



# The Human Factor

A report on manning

**THE HUMAN FACTOR  
A REPORT ON MANNING**

This report analyses data which has been collected by the Association's Ship Inspectors and examines it with the aim of putting into perspective some of the more commonly expressed views about the manning of ships today.

This report is based upon a study of the Club's records which was carried out by the Institute of Maritime Law in Southampton. We wish to acknowledge gratefully the work done by the Institute in preparing their report and to thank them for their continuing co-operation.

*Thomas Miller P&I, agents for the Managers of the United Kingdom Mutual Steam Ship Assurance Association (Bermuda) Ltd.*

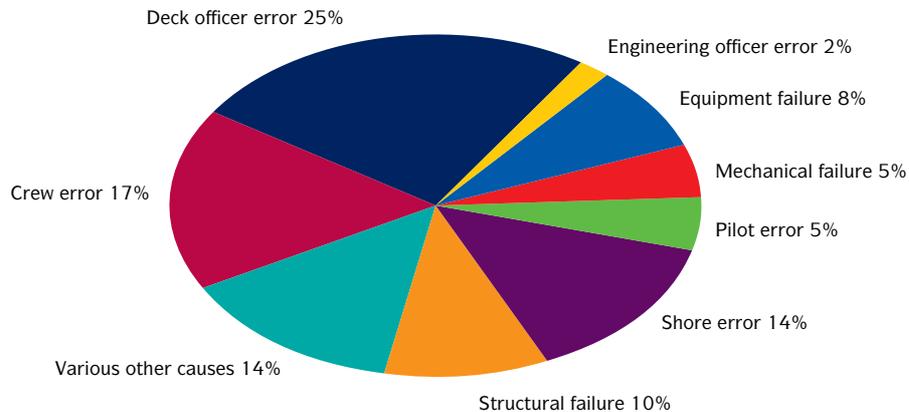
## Introduction

For many years ship inspections tended to concentrate on the physical condition of a ship and little time was spent on what might have been considered to be a more important area for concern – the performance of the officers and crew and the manner in which the ship was operated. The report of the Marine Accident Investigation Board on the “*Marchioness*” and “*Bow Belle*” commented: “for many years there has been a widespread lack of appreciation of operational matters ... a preoccupation with technology and the details of ships’ equipment at the expense of regard for the ship’s operating function as a whole.”

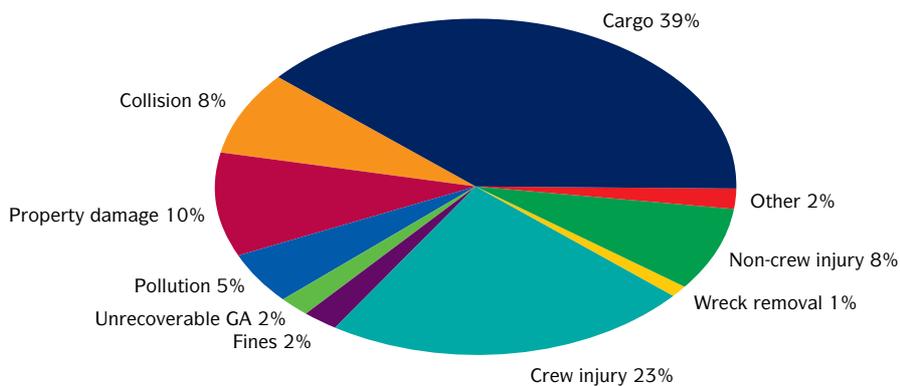
The importance of the human element, or the ‘people factor’ as it is sometimes called, is well established: the Club’s own Analysis of Major claims underlines this significance. Below is a chart which illustrates the main causes of major claims. At least half the claims under review are considered to be caused by human error although in certain types of incident – collisions for example – the proportion is much higher.

Cases of structural failure or of machinery failure may themselves be caused partly or wholly by poor standards of maintenance or bad practice.

**Table 1. Main causes of major P&I claims**



**Table 2. Main types of major P&I claims**



(The figures in Tables 1 and 2 are approximate)

## Manning

Manning has now become an increasingly important factor in the regulation of ships both by international convention and national law, for example:

- The STCW Convention (1978) amended in 1995. (Manning scales and certification.)
- The International Safety Management Code (Chapter IX of the SOLAS Convention.)
- SOLAS (Inter-related questions of crew training and skills in various areas.)
- The US Oil Pollution Act 1990 (OPA90) (Manning and management of the ship both ashore and afloat.)

Each year the Club's Ship Inspectors visit five or six hundred ships and during their inspections attempt, among other considerations, to assess subjectively the standard of crew performance. Each visit offers also an opportunity to gather information about officers and crew in terms of nationality, age, language and under other significant headings. Since January 1993, the inspectors have been routinely collecting such information. Samples of the questionnaires used are attached. (Appendices A & B.)

Over the twelve month period under review a total of 555 ships were visited and detailed information about the officers and crew was recorded, thus providing a snapshot of the manning situation in a substantial sample of ships from the current Club fleet. The data that was collected has been analysed and reviewed by the Institute of Maritime Law in Southampton and by the managers' agents in London. The purpose of this report is to present the data in an objective manner, attempting to put into perspective some of the views most commonly expressed about the manning of ships today.

The term 'human element' is now commonly used but there are several constituent factors which are each worthy of separate consideration. Fatigue, for example, undoubtedly plays a significant part in accidents. Ships are required to operate twenty four hours a day and so also are ships' crews. The effects of working around the clock and the disturbance of the normal rhythm of people's waking days in the maritime industry is a field worthy of further research.

### Human Factors

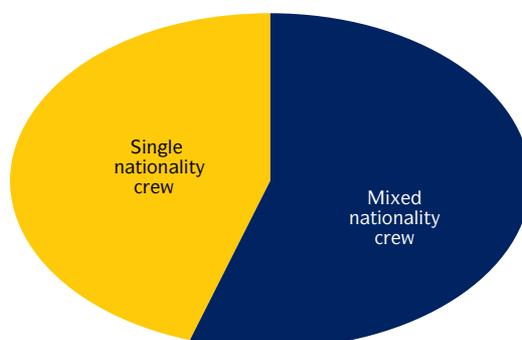
- Fatigue
- Experience
- Morale
- Conditions of service
- Motivation
- Environment
- Loyalty
- Language
- Training
- Management policies
- Standards of certification

The quality of a ship's crew has a direct bearing on the ship's overall performance. It is not necessarily true to say that sub-standard ships always have sub-standard crews but a sub-standard crew almost certainly means a sub-standard ship. Generalisation is dangerous. For example, mixed crews may in general be thought to be undesirable but there are undisputably many ships with mixed crews or third world crews which are operated to the highest standards. In the 1990s, ensuring that a ship is properly as well as economically manned, is not easy. Shipowners regularly delegate specific tasks to independent agents. The use of such agents and, in particular, the use of crewing agents, can in some instances distance the shipowner from his crew and the crews themselves may lose any sense of identity with the owner's interests.

The relative decline in the numbers of ships sailing under traditional maritime flags, together with the associated or perhaps coincidental reduction in the numbers of experienced seafarers trained in those countries, has altered career patterns with changes in responsibilities, career development, depth of training and in the levels of experience to be found among officers and ratings.

The need to reduce costs is evident in a climate of depression and overtonnage. Owners have always used cheap crews and there is nothing new about the employment of mixed crews. The inspectors found that, of the ships visited, 56% had mixed crews.

**Table 3. Nationality of full crew**



When the nationality of officers and crews was examined separately, it was found that 32% of ships had officers who were predominantly from the European Union and 30% from Eastern European countries. Ratings, on the other hand, were more likely to come from the Far East and Asia: in 32% of ships, the ratings were predominantly from South East Asia with 12% from the Far-east and 7% from the rest of Asia. (See Tables 21 and 23.)

Two tentative conclusions may be drawn. Firstly, a ship may typically have European officers and South East Asian ratings. Secondly, a substantial percentage of officers and ratings are recruited from less expensive sources. Given the relatively low level of sub-standard ships, there is clearly no evidence to support the view that ships with cheap crews are necessarily poor ships.

The decision as to where to flag a ship is governed by several factors including taxation and administrative convenience, but another point to be taken into consideration is the law of the flag state and whether this will restrict the free choice of nationality of the crew. Some flag states seek to protect their own seafarers by requiring a proportion of the officers and ratings of registered ships to be nationals of that state. This is not a universal approach and it is broadly true that the more liberal flag states rarely regulate crewing in this way.

### **SUMMARY**

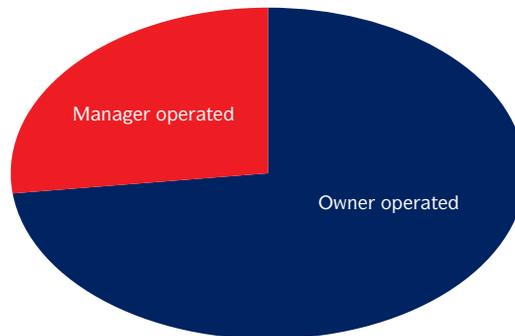
Mistakes are a part of human experience. However, good management policies, effective training and the possession of appropriate qualifications and experience are all factors which may be expected to reduce the incidence of human errors.

- An undermanned or badly manned ship is sub-standard.
- A ship with serious manning deficiencies is unseaworthy.
- Manning is increasingly a factor in the regulation of shipping.
- Manning and management have a clear significance in assessing the ship's overall quality.

## Directly and indirectly managed ships

A high percentage of the ships visited (73%) were owner operated, although this does not necessarily mean that the owners made no use of specialised agencies, such as crewing agencies. The remainder (27%) were considered to be exclusively operated by a professional management company on the owner's behalf.

