employ former seafarers in their marine claims department as specialists. Where a business itself specialises in marine claims work, they provide the technical expertise to evaluate claims. In such businesses they are employed as consulting surveyors, energy surveyors, average adjusters and claims executives. For these types of job an unlimited Masters or Chief Engineers certificate is usually required, and the nature of the job will determine whether a former deck or engineer officer is employed.
- 4.19. P and I clubs are formed by shipowners to secure cover for risks which are beyond the scope of normal marine insurance risks. Such clubs are, therefore, a specialised sector of the marine insurance market, namely mutual indemnity. Former seafarers may be employed by such clubs as surveyors in their condition survey department or as claims executives. They may also, occasionally, be employed as underwriters. Clubs usually look for either people with a seafaring or legal background to work as

claims executives. For survey work the clubs require former deck or engineer officers with an unlimited Masters or Chief Engineers certificate. For claims handling and loss prevention work they generally prefer former deck officers with this qualification.

- 4.20. Loss Adjusters may employ former seafarers as loss adjusters or as marine surveyors. For the former type of employment either ex-deck or ex-engineer officers may be required and for the latter type ex-deck officers. Such people are usually required to have an unlimited Masters or Chief Engineers certificate.

Ship Finance

- 4.21. This category is the same as the 1996 study. Clearing banks and other institutions within this category, which provide shipping companies with loan capital and other forms of finance, do not generally see that there is any advantage to be gained from employing seafarers because of the technical expertise they possess, unless they also have other qualifications and skills which are more relevant to their specific line of business.
- 4.22. Where technical expertise is required it is bought in from consulting or surveying firms. Such companies, however, do recruit shore-based shipping company personnel with financial management experience and, therefore, may occasionally recruit former seafarers who have gained such experience with a shipping company.

Ship and Cargo Broking and Ship Chartering

- 4.23. This category combines the Ship/Cargo broking and Ship Chartering categories from the 1996 study. Broking firms provide services to international commodity traders and to tramp vessel owners. Chartering firms are generally involved in chartering in vessels to provide shipping services within the bulk sector.
- 4.24. Some former seafarers are employed as chartering or sale and purchase brokers, but seafaring experience is not generally considered to be a prerequisite for such jobs. Seafaring experience is considered useful, however, in sale and purchase matters, particularly when the handover from one owner to another takes place.
- 4.25. Many larger shipbroking firms which have other shipping interests besides broking employ former seafarers. They are often not employed, though, in a broking capacity, but as terminal managers, husbandry managers and operations managers or in agency work. For such jobs they are required to have appropriate seafaring qualifications. Good interpersonal skills are seen as being an essential requirement for a broker. Former seafarers may not always possess such skills.
- 4.26. Most Chartering companies are small, employing less than ten personnel; some are subsidiaries of larger foreign companies. Former seafarers are usually employed in a technical capacity as operations managers or supervisors or to provide support to the chartering function by carrying out tasks such as technical audits. They may also be employed as marine or engineer superintendents, but this is not likely. Such jobs usually require an unlimited Masters or Chief Engineers certificate.

Ship Agents

- 4.27. This category is the same as that used in the 1996 study. Firms in this category provide shipping companies with liaison services for their ships while in port. They liaise on the ships behalf with bunkering, stevedoring and other contracting companies and provide other services, such as accounting, where necessary. They will, for example, arrange for the berthing and un-berthing of ships and for tugs and fire fighting services if required.
- 4.28. Most firms within this category are small, few employ more than thirty people. While some employ former seafarers, the consensus of opinion appears to be that the positions they fill could be easily filled by non-seafarers. For run of the mill agency work, the technical expertise which seafarers possess is seldom required.

Marine Equipment Suppliers and Information and Technology

- 4.29. This category is the same as that used in the 1996 study and covers the whole spectrum of manufacturing activities relating to the provision of marine equipment from rope making to sophisticated electronic equipment such as radar and IT systems. Firms in this category provide a wide range of job opportunities for former engineering officers in particular, although the numbers employed by individual firms are generally small. Firms that manufacture more sophisticated equipment are more likely to employ ex-seafarers as salesmen or for providing technical advice in the use of equipment. This provides job opportunities for former deck officers as well as engineer officers.
- 4.30. Many former seafarers employed in this business category hold an unlimited Masters or Chief Engineers certificate, although some jobs may not require this level of qualification.

Marine Engineering

- 4.31. This category is based around the Shipbuilding and repairing category used in the 1996 study but also includes other engineering firms such as engine builders and other engineering activities. The activities of firms in this category are self explanatory. Employment opportunities for ex-seafarers are mainly for former engineer officers. They may be employed as system and control engineers or as electrical and engineer designers. Former naval officers are preferred for many of these jobs. Ex-Merchant Navy personnel are also employed as guarantee superintendents and helmsmen.

Federated Shipping and Offshore Companies

- 4.32. Due to the way in which the Chamber of Shipping stores information about Shipping Companies and Offshore Companies it would have been difficult to separate the two groups used in the 1996 study. These were therefore combined into one group.
- 4.33. Shipping companies employ former merchant seafarers usually in fleet management jobs. Such employees generally hold an unlimited Masters or Chief Engineers certificate and depending on the nature of the post could be either former engineer or deck officers. Offshore companies are also engaged in water based maritime operations. Their requirement for shore-based personnel with seafaring experience is, therefore, similar to that of shipping companies. Ex-seafarers are,

consequently, employed in similar capacities and are required to have the appropriate level of qualification for the job. Among the jobs that they fill in such companies are those in marine safety management. They are also employed in other technical management capacities, including quality control and as marine and engineer superintendents as well as in chartering operations and in technical training.

Non-Federated Shipping and Offshore Companies

4.34. In view of the way information about Federated companies was treated it was decided to treat non-federated shipping companies and offshore companies in a similar way.

Ship / Crew Management

4.35. This category combines the Ship Management and Crew Management categories from the 1996 study. Ship Management companies are capable of providing shipowners with a complete range of management services for their vessels. They may takeover the whole operation of managing a fleet of ships for an owner or only some of the functions. They, therefore, employ former seafarers in the same capacities as shipping companies, which own and manage their own ships. Consequently, former seafarers are primarily employed as marine and engineer superintendents and as ship operations managers. Such employees are usually required to hold an unlimited Masters or Chief Engineers certificate.

4.36. Crew Management firms provide an employment agency service for shipping companies and other firms in the maritime related sector seeking to recruit seafarers. They are also sometimes involved in activities relating to the training of cadets as well as their recruitment. Former seafarers employed in this type of personnel work are usually either ex-deck or ex-engineer officers with at least an Officer of the Watch certificate. Many hold an unlimited Masters or Chief Engineers certificate.

Education and Training

4.37. Four mainstream nautical colleges: Blackpool and Fylde College, South Tyneside College, Glasgow College of Nautical Studies and Warsash Maritime Centre are the main providers of professional maritime education and training in the UK. Other establishments provide different types of specialised training for maritime activities or higher education services. The four main colleges are big employers of ex-seafarers, mainly former officers. Most hold at least an unlimited Masters or Chief Engineers certificate.

Charitable Institutions / Publishing / Representative Organisations / Public sector and Miscellaneous

4.38. This category covers a range of activities which in themselves do not form a large enough group to warrant individual consideration. The group therefore includes Non profit and charitable organisations, Seamen's missions, publishing, representative organisations and public sector agencies.

4.39. Non profit and charitable organisations are concerned mainly with the welfare and education of both seafarers and ex-seafarers and with the maintenance of the national maritime heritage. Depending on

their function, they may see it as a requirement or an advantage to employ ex-seafarers but often this is not the case.

- 4.40. Publishing companies in this category include the specialised maritime press and publishers of trade journals and books. The more specialised technical journals and the maritime press tend to see it as an advantage to employ at least a notional ex-seafarer but the business related publications generally do not.
- 4.41. The category includes some unique institutions; the RNLI, the Maritime and Coastguard Agency and Trinity House. These institutions, two of which have water based operations, are large employers of former seafarers, particularly ex-petty officers and ratings. This category also includes the maritime unions. Former officers where employed often hold an unlimited Masters or Chief Engineers certificate.
- 4.42. MCA inspectors have responsibility for operating UK flag state control as well as the port state control system in the UK which ensures, among other things, that specific international regulations relating to vessel safety are complied with by vessels visiting UK ports. They also have responsibility for investigating accidents to shipping within UK territorial waters, regardless of whether such accidents involve UK registered ships or whether such vessels are merchant, fishing or pleasure craft. It is also responsible for investigating accidents involving UK vessels in foreign waters. In the past, former seafarers working for this agency in a professional capacity were required to hold an Extra Master's certificate or Extra Chief Engineer's certificate or a Class 1 certificate and a relevant degree qualification. Current entry requirements are an unlimited Masters or Chief Engineers certificate and perhaps a Bachelors or Masters degree.

Appendix 5

Survey questionnaires

The UK economy's requirements for people with experience of working at sea in shore-based jobs

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Port Survey

This questionnaire forms part of a study being undertaken by Cardiff Business School, Transport and Shipping Research Group for the Department for Transport, Chamber of Shipping and the Marine Society. This study aims to determine shore-based employment of former seafarers and **whether maritime related sectors of the UK economy are likely to face an insufficient future supply of shore-based people with experience of working at sea.** It follows up a similar study carried out in 1995. In order to assess this issue we would appreciate your assistance by completing the following questionnaire. **On completion would you please return in the envelope provided.** Postage has already been paid. Your help is very much appreciated.

In the event that you have any problems completing the questionnaire please contact:
Dr Rawindaran Nair or Dr Stephen Pettit, Cardiff University on 029 2087 6081
(E-mail NairR1@cardiff.ac.uk or Pettit@cardiff.ac.uk)

Organisation name	:	<input type="text"/>	Completed by	:	<input type="text"/>
Principal area of business	:	<input type="text"/>	Position	:	<input type="text"/>
Telephone No	:	<input type="text"/>	Date	:	<input type="text"/>
E-mail address	:	<input type="text"/>			

Answers should relate to the organisation's employment position as at 1st January 2003

In the context of this questionnaire 'shore-based' includes jobs such as Marine Pilots and Harbour Masters

- 1** How many people does your Port or Harbour Authority employ in shore-based jobs?
- 2** Are any of these people former merchant seafarers? Yes
No
- 3** If the answer to question 2 is **Yes**, are any of these former merchant seafarers employed in jobs where their professional seafaring experience is considered to be either an essential requirement for obtaining the job or an advantage in the type of work they are doing? Yes
No

If the answer to either question 2 or 3 is No, please return the questionnaire in the envelope provided. It is important for estimation purposes that you provide this information. Thank you for your time in doing so.

Address Label

4 Please list the jobs where your Port or Harbour Authority considers it to be **an essential requirement** for employees to have professional seafaring experience. Give details of the number of ex-merchant seafarers and ex naval personnel **actually employed in such jobs** and the minimum professional qualification. **Include both UK and Non-UK former seafarers.** Are such employees required to hold a valid certificate of competency?

Job (list)	No. of former seafarers employed		Minimum professional qualification	Valid Certificate required? Yes / No
	ex-merchant	ex-naval		

5 Please list the jobs where your Port or Harbour Authority considers it to be **an advantage** for employees to have professional seafaring experience. Give details of the number of ex-merchant seafarers and ex-naval personnel **actually employed in such jobs** and the minimum professional qualification. **Include both UK and Non-UK former seafarers.** Are such employees required to hold a valid certificate of competency?