**Table 4. Operator**



It is widely supposed that management companies may employ crews that do not display the committed involvement traditionally expected. In this connection, the Ship Inspectors examined two matters:

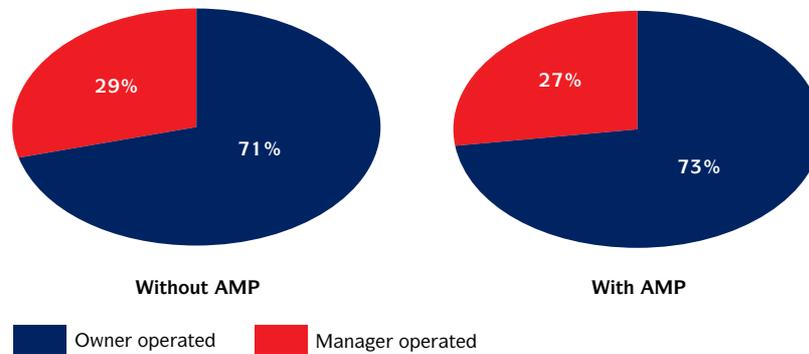
- The existence and effectiveness of management policies and
- The allocation of responsibility for the vessel's current condition.

### MANAGEMENT POLICIES

Nowadays an increasingly common management tool is the policy statement. This concept finds a place in modern legislation and in the context of shipping this includes the ISM Code and Vessel Response plans (SOPEPS) as now required under the United States OPA90. The assumption lying behind the adoption of management policies is that increased understanding of responsibilities and systems will lead to better performance. However, the mere existence of a written policy is not sufficient: to be effective, the policy must be active. A written plan of action in case of collision or pollution for example, is of little value if it is known only to the master and shore staff.

Most ships have, or claim to have, management policies. The Ship Inspectors found that most ships (84% owner operated and 82% manager operated) have management policies in place. Of these, 97% of all ships (97% owner operated and 98% manager operated) declared such policies to be active. It is possible that this figure may be underestimated since some operators may in fact operate such policies without describing them as such. Furthermore, since the programme of visits was designed to assess the standards of entered ships, it was in part used to target groups of ships that were considered likely to have problems. It would seem likely that the true picture for entered ships may be even better.

**Table 5. Active Management Policies**



AMP: Active Management Policy

The existence of Active Management Policies (AMP), whether on directly or indirectly operated ships, provides only one indication of the quality of management, including crew management. Size and standing must play a part. Many top quality leading ship management companies like many leading owners, will have quality assurance programmes, traditions of good management and a well incorporated sensitivity to reputation, all of which will combine to produce effective management systems. Active Management Policies clearly impact upon the quality of manning. There is however, little to distinguish in this respect, between owner or manager operated ships.

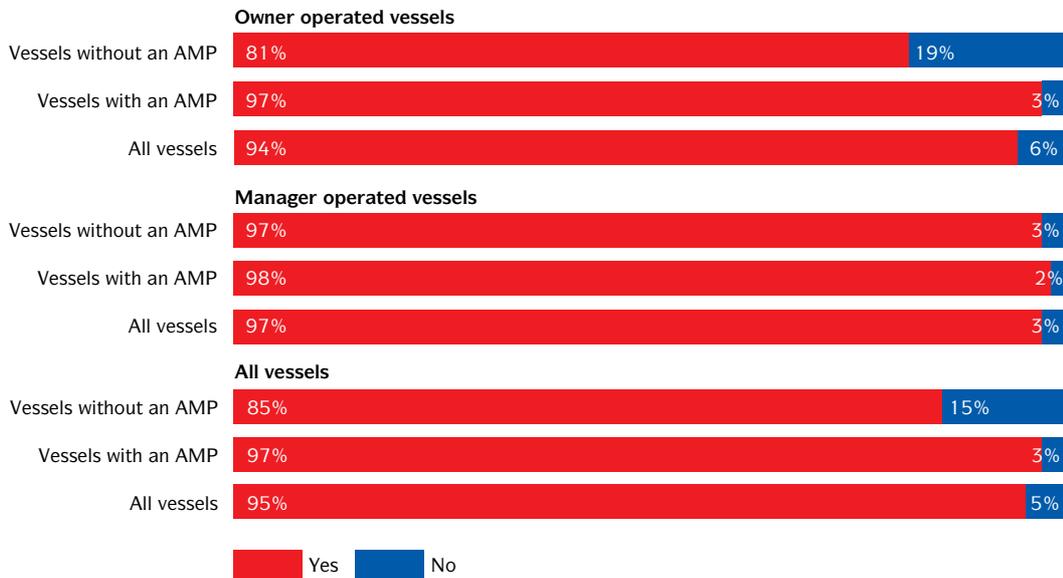
Active Management Policies can therefore be seen as an indication as to whether each management system (either owner operated or manager operated) accepts and actively responds to the responsibilities for safety and operational standards. As such, it may be taken as some indication of crew efficiency and possibly crew morale. The benefits of good communications with and the guidance of officers through an effective management policy are likely to be considerable. The existence of an Active Management Policy would also appear to reduce the distance between operator and employee since the percentage of senior officers questioned believing that they act with the owners' interests at heart, increases with an Active Management Policy in place, as illustrated opposite.

Loyalty, or the lack of it, clearly has an important impact on the performance of ships' crews. The growing practice of using crews from crew manning agencies underlines this factor – is the seafarer loyal to his employer, the manning agent or the operator?

As might be expected, very few officers admitted to believing that they did not have the owner's interests at heart. What was more surprising was that a significant minority felt unable to be positive: 5% of Masters felt that they did not have the owner's interests at heart. This figure was almost halved when there was an Active Management Policy in place. Again, contrary to popular expectation, the numbers of disaffected masters were lower when the ship was manager operated.

**Table 6. Loyalty**

*The inspectors asked each Master to state whether he felt that he had the owners' best interests at heart.*



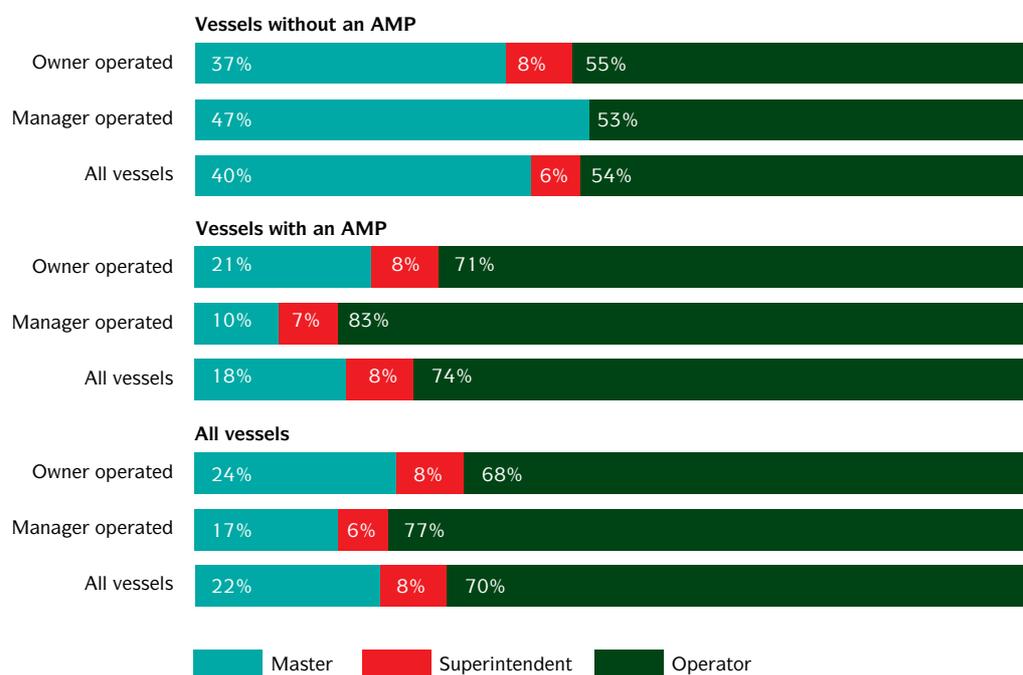
AMP: Active Management Policy

The conclusion could be that professional management of crews assists the commitment of those crews and that this professionalism is to be found at least as often among management companies as among shipowners who directly operate their ships. There is certainly no evidence that indirect management makes for crews with poor attitudes.

**RESPONSIBILITY FOR SHIP’S CONDITION**

The Ship Inspectors investigated the question of responsibility for the condition of the ship. The point at issue here is whether the operator, be he owner or manager, has established a sound management system in order to ensure the proper maintenance of his ship or whether its condition is attributable only to the efforts of an individual, either the Master himself or a Superintendent. The method adopted is to record the perception of the Inspector as to where the responsibility for the condition of each individual ship lies. It is perhaps not surprising that, in modern times, the efforts of individuals are perceived by experts as having much less impact in practice than impersonal management controls or systems. Modern management, in ships as in other undertakings, generally proceeds by the use of effective systems in preference to relying on brilliant individuals. In 70% of all ships, the condition was seen as attributable to management controls, with a slightly lower proportion of the larger group of owner-operated ships (68%) than manager-operated (77%). These figures rose in ships with Active Management Policies – to 74%, 71% and 83% respectively.

**Table 7. Condition of ship attributed to Master, Superintendent or Operator**



AMP: Active Management Policy

Where an individual was seen as responsible for the ship's condition, that individual was about three times more likely to be the Master than the Fleet Superintendent (22% of all ships, 24% of owner-operated vessels, 17% of manager-operated as against 8%, 8% and 6% for the Fleet Superintendent). Where there was an Active Management Policy fewer ships were perceived to be the responsibility of individuals, but again, more were seen to be the Master's responsibility than the Fleet Superintendent's (18% for all ships, 21% for owner-operated ships and 10% for manager-run vessels, as against 8%, 8% and 7% respectively).

The Superintendent's role is therefore generally seen as less significant and in all cases the management role is seen as considerably more important on a ship with an Active Management Policy than on one without. Furthermore, the management role is perceived to be of even greater significance when comparing owner operated ships with manager operated ships when there is an Active Management Policy in place.

The fair conclusion is that individual efforts and attitudes are less significant in all ships but particularly so where there is an Active Management Policy. The operation of ships in the 1990s is determined more by good systems than by good people, whether afloat or ashore.