Job (list)	No. of former seafarers employed		Minimum professional qualification	Valid Certificate required? Yes / No
	ex-merchant	ex-naval		

6 Does your Port or Harbour Authority employ non-UK former seafarers in any of the jobs listed in 4 or 5? Yes No

7 If your answer is **Yes**, please specify which jobs and how many are currently employed in each job?

Job (list)	No. of non-UK former seafarers			
	Employed in the UK		Employed Overseas	
	ex-merchant	ex-naval	ex-merchant	ex-naval

8 Is your Port or Harbour Authority actually employing **non-seafarers** in jobs where it would prefer to have suitably qualified former merchant seafarers with relevant experience? **Yes** **No**

If Yes, which jobs and how many non-seafarers are actually employed in such jobs?

Job (list)	No. of non seafarers
<input type="text"/>	<input type="text"/>

9 How many shore-based personnel whom you would prefer to have seafaring experience do you expect to employ:

In 5 years time? **in 10 years time?**

(These estimates should take account of those where it is an essential requirement of the job (Q4), an advantage to the job they are doing (Q5) and jobs where you would prefer to have suitably qualified ex-merchant seafarers (Q8)).

10 Do you envisage any difficulty in finding suitably qualified people with the necessary length of seafaring experience to fill vacancies in your projected total requirement.

in 5 years time? Yes No

in 10 years time? Yes No

The following information on ages is required to estimate the future demand for UK seafarers in shore-based employment. Please complete the table for the number of people detailed in questions 4, 5 and 8.

If it is more convenient for you to produce this information in a different form, please do so and attach to the questionnaire.

If you are unable to provide this information, please go to question 14.

11 Please provide the number of each age for those people detailed in Question 4:

< 26	<input type="text"/>	31	<input type="text"/>	37	<input type="text"/>	43	<input type="text"/>	49	<input type="text"/>	55	<input type="text"/>	61	<input type="text"/>
26	<input type="text"/>	32	<input type="text"/>	38	<input type="text"/>	44	<input type="text"/>	50	<input type="text"/>	56	<input type="text"/>	62	<input type="text"/>
27	<input type="text"/>	33	<input type="text"/>	39	<input type="text"/>	45	<input type="text"/>	51	<input type="text"/>	57	<input type="text"/>	63	<input type="text"/>
28	<input type="text"/>	34	<input type="text"/>	40	<input type="text"/>	46	<input type="text"/>	52	<input type="text"/>	58	<input type="text"/>	64	<input type="text"/>
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12 Please provide the number of each age for those people detailed in Question 5:

< 26	<input type="text"/>	31	<input type="text"/>	37	<input type="text"/>	43	<input type="text"/>	49	<input type="text"/>	55	<input type="text"/>	61	<input type="text"/>
26	<input type="text"/>	32	<input type="text"/>	38	<input type="text"/>	44	<input type="text"/>	50	<input type="text"/>	56	<input type="text"/>	62	<input type="text"/>
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14 Please add any further comments you may wish to make in the space provided.

Thank you for completing this questionnaire. Please return in the envelope provided to:

**Dr Stephen Pettit, Cardiff Business School, Freepost CF4117,
Aberconway Building, Colum Drive, Cardiff, CF1 1YZ**

The UK economy's requirements for people with experience of working at sea in shore-based jobs

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Company Survey

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Organisation name	:	<input type="text"/>	Completed by	:	<input type="text"/>
Principal area of business	:	<input type="text"/>	Position	:	<input type="text"/>
Telephone No	:	<input type="text"/>	Date	:	<input type="text"/>
E-mail address	:	<input type="text"/>			

Answers should relate to the organisation's employment position as at 1st January 2003

In the context of this questionnaire 'shore-based' includes jobs such as Marine Pilots and Harbour Masters

- 1** How many people does your Company employ in shore-based jobs?
- 2** Are any of these people former merchant seafarers? Yes
No
- 3** If the answer to question 2 is **Yes**, are any of these former merchant seafarers employed in jobs where their professional seafaring experience is considered to be either an essential requirement for obtaining the job or an advantage in the type of work they are doing? Yes
No

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Address Label

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Job (list)	No. of former seafarers employed		Minimum professional qualification	Valid Certificate required? Yes / No
	ex-merchant	ex-naval		

5 Please list the jobs where your Company considers it to be **an advantage** for employees to have professional seafaring experience. Give details of the number of ex-merchant seafarers and ex-naval personnel **actually employed in such jobs** and the minimum professional qualification. **Include both UK and Non-UK former seafarers.** Are such employees required to hold a valid certificate of competency?

Job (list)	No. of former seafarers employed		Minimum professional qualification	Valid Certificate required? Yes / No
	ex-merchant	ex-naval		

6 Does your Company employ non-UK former seafarers in any of the jobs listed in 4 or 5? **Yes** **No**

7 If your answer is **Yes**, please specify which jobs and how many are currently employed in each job?

Job (list)	No. of non-UK former seafarers			
	Employed in the UK		Employed Overseas	
	ex-merchant	ex-naval	ex-merchant	ex-naval

8 Is your Company actually employing **non-seafarers** in jobs where it would prefer to have suitably qualified former merchant seafarers with relevant experience? **Yes** **No**

If Yes, which jobs and how many non-seafarers are actually employed in such jobs?

Job (list)	No. of non seafarers
<input type="text"/>	<input type="text"/>

9 How many shore-based personnel whom you would prefer to have seafaring experience do you expect to employ:

In 5 years time? **in 10 years time?**

(These estimates should take account of those where it is an essential requirement of the job (Q4), an advantage to the job they are doing (Q5) and jobs where you would prefer to have suitably qualified ex-merchant seafarers (Q8)).