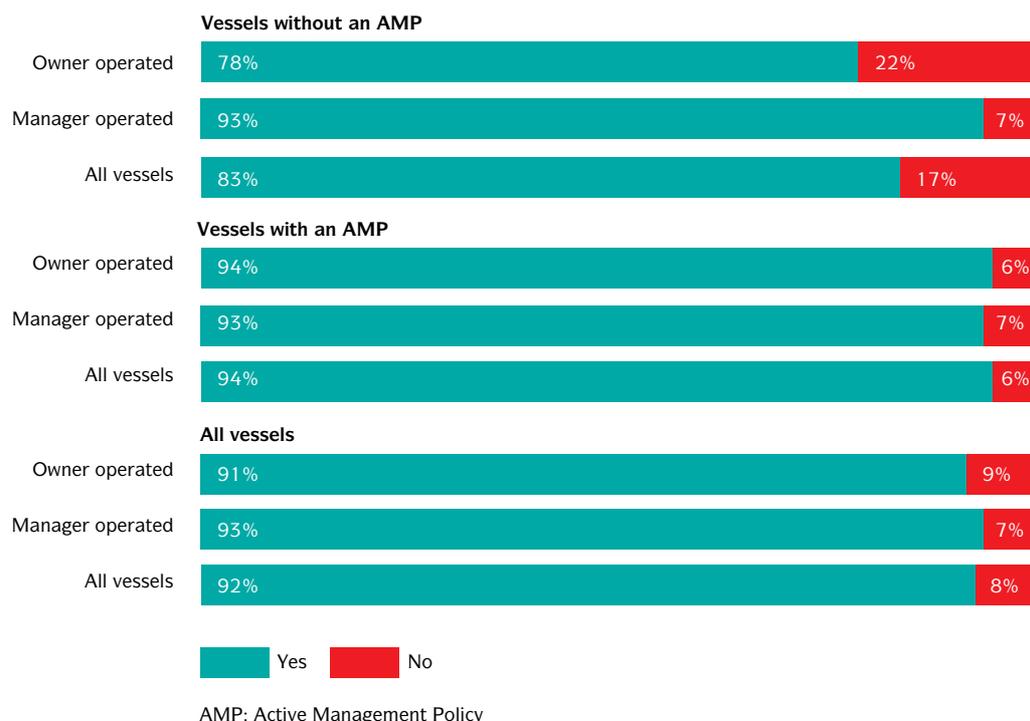
### **MANNING CREW SCALES AND SOURCES OF CREW SUPPLY**

The decline of the maritime industry in some traditional areas, coupled with the associated decline in the numbers of seafarers from these countries and the

continuing need for shipowners to control crew costs, are said to lead to ships that are undermanned, or manned by inadequately qualified officers. “Manpower in Crisis”, an ISF/BIMCO joint study, concludes that the industry faces the risk of a serious shortfall in officers and ratings by the turn of the century. Quality is also seen as a problem. An internal Club report on the Philippine Merchant Marine underlined this problem, finding that “the system could not supply the qualified and quality personnel” and that “demand, especially for officers, is high and quality is regularly overlooked in the need to fulfil owners requirements”.

The issues of the experience of officers will be considered later. In this section we shall examine the question of compliance with manning scales. The majority of the ships visited under the Ship Visit Programme were fully manned. Well over 90% of ships with a management policy were found to be manned in compliance with the governing scales – that is to say, the manning scales laid down by the flag administration. No detailed information is available on exemption from any requirements. Flag states generally allow for the formal relief of their ships from particular manning requirements in special circumstances. A vessel with a proper exemption certificate in respect of, say, a Second Engineer, will count as fully-manned when it sails without a Second Engineer. It is widely understood that many flag states will permit exemption in circumstances where officers of a particular type or grade are hard to come by: there is, however, no published evidence that such practices lead to dangerous abuses of the system.

**Table 8. Compliance with manning scale**



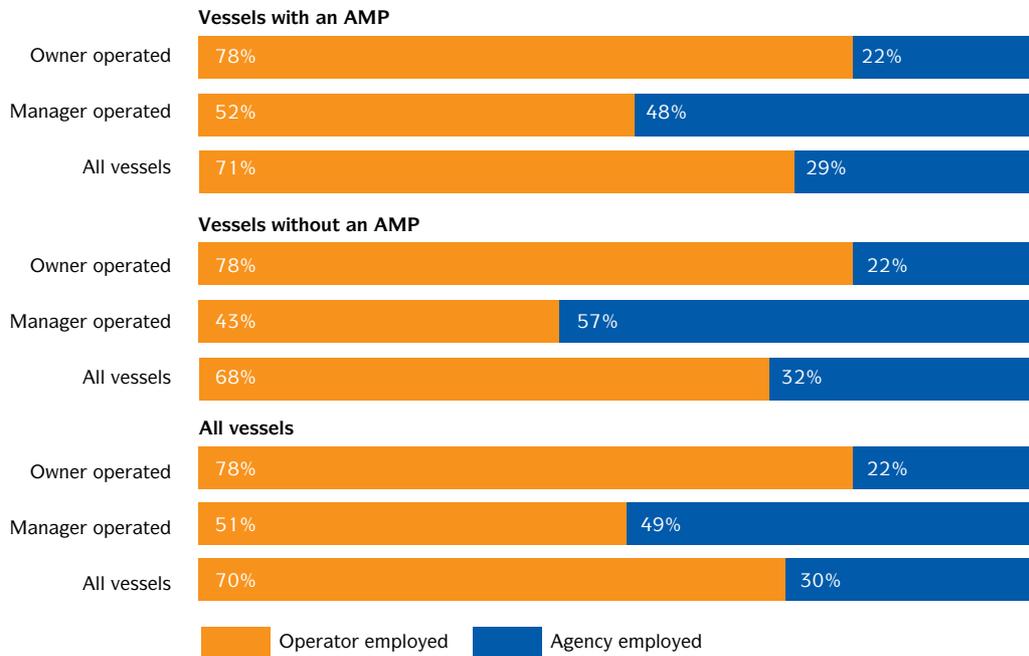
Even where compliance with manning scales exists at the high level that it does, it can be seen from the table above that the existence of an Active Management Policy significantly improves the rate of compliance on an owner operated ship. Management-operated vessels score at a high level regardless of the existence of such a policy. The Ship Visit Programme does not provide information as to the source of the Certificates of Competency held by the officers and ratings of the ships visited. There has been, of course, a wide variation in the training and possibly the standards generally applied in different countries. The international convention governing the matter, the Convention on Standards of Training and Certification of Watchkeepers 1978 (STCW) has been revised in 1995. The contents of these recent developments are contained in Appendix D of this report.

Since the introduction of the STCW convention in 1978, doubts have from time to time been expressed concerning the standards applied by some of the signatory administrations. It is the aim of the revised convention to improve the standards of compliance by all flag states.

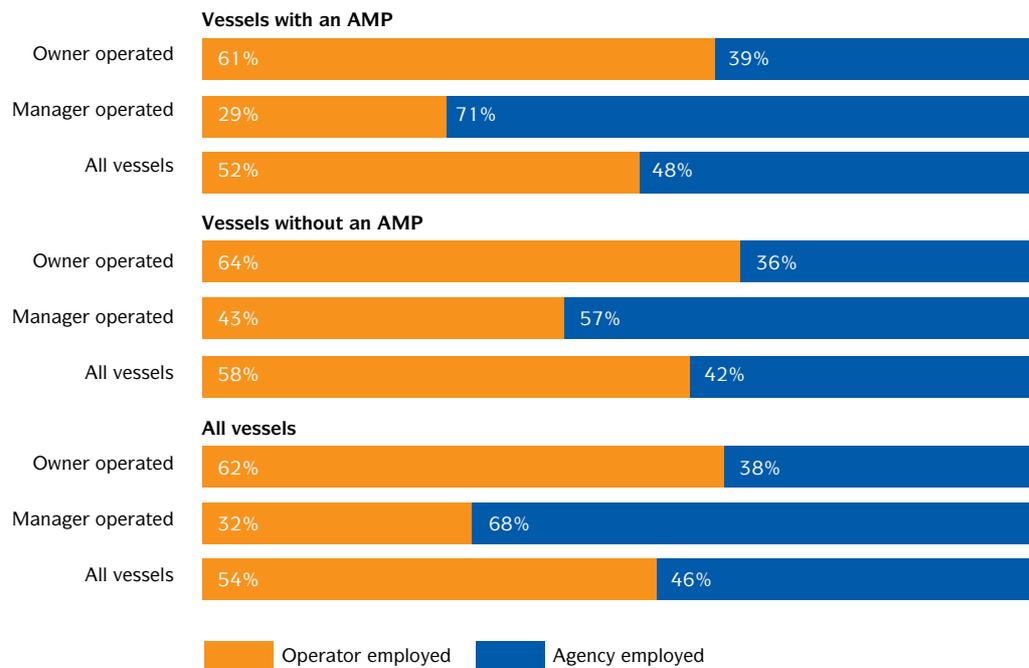
The popular view of manning agencies tends to be negative but they are an important source of supply of officers and ratings today. The majority of seafarers registered to manning agents are from third world countries. Undoubtedly, some manning agencies have on their books numbers of ill-qualified and poor quality seafarers and possibly many of those seafarers are not readily employable on deep-sea shipping. Nonetheless, many manning agencies also handle high-quality, well-qualified seafarers and they are an established feature of the maritime scene with the possibility of becoming associated members of the ISMA. Where evidence of quality improvements exists, including manning, some Hull and Machinery underwriters are starting to give discounts on premiums. It is hard to envisage effective management of shipping in the 1990s which does not, at some time and to some extent, make use of the services of manning agencies. As the tables opposite show, entered ships visited demonstrate substantial reliance on crewing agencies with some 30% of ships finding their officers from manning agencies and 46% their ratings.

There are clear differences in practice between owner-operated and manager-operated vessels. The former show a significantly lower reliance upon agencies whereas ships managed by management companies take half their officers from manning agencies and more than two thirds of their ratings. The picture is affected by the existence of Active Management Policies, but not to such an extent that conclusions can be drawn. Given the very high level of compliance with flag-state manning scales, it cannot be the case that shipowners and operators are using manning agencies to avoid their obligations as to full manning. Nor, as we have seen, is there any evidence that managed ships are of significantly poorer quality than directly operated ships. It would seem to follow that the use of manning agencies does not of itself predict sub-standard shipping. Over 90% of ships inspected are manned at levels required or authorised by flag states and the majority of operators employ crew – officers and ratings – directly.