10 Do you envisage any difficulty in finding suitably qualified people with the necessary length of seafaring experience to fill vacancies in your projected total requirement.

in 5 years time? Yes No

in 10 years time? Yes No

The following information on ages is required to estimate the future demand for UK seafarers in shore-based employment. Please complete the table for the number of people detailed in questions 4, 5 and 8.

If it is more convenient for you to produce this information in a different form, please do so and attach to the questionnaire.

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12 Please provide the number of each age for those people detailed in Question 5:

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Organisation name	:	<input type="text"/>	Completed by	:	<input type="text"/>
Principal area of business	:	<input type="text"/>	Position	:	<input type="text"/>
Telephone No	:	<input type="text"/>	Date	:	<input type="text"/>
E-mail address	:	<input type="text"/>			

Answers should relate to the organisation's employment position as at 1st January 2003

In the context of this questionnaire 'shore-based' includes jobs such as Marine Pilots and Harbour Masters

- | | | | |
|----------|---|-----------|----------------------|
| 1 | How many people does your Company employ in shore-based jobs? | In the UK | <input type="text"/> |
| | | Overseas | <input type="text"/> |
| 2 | Are any of these people former merchant seafarers? | Yes | <input type="text"/> |
| | | No | <input type="text"/> |
| 3 | If the answer to question 2 is Yes , are any of these former merchant seafarers employed in jobs where their professional seafaring experience is considered to be either an essential requirement for obtaining the job or an advantage in the type of work they are doing? | Yes | <input type="text"/> |
| | | No | <input type="text"/> |

If the answer to either question 2 or 3 is No, please return the questionnaire in the envelope provided. It is important for estimation purposes that you provide this information. Thank you for your time in doing so.

Address Label

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Job (list)	No. of former seafarers employed		Minimum professional qualification	Valid Certificate required? Yes / No
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Job (list)	No. of former seafarers employed		Minimum professional qualification	Valid Certificate required? Yes / No
	ex-merchant	ex-naval		

6 Does your Company employ non-UK former seafarers in any of the jobs listed in 4 or 5? **Yes** **No**

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Job (list)	No. of non-UK former seafarers			
	Employed in the UK		Employed Overseas	
	ex-merchant	ex-naval	ex-merchant	ex-naval

8 Is your Company actually employing **non-seafarers** in jobs where it would prefer to have suitably qualified former merchant seafarers with relevant experience? **Yes** **No**

If Yes, which jobs and how many non-seafarers are actually employed in such jobs?

Job (list)	No. of non seafarers
<input type="text"/>	<input type="text"/>

9 How many shore-based personnel whom you would prefer to have seafaring experience do you expect to employ:

In 5 years time? **in 10 years time?**

(These estimates should take account of those where it is an essential requirement of the job (Q4), an advantage to the job they are doing (Q5) and jobs where you would prefer to have suitably qualified ex-merchant seafarers (Q8)).

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12 Please provide the number of each age for those people detailed in Question 5:

< 26	<input type="text"/>	31	<input type="text"/>	37	<input type="text"/>	43	<input type="text"/>	49	<input type="text"/>	55	<input type="text"/>	61	<input type="text"/>
26	<input type="text"/>	32	<input type="text"/>	38	<input type="text"/>	44	<input type="text"/>	50	<input type="text"/>	56	<input type="text"/>	62	<input type="text"/>
27	<input type="text"/>	33	<input type="text"/>	39	<input type="text"/>	45	<input type="text"/>	51	<input type="text"/>	57	<input type="text"/>	63	<input type="text"/>
28	<input type="text"/>	34	<input type="text"/>	40	<input type="text"/>	46	<input type="text"/>	52	<input type="text"/>	58	<input type="text"/>	64	<input type="text"/>
29	<input type="text"/>	35	<input type="text"/>	41	<input type="text"/>	47	<input type="text"/>	53	<input type="text"/>	59	<input type="text"/>	65	<input type="text"/>
30	<input type="text"/>	36	<input type="text"/>	42	<input type="text"/>	48	<input type="text"/>	54	<input type="text"/>	60	<input type="text"/>	>65	<input type="text"/>

13 Please provide the number of each age for those people detailed in Question 8:

< 26	<input type="text"/>	31	<input type="text"/>	37	<input type="text"/>	43	<input type="text"/>	49	<input type="text"/>	55	<input type="text"/>	61	<input type="text"/>
26	<input type="text"/>	32	<input type="text"/>	38	<input type="text"/>	44	<input type="text"/>	50	<input type="text"/>	56	<input type="text"/>	62	<input type="text"/>
27	<input type="text"/>	33	<input type="text"/>	39	<input type="text"/>	45	<input type="text"/>	51	<input type="text"/>	57	<input type="text"/>	63	<input type="text"/>
28	<input type="text"/>	34	<input type="text"/>	40	<input type="text"/>	46	<input type="text"/>	52	<input type="text"/>	58	<input type="text"/>	64	<input type="text"/>
29	<input type="text"/>	35	<input type="text"/>	41	<input type="text"/>	47	<input type="text"/>	53	<input type="text"/>	59	<input type="text"/>	65	<input type="text"/>
30	<input type="text"/>	36	<input type="text"/>	42	<input type="text"/>	48	<input type="text"/>	54	<input type="text"/>	60	<input type="text"/>	>65	<input type="text"/>

14 Please add any further comments you may wish to make in the space provided.

Thank you for completing this questionnaire. Please return in the envelope provided to:

**Dr Stephen Pettit, Cardiff Business School, Freepost CF4117,
Aberconway Building, Colum Drive, Cardiff, CF1 1YZ**

Appendix 6

Tables not included in main report

Note: In the following tables, for an explanation of the difference between Estimates 1 and 2 see paragraphs 2.7 and 4.6. to 4.8. in the main report.

Table A.5. Estimate 1 - Estimated number of jobs which employers consider it is essential to fill with people with seafaring experience

Business category	Type of Employee - UK Seafarer						Other type of Employee		Total		
	Deck ex MN	Officer ex MN	Engineer ex MN	Officer ex RN	Engineer ex RN	Officer ex RN	Other MN	Other RN		Foreign ex-seafarer	Non seafarer
Classification Societies	44		1037	2	100		0		896	495	2574
Consultants and Surveyors	692		202	36	59		0		155	50	1194
Port Services	50		30	0	3		3		0	0	86
Terminal Operators	130		6	0	0		179		0	10	325
Towage and Salvage and Dredging	145		107	20	0		5		0	5	282
Ports	1086		23	25	6		76	9	32	21	1278
Maritime Lawyers	48		0	16	0		0		0	0	64
Marine Insurance and P & I	42		48	0	0		0		24	6	120
Ship Finance	0		0	0	0		0		0	0	0
Ship Brokers and Charterers	23		17	0	0		0		17	8	65
Ship Agents	0		0	0	0		0		0	0	0
Marine Equipment and Information Technology	210		159	46	0		0		97	0	512
Marine Engineering	0		81	49	58		0		0	9	197
Non-Fed Shipowners and Offshore	493		422	23	12		0		224	0	1174
Federated Shipowners and Offshore	226		103	4	0		12		11	14	370
Ship and Crew Management	275		302	0	7		0		73	14	671
Maritime Schools	178		99	10	0		0		13	3	303
Miscellaneous	219		173	54	47		10	7	24	35	569
Total	3861		2809	285	292		285	16	1566	670	9784

Source: 2003 Survey

Table A.6. Estimate 1 - Estimated number of jobs which employers consider it is an advantage to fill with people with seafaring experience										
Business category	Type of Employee - UK seafarer						Other type of employee		Total	
	Deck Officer ex MN	Engineer Officer ex MN	Officer ex RN	Engineer ex RN	Officer ex RN	Other MN	Other RN	Foreign ex-seafarer		Non seafarer
Classification Societies	25	30	0	0	0	0	0	0	16	71
Consultants and Surveyors	114	8	88	8	8	5	0	0	186	417
Port Services	39	4	0	0	9	0	0	0	18	70
Terminal Operators	40	0	0	0	30	0	0	0	16	86
Towage and Salvage and Dredging	119	49	27	5	32	0	0	0	38	270
Ports	172	12	76	3	103	30	30	30	262	688
Maritime Lawyers	74	5	9	0	0	0	0	15	16	119
Marine Insurance and P & I	124	136	8	0	0	0	0	24	18	310
Ship Finance	0	0	0	0	0	0	0	13	0	13
Ship Brokers and Charterers	31	0	14	0	0	0	0	0	12	57
Ship Agents	67	17	17	0	0	0	0	0	0	101
Marine Equipment and Information Technology	111	623	111	207	0	0	0	83	249	1384
Marine Engineering	0	205	7	0	15	0	15	8	8	250
Non-Fed Shipowners and Offshore	235	172	0	8	23	8	16	16	321	783
Federated Shipowners and Offshore	38	14	3	0	8	0	0	0	7	70
Ship and Crew Management	173	49	0	0	8	0	11	33	33	274
Maritime Schools	82	4	5	0	0	0	4	11	11	106
Miscellaneous	84	28	13	27	211	213	11	242	242	829
Total	1528	1436	298	258	447	256	222	1477	5898	

Source: 2003 Survey

Table A.7. Estimate 2 – Estimated number of jobs which employers consider it is essential to fill with people with seafaring experience										
Business category	Type of Employee - UK Seafarer						Other type of Employee		Total	
	Deck Officer ex MN	Engineer Officer ex MN	Officer ex RN	Engineer ex RN	Officer ex RN	Other MN	Other RN	Foreign ex-seafarer		Non seafarer
Classification Societies	29	37	0	0	0	0	0	46	0	112
Consultants and Surveyors	692	202	36	59	0	0	0	155	50	1194
Port Services	50	30	0	3	0	3	0	0	0	86
Terminal Operators	130	6	0	0	0	179	0	0	10	325
Towage and Salvage and Dredging	145	107	20	0	0	5	0	0	5	282
Ports	1086	23	25	6	0	76	9	32	21	1278
Maritime Lawyers	48	0	16	0	0	0	0	0	0	64
Marine Insurance and P & I	42	48	0	0	0	0	0	24	6	120
Ship Finance	0	0	0	0	0	0	0	0	0	0
Ship Brokers and Charterers	23	17	0	0	0	0	0	17	8	65
Ship Agents	0	0	0	0	0	0	0	0	0	0
Marine Equipment and Information Technology	210	159	46	0	0	0	0	97	0	512
Marine Engineering	0	81	49	58	0	0	0	0	9	197
Non-Fed Shipowners and Offshore	493	422	23	12	0	0	0	224	0	1174
Federated Shipowners and Offshore	226	103	4	0	0	12	0	11	14	370
Ship and Crew Management	275	302	0	7	0	0	0	73	14	671
Maritime Schools	178	99	10	0	0	0	0	13	3	303
Miscellaneous	219	173	54	47	0	10	7	24	35	569
Total	3846	1809	283	192	0	285	16	716	175	7322

Source: 2003 Survey

Table A.8. Estimate 2 - Estimated number of jobs which employers consider it is an advantage to fill with people with seafaring experience