**Table 9. Employment of officers**



**Table 10. Employment of crew**



AMP: Active Management Policy

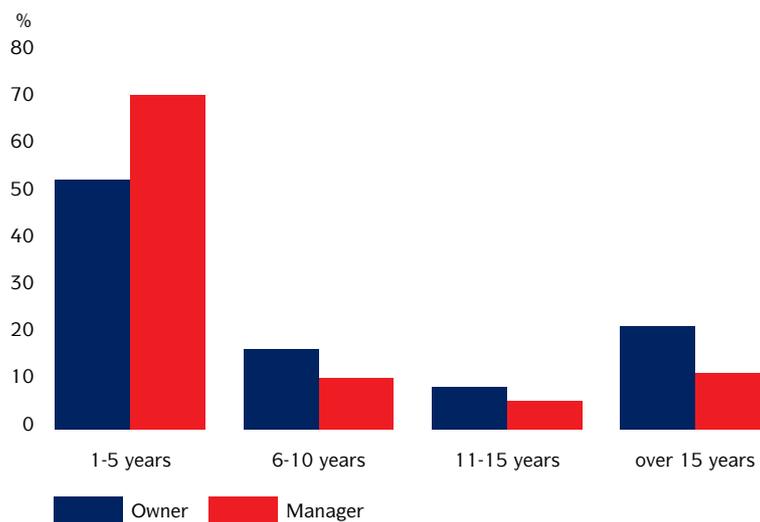
## Service and experience

Are ships' crews today less experienced or less committed than their predecessors and have skill shortages and changes in attitude destroyed the professionalism that once typified the maritime industry? The Ship Inspectors have gathered much information which bears upon these questions from which some relevant conclusions can be drawn.

### LENGTH OF SERVICE WITH ONE EMPLOYER

It is perhaps unsurprising to discover that the lengths of service of officers on owner-operated vessels tends to be greater than for officers on manager-operated vessels. Ship management companies may perhaps be thought to have less reason to seek to establish a pool of committed officers than shipowners. This difference might be considered also to reflect a difference in attitudes between owners and managers to training as well as to personnel management – the former accepting a responsibility for developing the general body of trained seafarers for the industry, the latter, as service providers, perhaps not perceiving that as one of their roles.

**Table 11. Length of service with current employer**



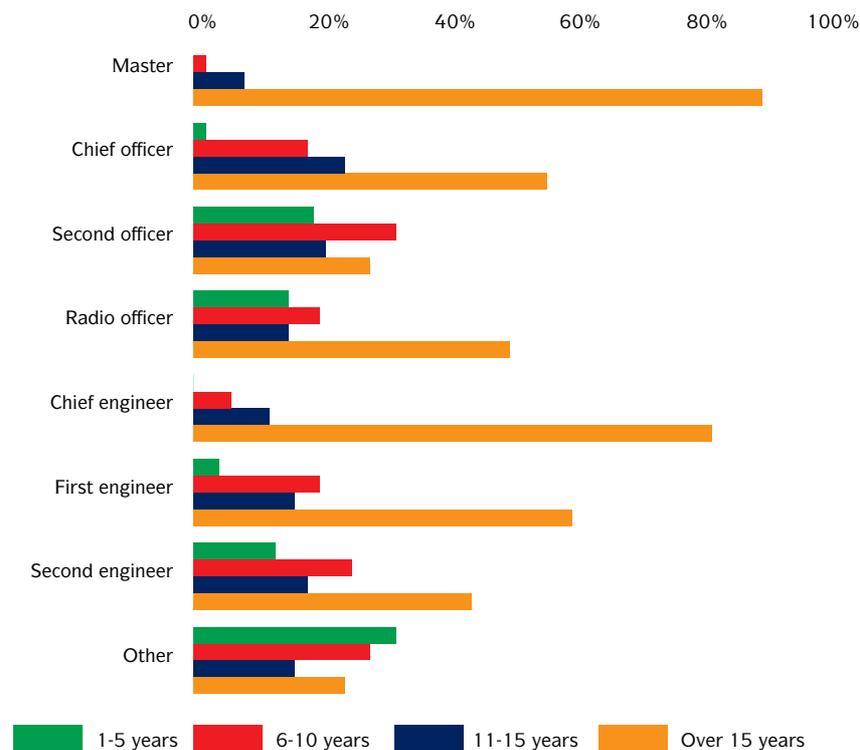
The relatively high number of officers on owner-operated ships who have served over fifteen years with the same operator must have spent much of their adult working life with the same employer, and that working life must have included periods devoted to training for qualifications and promotion. In contrast, unless the 71% of officers serving under five years with a ship-manager are all junior officers, which is unlikely, then it seems that manager-operators prefer to hire fully qualified personnel, whether directly or from agencies. This may mean that owners are placing their confidence in the establishment and maintenance of a pool of officers while managers must take the chance on the availability of

trained personnel on the employment market. Two conclusions may be drawn. First, these two policies – if they indeed exist – appear to be in conflict, since the ship managers rely upon the shipowners to bear the responsibility of training officers. Second, it may become increasingly difficult to keep up a policy of not training and maintaining a pool of officers, given the predicted shortage of qualified seafarers by the turn of the next century. There is no evidence that such practices lead to undermanning, but the situation will require continued close attention. It should, in fairness, be recorded that there is clear evidence that many leading ship managers have recognised this and are now developing training programmes and building up a pool of permanent employee officers.

### SEATIME AND CAREER PROGRESSION

What of the officers themselves? Again, it is a popular conception that ships' officers are in general less experienced than they were some years ago and that, more specifically, they reach the higher ranks more quickly, no longer having to serve for quite so many years in junior ranks. The Ship Visit Programme provides much relevant information. The most general point that may be raised refers to the sea-time of the officers.

**Table 12. Years of service at sea**

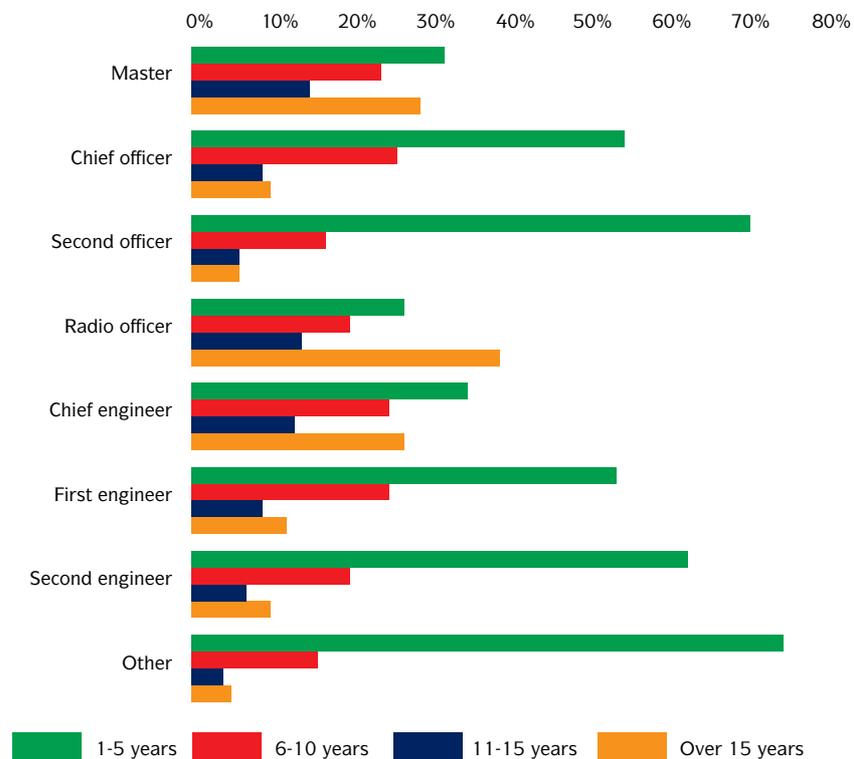


This table shows the results of questioning officers, half of whom had sea-time in excess of 15 years. It clearly cannot be said that the ships visited in the programme had inexperienced officers. Almost exactly 90% of the 549 Masters in the survey had more than 15 years experience, which is unsurprising. Chief

Officers and Second Officers showed a steady diminution in that category (55% and 29% respectively). The position below deck was slightly different, with 82% of Chief Engineers showing more than 15 years sea-time, and First and Second Engineers showing 60% and 43% respectively. Such variations presumably represent differences in market and in the career moves and expectations of officers of each cloth. It may be that more Chief Engineers than Masters are leaving the sea before normal retirement, with the converse pattern present among the lower ranks.

The relatively low proportions of Second Officers and Second Engineers (19% and 13% respectively) in the first category of sea-time (1 to 5 years) probably reflects the reduction of the number of those coming into the industry. One reason for this has been the decline in the number of cadet places in training schools in traditional maritime countries. This is, of course, a matter for serious long-term concern.

**Table 13. Years of service in present rank**



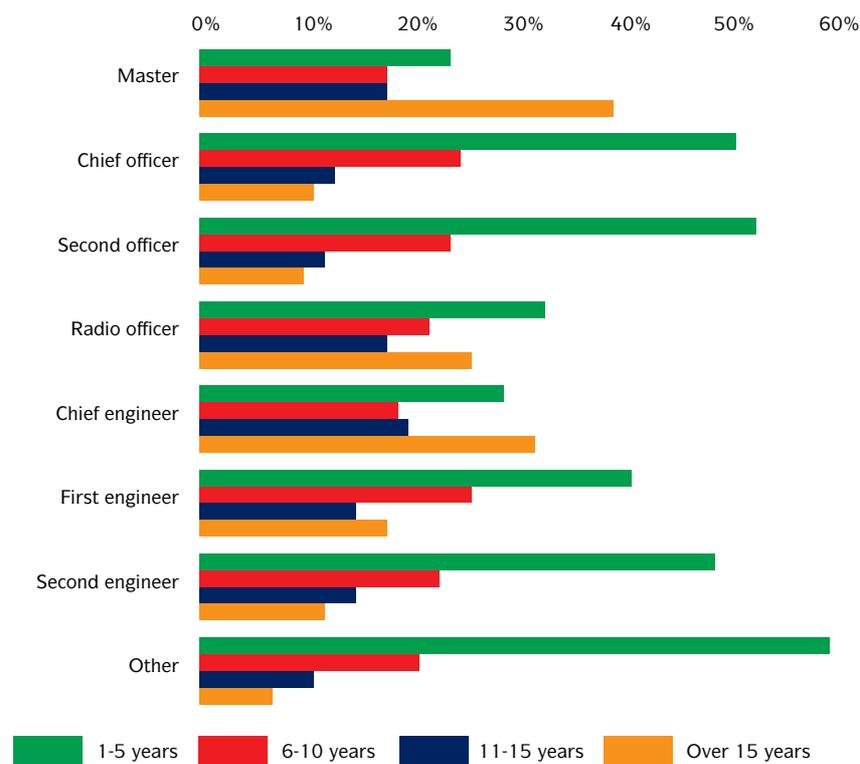
When considering Table 13, the figures for 1st and 2nd Engineering Officers are similar: 83% of 2nd Engineers had less than 10 years experience at that rank whereas the equivalent for 1st Engineers was 79%.