Business category	Type of Employee - UK seafarer						Other type of employee		Total	
	Deck Officer ex MN	Engineer Officer ex MN	Officer ex RN	Engineer ex RN	Officer ex RN	Other MN	Other RN	Foreign ex-seafarer		Non seafarer
Classification Societies	35	661	1	64	0	0	0	850	922	2533
Consultants and Surveyors	114	8	88	8	8	5	0	0	186	417
Port Services	39	4	0	0	9	0	0	0	18	70
Terminal Operators	40	0	0	0	30	0	0	0	16	86
Towage and Salvage and Dredging	119	49	27	5	32	0	0	0	38	270
Ports	172	12	76	3	103	30	30	30	262	688
Maritime Lawyers	74	5	9	0	0	0	0	15	16	119
Marine Insurance and P & I	124	136	8	0	0	0	0	24	18	310
Ship Finance	0	0	0	0	0	0	0	13	0	13
Ship Brokers and Charterers	31	0	14	0	0	0	0	0	12	57
Ship Agents	67	17	17	0	0	0	0	0	0	101
Marine Equipment and Information Technology	111	623	111	207	0	0	0	83	249	1384
Marine Engineering	0	205	7	0	15	0	0	15	8	250
Non-Fed Shipowners and Offshore	235	172	0	8	23	8	0	16	321	783
Federated Shipowners and Offshore	38	14	3	0	8	0	0	0	7	70
Ship and Crew Management	173	49	0	0	8	0	0	11	33	274
Maritime Schools	82	4	5	0	0	0	0	4	11	106
Miscellaneous	84	28	13	27	211	213	0	11	242	829
Total	1538	2067	299	322	447	256	0	1072	2359	8360

Source: 2003 Survey

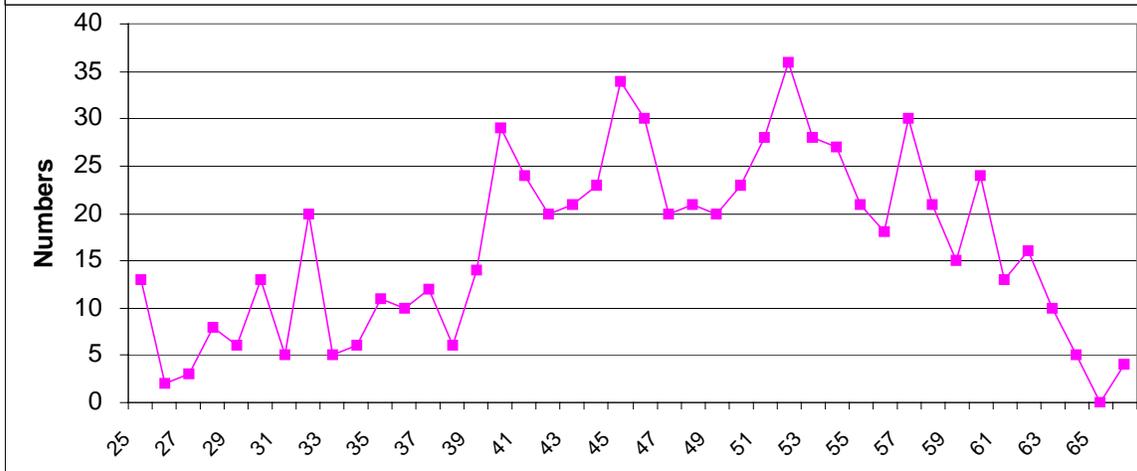
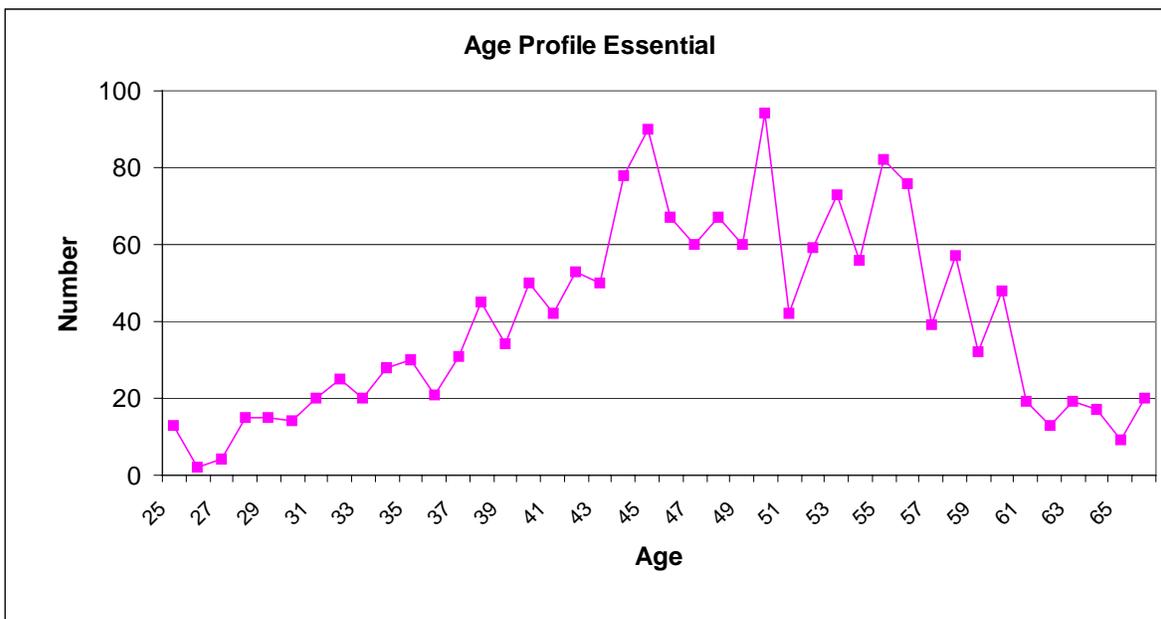
Business category	Type of Employee - UK Seafarer						Other type of Employee		Total
	Deck Officer ex MN	Engineer Officer ex MN	Officer ex RN	Engineer Officer ex RN	Other MN	Other RN	Foreign ex- seafarer	Non seafarer	
Ports	1336	46	23	1	240	28	0	56	1730
Port services	223	0	0	0	35	2	10	0	270
Towage/Salvage	218	95	7	7	40	0	14	0	381
Dredging	18	24	0	15	12	0	6	0	75
Offshore	148	168	0	0	0	0	10	0	326
Pollution control	51	2	2	2	59	0	0	0	116
Surveyors/Inspection	294	175	4	19	0	0	56	4	552
Cargo Surveyors	55	5	0	0	0	0	5	3	68
Classification	19	1000	2	100	0	0	850	0	1971
Insurance	0	14	0	0	0	0	0	0	14
Banking	0	0	0	0	0	0	0	0	0
Ship/cargo Broking	88	26	0	0	0	0	0	0	114
Ship chartering	6	0	0	0	0	0	3	0	9
P and I	48	10	0	0	0	0	0	0	58
Loss adjusters	0	0	0	0	0	0	0	0	0
Legal	75	0	14	0	0	0	0	0	89
Consultants	918	326	10	10	30	276	59	0	1629
Marine equipment	79	316	30	79	49	0	0	0	553
Shipbuilders/repair	0	20	0	0	20	0	0	0	40
Federated Ship Co's	332	375	0	0	67	0	88	0	862
Non-Fed'd Ship Co's	216	276	0	0	50	0	40	0	582
Ship management	246	322	28	0	0	0	14	0	610
Crew management	21	18	0	0	0	0	0	9	48
Ships agents	12	4	0	0	0	0	0	0	16
Charitable Institutions	3	0	0	0	0	0	0	0	3
Education & Training	710	212	25	21	29	16	0	0	1013
Publishing	7	0	0	0	0	0	0	1	8
Miscellaneous	87	106	6	2	204	236	0	0	641
Total	5210	3540	151	256	835	558	1155	73	11778