### **CERTIFICATES AND PROMOTION**

Traditionally, especially in large shipping companies, an officer with a Master's Certificate might expect to serve for several years as a Chief Officer before obtaining command. It is often asserted that such a system no longer applies.

Skill shortages have ensured that we have moved, it is sometimes said, from an industry where officers were technically over-qualified to one where they are barely qualified. The Ship Inspectors did not gather information directly on this point (for example, by discovering how many officers held superior certificates) but did produce some relevant information. The table below gives, for each rank, the number of years since obtaining the individual's current qualification. While there may have been changes in the relationship between qualification and rank, the traditional pattern has not entirely disappeared: 39% of Masters have held their certificate for more than fifteen years, while only 28% have more than fifteen years' service in that rank.

**Table 14. Years since obtaining current qualification**



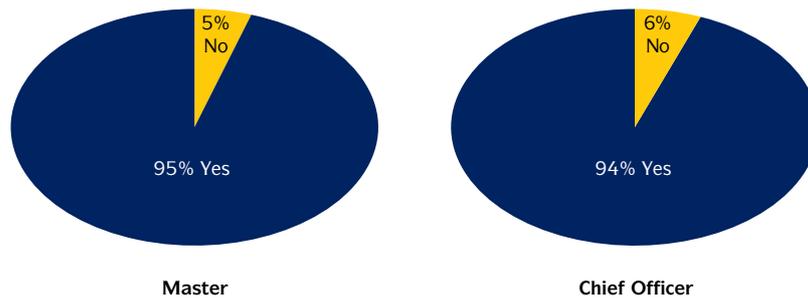
Similarly, 32% of Chief Engineers have held a Chief's certificate for more than fifteen years, with 27% holding the rank for more than that period. Other ranks show similar differences. The figures are not of course precise, but they are not consistent with immediate promotion on qualification.

There is no evidence of over-rapid promotion or of serious dilution of qualifications or of experience.

## CARGO EXPERIENCE

The safe carriage of cargo is the main purpose of commercial shipping. Failure so to do can be both dangerous and expensive. The Club's "Analysis of Major Claims" 1993 showed that the cost of cargo claims by far exceeds the cost of claims in any other category and that, even in the context of very large claims, dominated as it is by major disasters, cargo claims accounted for 20%. The task of safe carriage requires technical skill and relevant experience. The Ship Visit Programme sought information as to the previous experience of the Master and Chief Officer of the cargo carried when the ship was visited.

**Table 15. Previous experience of present cargo**

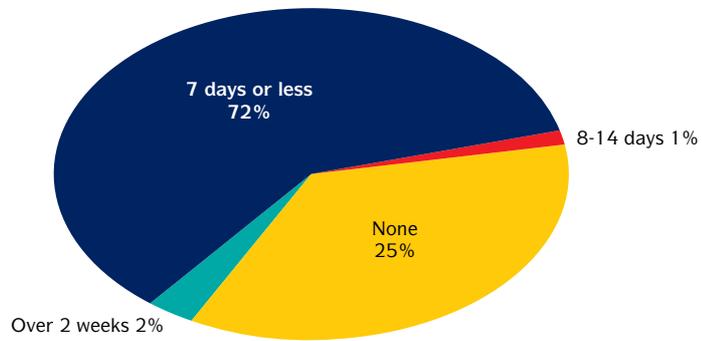


The great majority of Masters (95%) and Chief Officers (94%) did have relevant experience of the cargo carried. The figures were effectively the same for owner-operated and manager-operated vessels, with a very slight diminution of experience for Chief Officers in manager-operated ships. Given the apparent practice of Ship Management Companies of recruiting officers as required rather than establishing an available "pool", one might have expected a very much larger difference in cargo experience than these figures show. There is a slight but consistent improvement in cargo-experience when the vessel, however managed, has an active management policy.

## HANDOVER

Officers also need to develop experience of the ship for which they are responsible. Again, this may not be as straightforward as it sounds. Some operators achieve this by making a practice of sending their senior officers back to the same ship for several tours of duty. Also, much relevant experience may be acquired in different ships of the same or very similar type. On the other hand, different ships, or ship types, may require very different periods of familiarisation. The same is true of different ranks and functions aboard ship. One indicator of the development of experience may be the handover period, which is, in effect, a concentrated period in which knowledge is acquired. In hard economic times, it may be tempting to regard handover periods as unproductive time. Skill shortages, the greater use of Manning Agencies and Ship Management Companies all may tend to a similar result.

**Table 16. Officers' handover periods**



Information on handover periods derived from the Ship Visit Programme is given in the table above. The picture it presents is quite consistent. At every level, about one quarter of the officers, above and below deck, have no handover period at all and the great majority of the rest get a week or less. It would seem that lengthy handover periods are not regarded as an important way of developing experience with ships.

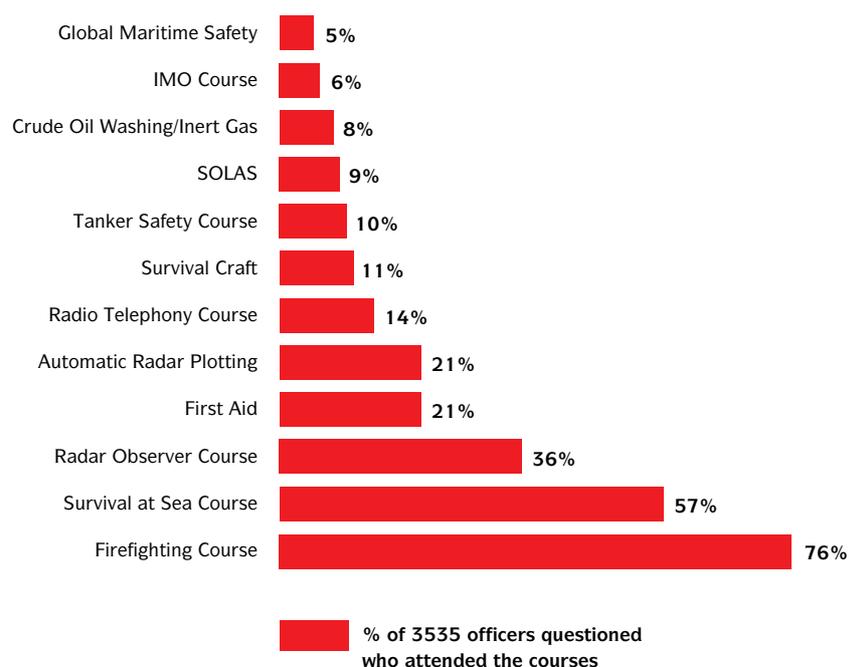
## Training and endorsements

We have seen that the vast majority of ships visited in the Ship Visit Programme were fully manned by a complement of properly certificated officers in accordance with the requirements of the flag state. This includes circumstances where the vessel is properly exempted from the requirement to carry particular officers. The holding of a certificate of appropriate class is not, however, all that is expected of an efficient ship's officer. They will also attend specialist courses to improve their skills and knowledge and, where appropriate, seek endorsement of their certificates to increase their formal competence.

### TRAINING

In the same way that regular maintenance is required for ships, it is also highly desirable to provide the same for crews through the system of training and endorsements, a system envisaged by STCW. The importance of training is widely acknowledged, yet in difficult times it is often first to fall under the economic knife. The relevance of training and endorsements to the quality of shipping seems clear. Apart from its relevance to appropriate certification, adequate training should increase competence and, indeed, confidence among officers in their ability to run the ship and to handle emergencies. It may not be too much to relate continued training to the reduction of human error, the main reason for casualties. Finally, it may be that high levels of training can be taken to indicate high levels of commitment. The next table indicates what courses were attended.

**Table 17. Training courses attended**



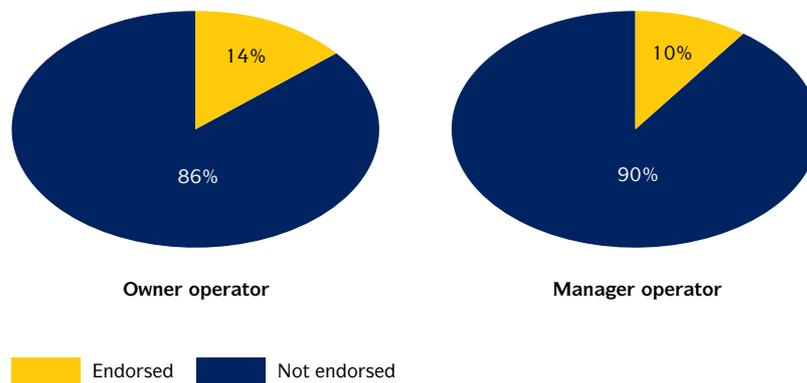
The Ship Inspectors discovered that virtually all officers attend training courses. There is no discernible difference in this area between owner-operated and manager-operated ships. It would appear that both types of management encourage training courses equally. In the period under review some 3535 officers attended courses and 57% of them had attended 3, 4 or 5 different courses. Only 18% had attended only one course. In all some 47 different training courses were attended.

By far the most popular courses are firefighting, survival at sea and radar observer courses, all of them of high significance to casualties and disasters. But the variety of courses attended is large. It is also possible that there was a degree of under-reporting in this area.