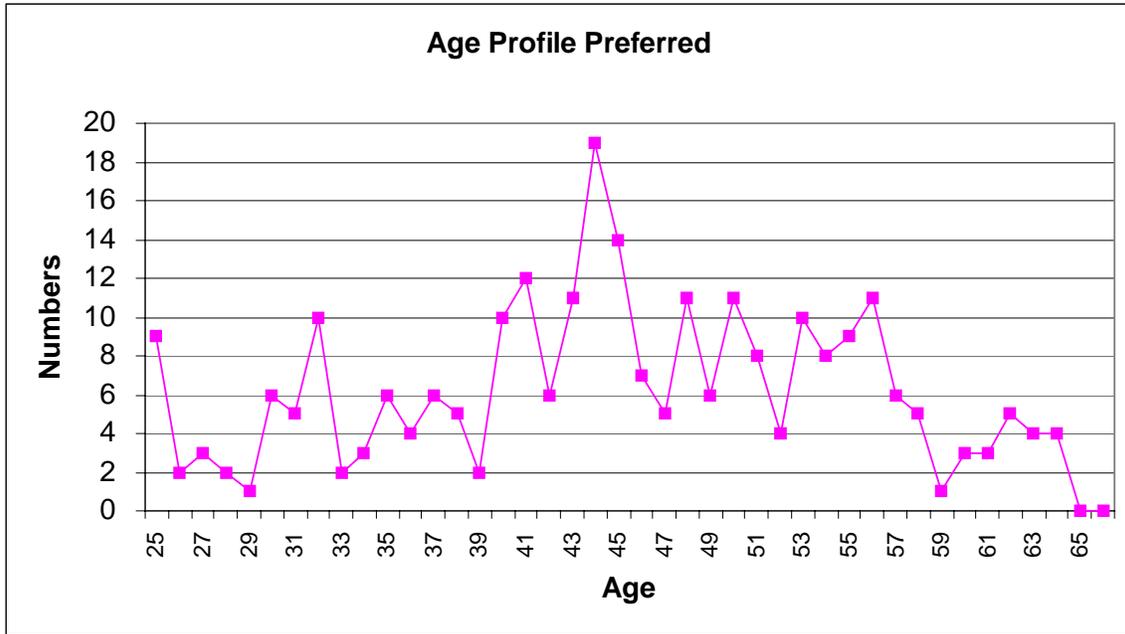
Source: 1996 Study

Business category	Type of Employee - UK seafarer						Other type of employee		Total
	Deck Officer ex MN	Engineer Officer ex MN	Officer ex RN	Engineer Officer ex RN	Other MN	Other RN	Foreign ex-seafarer	Non seafarer	
Ports	170	10	8	1	358	56	50	184	837
Port services	8	0	0	0	5	0	0	0	13
Towage/Salvage	74	27	0	0	20	0	7	0	128
Dredging	0	0	9	0	0	0	6	0	15
Offshore	59	0	0	0	30	0	0	0	89
Pollution control	28	21	2	0	10	4	2	0	67
Surveyors/Inspection	39	12	0	2	0	0	2	34	89
Cargo Surveyors	35	0	0	0	0	0	0	0	35
Classification	2	80	0	0	0	0	4	0	86
Insurance	27	0	20	0	0	0	7	0	54
Banking	0	0	0	0	0	0	0	0	0
Ship/cargo Broking	88	0	0	0	7	0	34	27	156
Ship chartering	0	0	0	0	0	0	9	0	9
P and I	104	5	8	0	3	0	3	35	158
Loss adjusters	21	4	0	0	0	0	0	0	25
Legal	115	0	40	0	0	0	7	7	169
Consultants	100	118	0	0	0	10	39	0	267
Marine equipment	20	493	0	69	69	10	0	227	888
Shipbuilders/repair	0	89	0	295	99	20	10	0	513
Federated Ship Co's	106	35	0	0	75	0	18	0	234
Non-Fed'd Ship Co's	138	0	0	0	0	0	20	0	158
Ship management	95	6	14	0	7	7	41	0	170
Crew management	15	0	0	0	0	0	0	15	30
Ships agents	34	0	4	0	4	0	0	21	63
Charitable Institutions	0	0	0	0	0	0	0	0	0
Education & Training	4	0	0	0	46	29	8	0	87
Publishing	0	1	0	0	0	0	0	0	1
Miscellaneous	53	2	3	2	476	21	0	149	706
Total	1335	903	108	369	1209	157	267	699	5047

Source: 1996 Study

Appendix 7 Age Profiles





Appendix 8
Analysis of Yes/No questions in survey

Shipping Company Survey

Response to Selected Questions

Question 2. Are any of these people former merchant seafarers?

Response	No.	% age	Cumulative Per cent
Yes	65	68.4	68.4
No	28	29.5	97.9
Not applicable	2	2.1	100.0
Total	95	100.0	

Question 3. If the answer to question 2 is **Yes**, are any of these former merchant seafarers employed in jobs where their professional seafaring experience is considered to be either an essential requirement for obtaining the job or an advantage in the type of work they are doing?

Response	No.	% age	Cumulative Per cent
Yes	61	64.2	64.2
No	34	35.8	100.0
Total	95	100.0	

Question 6. Does your company employ non-UK former seafarers in any of the jobs listed in 4 or 5?

Response	No.	% age	Cumulative Per cent
Yes	8	8.4	8.4
No	51	53.7	62.1
Not applicable	36	37.9	100.0
Total	95	100.0	

Question 8. Is your Company actually employing **non-seafarers** in jobs where it would prefer to have suitably qualified former merchant seafarers with relevant experience?

Response	No.	% age	Cumulative Per cent
Yes	12	12.6	12.6
No	49	51.6	64.2
Not applicable	34	35.8	100.0
Total	95	100.0	

Question 10. Do you envisage difficulty in finding suitably qualified people with the necessary length of seafaring experience to fill vacancies in your projected total requirement?

In 5 years time

Response	No.	% age	Cumulative Per cent
Yes	24	25.3	25.3
No	34	35.8	61.1
Not applicable	4	4.2	65.3
Missing	33	34.7	100.0
Total	95	100.0	

In 10 years time

Response	No.	% age	Cumulative Per cent
Yes	31	32.4	32.4
No	23	24.2	56.6
Not applicable	8	8.4	65.0
Missing	33	34.7	100.0
Total	95	100.0	

Port Survey

Response to Selected Questions

Question 2. Are any of these people former merchant seafarers?

Response	No.	% age	Cumulative Per cent
Yes	90	78.3	
No	23	20.0	
Not applicable	2	1.7	
Total	115	100.0	

Question 3. If the answer to question 2 is **Yes**, are any of these former merchant seafarers employed in jobs where their professional seafaring experience is considered to be either an essential requirement for obtaining the job or an advantage in the type of work they are doing?

Response	No.	% age	Cumulative Per cent
Yes	89	77.4	77.4
No	26	22.6	100.0
Total	115	100.0	

Question 6. Does your company employ non-UK former seafarers in any of the jobs listed in 4 or 5?

Response	No.	% age	Cumulative Per cent
Yes	12	10.4	10.4
No	72	62.6	73.0
Not applicable	31	27.0	100
Total	115	100.0	

Question 8. Is your Company actually employing **non-seafarers** in jobs where it would prefer to have suitably qualified former merchant seafarers with relevant experience?

Response	No.	% age	Cumulative Per cent
Yes	29	25.2	25.2
No	60	52.2	77.4
Not applicable	26	22.6	100.0
Total	115	100.0	

Question 10. Do you envisage difficulty in finding suitably qualified people with the necessary length of seafaring experience to fill vacancies in your projected total requirement?

In 5 years time

Response	No.	% age	Cumulative Per cent
Yes	48	41.7	41.7
No	39	33.9	75.6
Not applicable	4	3.5	79.1
Missing	24	20.9	100.0
Total	115	100.0	

In 10 years time

Response	No.	% age	Cumulative Per cent
Yes	57	49.6	49.6
No	30	26.1	75.7
Not applicable	4	3.5	79.2
Missing	24	20.9	100.0
Total	115	100.0	

Company Survey

Response to Selected Questions

Question 2. Are any of these people former merchant seafarers?

Response	No.	% age	Cumulative Per cent
Yes	270	38.6	42.2
No	404	57.8	96.4
Not applicable	25	3.6	100.0
Total	699	100.0	

Question 3. If the answer to question 2 is **Yes**, are any of these former merchant seafarers employed in jobs where their professional seafaring experience is considered to be either an essential requirement for obtaining the job or an advantage in the type of work they are doing?

Response	No.	% age	Cumulative Per cent
Yes	229	32.8	32.8
No	470	67.2	100.0
Total	699	100.0	

Question 6. Does your company employ non-UK former seafarers in any of the jobs listed in 4 or 5?

Response	No.	% age	Cumulative Per cent
Yes	37	5.3	5.3
No	182	26.0	31.3
Not applicable	480	68.7	100.0
Total	699	100.0	

Question 8. Is your Company actually employing **non-seafarers** in jobs where it would prefer to have suitably qualified former merchant seafarers with relevant experience?

Response	No.	% age	Cumulative Per cent
Yes	40	5.7	5.7
No	252	36.1	41.8
Not applicable	407	58.2	100.0
Total	699	100.0	

Question 10. Do you envisage difficulty in finding suitably qualified people with the necessary length of seafaring experience to fill vacancies in your projected total requirement?

In 5 years time

Response	No.	% age	Cumulative Per cent
Yes	111	15.9	15.9
No	96	13.7	29.6
Not applicable	28	4.0	33.6
Missing	464	66.4	100.0
Total	699	100.0	

In 10 years time

Response	No.	% age	Cumulative Per cent
Yes	121	17.3	17.3
No	77	11.0	28.3
Not applicable	34	4.9	33.2
Missing	467	66.8	100.0
Total	699	100.0	

Appendix 9

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-
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