### ENDORSEMENTS

As is well known, the endorsement system, which is central to the approach of the STCW, enables officers to obtain formal additional qualifications which entitle the holder to undertake particular responsibilities. In the period under review, the Ship Visit Programme found three types of endorsement among the 3576 officers encountered. The endorsements were: Dangerous Cargo Chemical (DCC), Dangerous Cargo Gas (DCG) and Dangerous Cargo Tanker (DCT). In all, 575 endorsements were found, held by 464 officers (13% of the total). As might be expected, proportionately more endorsements were held by masters – 74 out of 470 masters (16%). Most officers (78%) held only one endorsement but 19 officers (4%) held three endorsements and 81 (17%) held two. The most popular was DCT, held by 349 (75%) of officers, followed by DCC (120 officers or 26%) and finally DCG (106 officers or 23%). As the next table shows, slightly more officers carried endorsed certificates in owner-operated ships than in manager-operated ships. In line with other results, the existence of an Active Management Policy was associated with a higher level of endorsements.

**Table 18. Officers holding endorsements**



Endorsements were also related to the nationality of the holder. This information was considered alongside other information relating to nationality and language. It was found that Greece provided the largest number of officers with endorsed certificates, although Greek officers were the largest nationality group in the group of 3576 officers and in proportionate terms showed just below the average of 13% overall. South Korean officers with 26% had double the average proportion with Japanese officers close behind at 22%.

Few general conclusions can be drawn. The need for endorsement of a certificate must relate directly to the sort of work that is done, or expected to be done, by the officer concerned. Some indication of the success or importance of the endorsement system might be derived from comparing the holding of endorsements with the type of post held by the holder. As yet the Ship Visit Programme has not sought that information. But if the holding of endorsements can be taken to indicate high levels of professionalism among officers, and therefore better, more efficiently operated ships, the significance of an Active Management Policy can be demonstrated.

## Language and nationality

The majority of all crews are mixed and this is neither new nor surprising. In some quarters in recent years, it has been suggested that a range of serious risks can be attributed to mixed crews. While it cannot be denied that mixed crews present problems not found among crews of a single nationality with a common language, such assumptions may be proved to be too simple. The fact that so many ships are crewed in this way itself argues against such conclusions. From the Club's Ship Inspection Report (1995), it is evident that there is no direct relation between mixed nationality crews and ships attracting adverse reports.

The Ship Inspectors obtained a great deal of information about the nationality of crews. Not only were the crews as a whole examined, but the officers and ratings were looked at separately. This gives greater precision to the general idea of mixed nationality. A ship whose officers are all Greek and whose ratings are all Filipino is properly described as having a mixed crew, but presents a very different proposition to a vessel whose officers and ratings, as groups, both come from two or more countries. The programme also identifies dominant as well as single nationality within the groups. Again, this is helpful, for example, if one officer is Italian but all the other officers are Greek, then such a ship can sensibly be considered alongside one in which all the officers are Greek. It is essentially a Greek-officered ship and it can and should be distinguished from one where the mix of nationalities is such that no dominant group can be identified. Finally, for the sake of clarity, nationalities have been grouped in this report into geographical areas.

Mixed crews may present a variety of problems, but foremost among them is language. It is not merely a matter of, as the oft-quoted remark has it, that in time of crisis people "panic in their own language" – a comment regularly justified by reference to the tragedy of the *"Scandinavian Star"*. Orders must be clearly understood to be obeyed and units or groups aboard a ship have to be able effectively to communicate in order to operate efficiently. As the Donaldson Report recommended:

**"...IMO is pressed to review the difficulties of inadequate communication between crew members and to set new language standards for communication between all officers and crew. Furthermore, it should ensure that crew members are as sensitive to the safe operation of the vessel in port as they are at sea, with particular attention being paid to proper loading and discharge procedures and safe bunkering practice."**

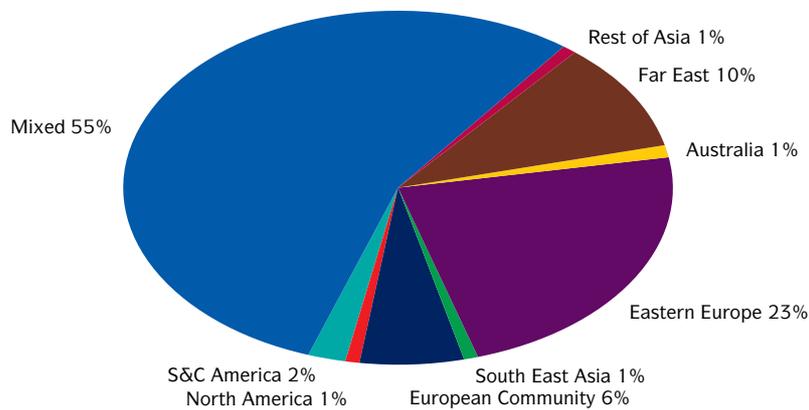
Finally, the ship must be able to "communicate externally" in a language that can be understood. The Ship Inspectors addressed all these issues by examining the use of the declared "working language" among the crew and among officers and ratings separately. In this context, the wide use of English as a medium of external communication requires that skill in that language also be investigated. This the Ship Inspectors have done.

There is a view that multi-racial crews should be replaced by single or bi-national crews, and that the officers should be all or dominantly of one nation and the ratings likewise. The data gathered on crew complements by the Ship Inspectors would seem to indicate broad agreement with this proposition. There remain however distinct differences between the nationalities of officers and ratings as groups, emphasising the importance of the interface between officers and crew in the solution of communication problems aboard ships. In practice, such problems are well known and readily addressed aboard ships. Some solutions are inherently risky, in particular those which identify one member, or a very few members, of either group as the “communicators”, because of their particular language skills. This practice cannot be ideal in times of crisis.

**NATIONALITY OF CREW**

The table below shows the result of the investigation into crew nationality carried out under the Ship Visit Programme during the period under review. The majority (56%) of the 555 vessels visited had mixed crews. The only substantial group of single nationality vessels (126 ships representing 23% of the total) was from Eastern Europe. Occasionally, the degree of mixture caused difficulties for the Inspector in the programme. Where the crew was mixed, the procedure was to then identify the dominant nationality. In two cases this proved impossible for the ship as a whole.

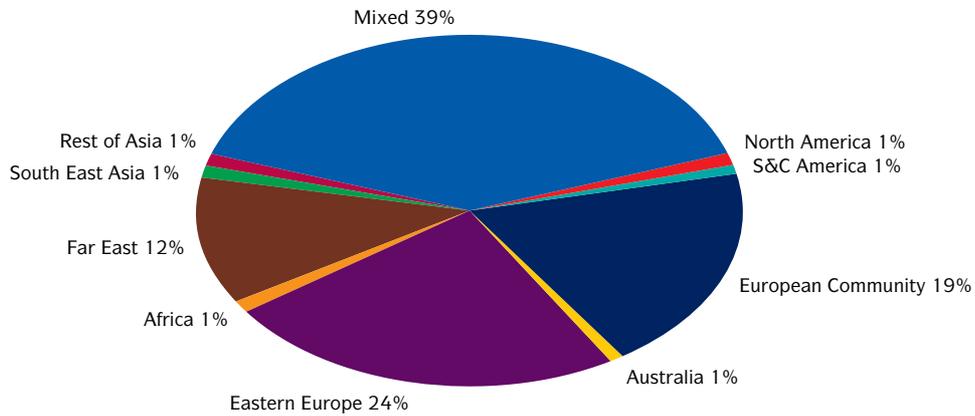
**Table 19. Nationality of full crew**



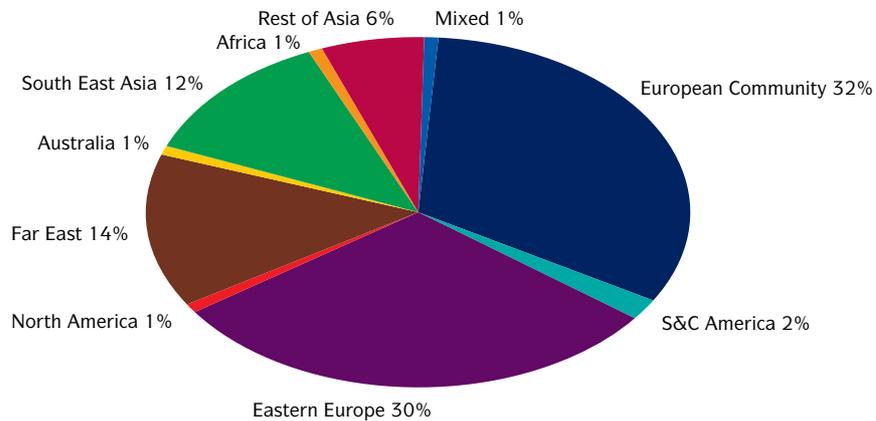
**NATIONALITIES OF OFFICERS BY REGION**

A significant percentage of ships had officers of a single nationality (61% of the whole). On the remaining ships visited (39%), the officers as a group were of mixed nationality. Most ships with an officer group of mixed nationality showed a clear dominant nationality. To present the point positively, 99% of ships were manned by officers with a single or a dominant nationality.

**Table 20. Officer nationality by region (single nationality)**



**Table 21. Officer nationality by region (dominant nationality)**

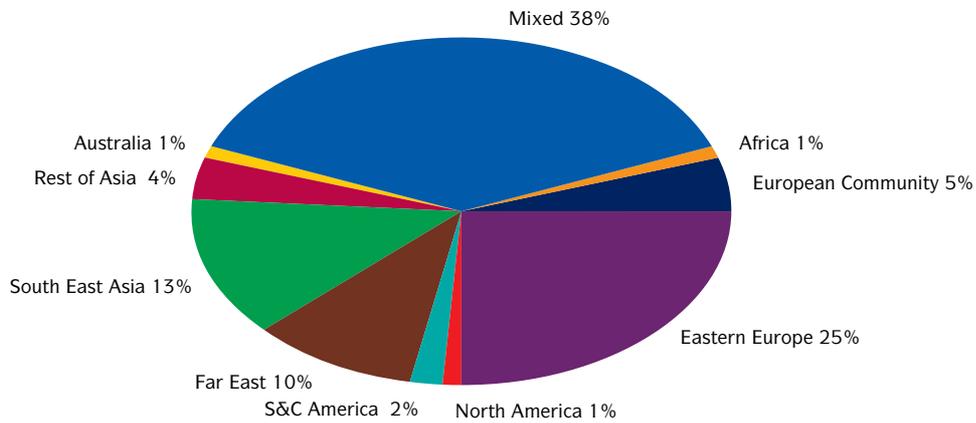


The pie-charts indicate the distribution of single or dominant nationalities of officers by geographical region. Perhaps the most significant point is that by far the most important regions are the European Union and Eastern Europe. Those two categories together account for 137 of the single nationality ships and 211 of the “dominant” nationality groupings for officers, a total of 348 ships or some 62% of the whole group. No other geographical region approaches these figures.

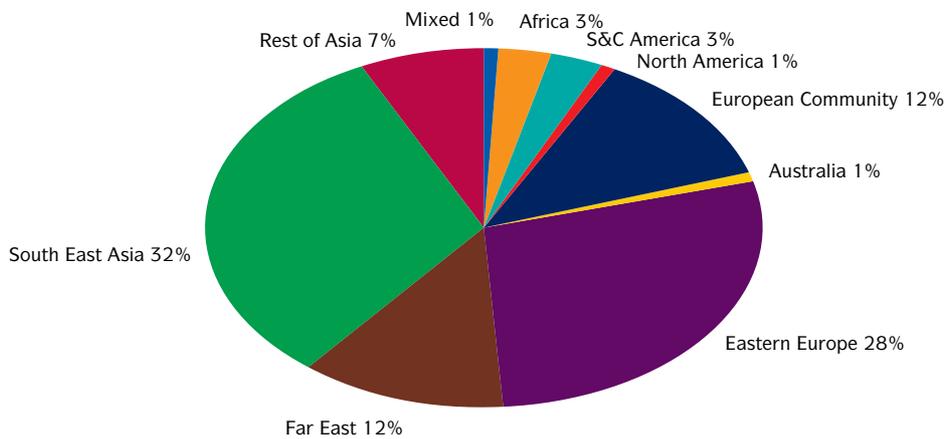
**NATIONALITIES OF RATINGS BY REGION**

When the nationality of ratings is examined, the picture is equally clear. As with officers, most of the 555 ships visited had a single nationality, 63% having a single nationality for their ratings. Again, the great majority of mixed nationality groups had a clear dominant nationality, four vessels only presenting the inspector with an insoluble problem when attempting to identify dominant nationality.

**Table 22. Rating nationality by region (single nationality)**



**Table 23. Rating nationality by region (dominant nationality)**



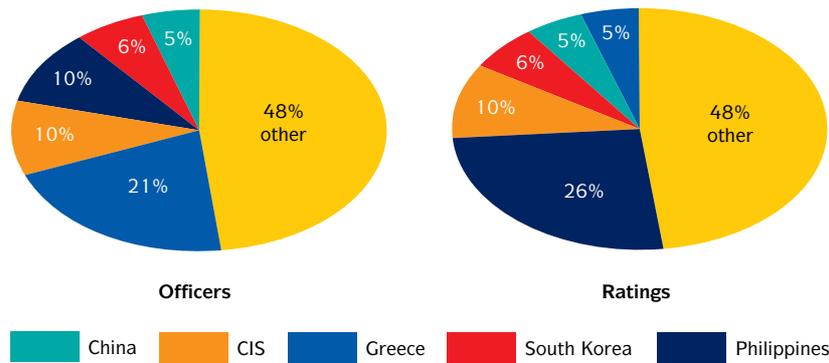
The pie-charts for ratings show distribution of single and dominant nationalities by region. Europe is again a significant region but in no sense as important as it is with officers. In Table 23, the two European categories (EU and Eastern Europe) together account for 225 ships or 40% overall. Asia is extremely significant: within this broad area, the region “South East Asia” is by far the most important, providing ratings for 13% of ships with ratings of single nationality and for 32% of those with “dominant” nationality. If South East Asia is taken with the Far East and the Rest of Asia, the overall proportion rises to about half. It is also clear that, where the ratings are of mixed nationality, Asian ratings dominate.

The typical ship would seem to have European officers and South East Asian ratings. Each group displays distinct cohesion in nationality, for the most part being composed wholly of one nationality.

## NATIONALITIES BY COUNTRY

Although it was impractical to analyse particular nationalities – which is why the information was presented by region – the Ship Visit Programme did collect relevant information on particular nationalities.

**Table 24. The top five dominant nationalities**



The information is not complete, but it supports the analysis derived from the distribution of nationality by region. The Philippines is a major supplier of ratings, Greece a major supplier of officers. The CIS is a significant supplier of both. The rest fits the pattern of “European officers, Asian ratings” noted above.

It is clearly the case that economics drives ship-operators to seek crews who can be engaged at competitive rates. South East Asia has a clear advantage in that market, particularly for ratings. It would also seem clear that operators prefer to find their officers from amongst traditional maritime nations where training and qualifications may be better known to those who make the decisions within the companies.

## LANGUAGE

Almost certainly, mixed nationalities mean mixed languages resulting in potential difficulties in communication. One solution to this problem is the adoption of a “working language” to be used by everyone on board when on duty. This is a solution so widespread as to be practically universal. All the ships visited were asked to declare the working language. The matter was then further investigated in order to see how far the ship’s language was embedded in the operation of the ship. Since, as we have seen, the common nationality pattern on board ships is that officers are universally or dominantly of one nationality and the ratings universally or dominantly of another, it was first necessary to discover whether both or either group did indeed use the adopted language. The Inspectors asked both officers and ratings to state whether the ship’s working language was their own mother tongue.

**Table 25. Ship's working languages**

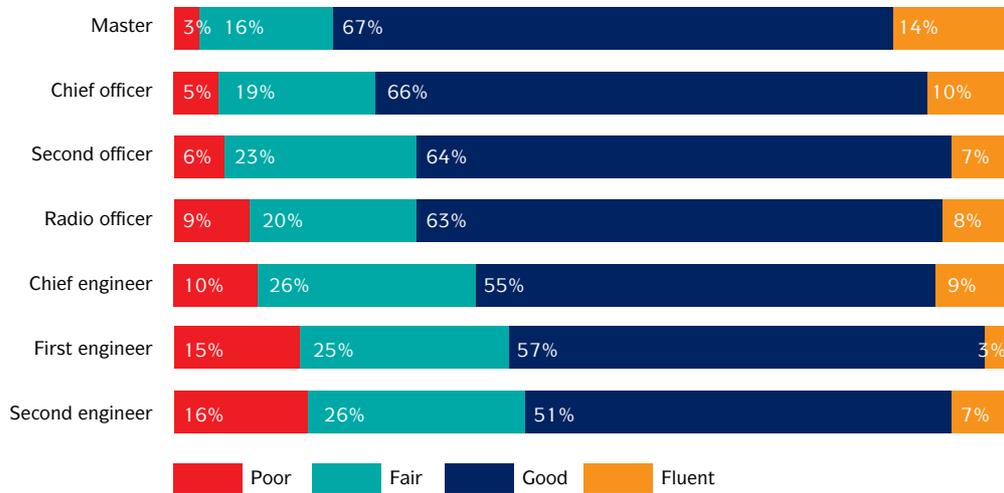
<b>Declared Working Language</b>		<b>Mother Tongue</b>			
<b>Language</b>	<b>Number of vessels which had this as their Declared Working Language</b>	<i>Percentage of those ships where the Crew's Mother Tongue corresponded with the ship's Declared Working Language</i>			
		<b>Total Crew</b>	<b>Officers only</b>	<b>Ratings only</b>	<b>None of the Crew</b>
Chinese	26	92%	0%	0%	8%
Croatian	19	100%	0%	0%	0%
English	254	6%	4%	0%	90%
French	16	88%	6%	0%	6%
Greek	33	67%	33%	0%	0%
Korean	33	94%	0%	0%	6%
Russian	73	100%	0%	0%	0%
Others	101	93%	3%	1%	3%

The table above shows the results of part of this survey. Most of the declared languages were in fact effectively used by the whole crew. It can safely be assumed in those cases that the chosen languages were at least potentially effective for the purposes required. In very few cases, apart from English, was it true that neither the officers nor the ratings used the ship's language as their mother tongue. The ship's language was therefore the mother tongue of at least one of the two categories of the crew.

The data collected shows that nearly half (254) of ships declared English to be the ship's working language. This figure may be usefully compared with the data on nationalities. While many ships appear to use English as their working language, only 3% of full crews are dominated by largely English speaking nationalities: UK, Ireland, Canada, US, Australia, New Zealand and South Africa. The place of English appears more complicated if further reference is made to the table above. 90% of the crews declaring English as their working language do not use English as their mother tongue. This is to be expected in so far as English is the accepted international language. However, as has been so graphically illustrated by the last chart, only a very small percentage of crew are from English speaking countries. As a result, the majority of inter-ship communications are conducted in a language foreign to each party. In such cases, the ability of the officers in particular to speak English fluently is obviously important and, in such cases, the working language must necessarily have a limited function.

The use of English for inter-ship communication, as well as for communication with shore-based personnel such as pilots, ship's agents and others, obtains greater significance than the use of any other language. The Ship Inspectors therefore examined fluency in English among officers. The Inspectors applied a simple assessment, derived from dealing with the officers concerned, rating them on a scale from one to ten. To approach the problem in any other way (eg by demanding formal proof of English speaking ability or by testing) would not have been possible.

**Table 26. Officers' English speaking ability**



The results exclude officers from English speaking countries who unsurprisingly scored well.

A number of points may be made. Radio officers and deck officers are in the main, good English speakers, with usually about three quarters scoring from 7 to 10 (good or fluent).

Ability increases with rank. Deck officers may have more contact with the outside world than do engineer officers, which may explain the slightly lower scores there. Few officers rated as poor speakers of English.

The overall pattern is relatively clear:

- There is, in general, a substantial ability in English among officers whose first language is not English.
- It would appear that English is the ship's first language of choice.
- A large number of ships have multi-national crews from non-English speaking countries where English is declared as the ship's language, but is probably used only in case of necessity.

# Appendix A



## Manning and Management

Numbers/Age	Total	Average age	Nationality*	Dominant nationality
Officer				
Ratings				
Full crew				
Riding crew				

\*Enter nationality (e.g. British) or mixed.

Compliance manning scale? Y/N/Dispensation .....

Master	Age		LOSS	
Chief engineer	Age		LOSS	

Officer manning agency (name) .....

Crew manning agency (name) .....

## Language

Language of ship	Officers' mother tongue (same or other)	Ratings' mother tongue (same or other)

Owner/Manager-operated? .....

Management policy? Y/N .....

Policy in place? Y/N .....

Ship condition reflects (answer in one square)	
Management	
Master	
Superintendent	

## Pilotage (Yes/Strict/Moderate/Lax/Nil)

Pre-pilotage conference?	
Master's supervision of pilot	
Officer's supervision of pilot	
Standards of vigilance under pilot	

**P&I Involvement** Current P&I literature on board? Y/N .....

	Master	C/Off.
Date of last contact with P&I correspondent?		
Understand impact of P&I costs/claims on operating cost of ship? (Y/N)		
Officer believes he has Owner's interests at heart? (e.g. in the case of Agency employed officers) (Y/N)		
Present cargo		
Previous experience of this cargo? (Y/N)		

M.V. ....

Rank	Certificate		Endorsements	Training courses attended	Length of sea service (L.O.S.S.)	L.O.S.S. with this owner	L.O.S.S. in present rank	Prior service in V/L	Hand over period	Nationality	Able to speak English
	Type	Qualifying date									
Master											
C/O											
2/O											
3/O											
R/O											
C/E											
I/E											
2/E											
3/E											
4/E											

## Appendix C

### ISM

#### INTERNATIONAL MANAGEMENT CODE FOR THE SAFE OPERATION OF SHIPS AND FOR POLLUTION PREVENTION THE ISM CODE

The ISM Code, IMO Assembly Resolution A.741 (18), was adopted on 4th November 1993 and is due to come into force worldwide under a new Chapter IX of SOLAS 74 in June 1998. It would appear to have radical ramifications for those involved in the management of ships; being the first IMO Code designed to tackle the issue of setting out international standards for safety from the management, as opposed to the technical point of view. The code is expressed in specific, but broad, terms, given the reality that "... no two shipping companies or shipowners are the same, and that ships operate under a wide range of different conditions," and that "Clearly, different levels of management, whether shore-based or at sea, will require varying levels of knowledge and awareness of the items outlined."

The stress on safety from the ship management aspect is interwoven throughout the ISM Code. The major effects for those connected with the ship management responsibilities of manning are found in Section 6:

6.2 The Company should ensure that each ship is manned with qualified, certificated and medically fit seafarers in accordance with national and international requirements.

6.3 The Company should establish procedures to ensure that new personnel and personnel transferred to new assignments related to safety and protection of the environment are given proper familiarisation with their duties. Instructions which are essential to be provided prior to sailing should be identified, documented and given.

6.4 The company should ensure that all personnel involved in the Company's SMS have an adequate understanding of relevant rules, regulations, codes and guidelines.

6.5 The Company should establish and maintain procedures for identifying any training which may be required in support of the SMS [safety management system – to be developed and implemented by each company and to cover matters as instructions for safe operation of the vessel; procedures for reporting accidents; response procedures to emergency situations] and ensure that such training is provided for all personnel concerned.

6.6 The Company should establish procedures by which the ship's personnel receive relevant information on the SMS in a working language or languages understood by them.

## Appendix C

6.7 The Company should ensure that the ship's personnel are able to communicate effectively in the execution of their duties related to the SMS.

In essence, these provisions should, in practice, have great effects for those involved in ship management, not forgetting those who maintain a livelihood by being employed on vessels. It should be noted that continuous reference is made to the 'Company' and its responsibilities under the Code. This epithet is used to cover '... the Owner of the ship or any other organisation or person such as the Manager, or the Bareboat Charterer, who has assumed the responsibility for operation of the ship from the Shipowner and who on assuming such responsibility has agreed to take over all the duties and responsibility imposed by the Code.'

Problems may arise when technical and crew management is split between different companies since it is unclear which is considered the 'Company' under the Code. Since a shipowner who has delegated responsibility for his ship to a ship manager is not precluded from having his own safety systems, this, as well as the ambiguity within the Code, may implicitly require more communication and cooperation between different groups with interests in the operation of the vessel.

## Appendix D

### STCW

#### 1994 AMENDMENTS TO THE INTERNATIONAL CONVENTION ON STANDARDS OF TRAINING, CERTIFICATION AND WATCHKEEPING FOR SEAFARERS, 1978

These amendments are due to come into force on 1st February 1997 and relate to one particular area of the STCW Convention. Provision is, for example, made for the replacement of the existing Chapter V in the Convention with a new chapter. An initial glance at them shows that a more simplified view towards regulation has been adopted – oil tankers, chemical tankers and liquified gas tankers were previously separately provided for but are now taken together (Chapter V Regulation V/1). Probing deeper, it can be seen that other changes appear to be further ranging.

The first noticeable difference comes with the heading of Chapter V. This states that it deals with “Special Training Requirements for Personnel on Tankers”. The words ‘training’ and ‘personnel on’ are new additions. It is unlikely that these will, in practice, make much difference to STCW when the amendments come into force – they seem simply to reemphasise the purpose of these requirements and the link between them and seafarers.

The second major difference is the deletion of the words “...tankers and who have not served on board ... a tanker as part of the regular complement, before carrying out such duties ...” from Regulation V/1, paragraph 1, the equivalent of Regulations V/1, 2 and 3 paragraphs 1 in the main body of the STCW Convention. This is quite a major step. The STCW Convention proper, as it read, seemed to provide a loophole for unscrupulous shipowners, charterers and managers. Only those officers and ratings who had not served on board a tanker of a particular genre before would be required to “complete an appropriate shore-based fire-fighting course” before they assumed their duties in relation to cargo and cargo equipment. With the removal of this proviso, such a loophole is closed. The practical consequence of this would appear to be that whenever a new officer or rating joins a vessel, whether a novice or not and in spite of this vessel being a type upon which he/she has served before or not, he/she is required to complete an appropriate, shore-based fire-fighting course – in other words, undertake a continuing education course.

Both the Convention and the new amendments insist on two steps being satisfied before duties in relation to cargo and cargo equipment can be undertaken. The first has just been described. The second takes the form of an ‘either or’ and its provisions differ radically in the 1994 amendments.

In Regulations V/1, 2 and 3 paragraphs 1, the Convention talks of serving:

- (a) an appropriate period of supervised shipboard service in order to acquire adequate knowledge of safe operational practices; or
  
- (b) an approved ... tanker familiarisation course which includes basic safety and

## Appendix D

pollution prevention precautions and procedures, layout of different types of ... tankers, types of cargo, their hazards and their handling equipment, general operational sequence and ... tanker terminology.

The amendments, in regulation V/1 provide for

- .1 at least three months of supervised sea service on tankers in order to acquire adequate knowledge of safe operational practices; or
- .2 an approved tanker familiarisation course covering at least the syllabus given at Appendix 1 to this regulation.

The Administration may, however, accept a period of supervised sea service shorter than three months as prescribed in sub-paragraph .1 for officers and ratings of a tanker, if all the following conditions are met:

- .3 the period so accepted is not less than one month;
- .4 the tanker is less than 1,600 gross tonnage;
- .5 the duration of the voyage on which the tanker is engaged does not exceed 72 hours; and
- .6 the administration is satisfied that the operational characteristics of the ship, including the number of voyages and number of loading and discharging operations in which the ship is engaged during such period, are such that the same level of knowledge may be acquired in that period.

With a time such as 'an appropriate period' being very much liable to subjective interpretation, the requirement of three months supervised sea (the Convention talks of shipboard) service might, in practice, make dramatic differences in certain quarters. However, although the provisos contained in sub-paragraphs 3 through to 6 detract from the initial force of this somewhat and seem to move the requirement back towards the 'appropriate period' position contained in the main body of the Convention at present, it is to be noted that these can only be allowable if prescribed by 'the Administration' – in other words, a state body. Therefore, the stance taken in the 1994 amendments is definitely more stringent for shipowners, charterers and ship managers.

With regards to familiarisation courses, the new amendments (in Appendix 1) set out the matters which they believe should be covered. In essence, these elaborate upon the provisions of Regulations V/1, 2 and 3, paragraphs 1 (b) in the Convention by defining which matters the rather vague words set down there actually cover. In practice, this subtle difference could have radical ramifications.

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The amended version of Chapter V continues:

2. Masters, chief engineer officers, chief mates, second engineer officers and, if other than the foregoing, any person with the immediate responsibility for loading, discharging and care in transit or handling cargo, in addition to the provisions of paragraph 1.1 and 1.2, shall have:

.1 experience appropriate to their duties on tankers and relevant to the type of tanker on which they serve, i.e. oil tanker, chemical tanker or liquified gas tanker; and

.2 completed an approved specialised training programme appropriate to their duties on the type of tanker on which they serve, i.e. oil tanker, chemical tanker or liquified gas tanker. The specialised training programme shall cover at least the syllabus given at Appendix 2 or 3 or 4 to this regulation, as appropriate.

At present, the STCW Convention speaks of having “relevant experience appropriate to their duties on ... tankers” and “completed a specialised training programme appropriate to their duties, including oil tanker safety, fire safety measures and systems, pollution prevention and control, operational practice and obligations under applicable laws and regulations.” In practice, the change of wording in these two sub-paragraphs will probably make little difference, particularly with regards to sub-paragraph 1. Sub-paragraph 2 is now designed to make more concrete the responsibilities which must be adhered to. It is interesting to note that with regards to Appendices 2 through to 4 – which spell out what the specialised training programme for each type of tanker should include – Appendix 4, which applies to liquified gas tankers, has more elaborate provisions than its counterparts.

The final major change introduced by the new amendments to the STCW Convention is Chapter V/1, paragraph 4. Again, this will have great practical significance, both for States-Parties and shipowners, charterers and ship managers. By ensuring that officers and ratings qualified in the sense of Chapter V must have documentary evidence as a means of verifying this fact, the 1994 STCW amendments are reemphasising their commitment to establishing higher safety standards in this aspect of shipping affairs.

At the 64th Session of the IMO Maritime Safety Committee (5-9 December 1994), it was agreed in principle that a new code for safe navigation and watchkeeping should be drawn up for use in conjunction with Chapter V of SOLAS 1974 and the STCW Convention itself by 1997. It is divided into two parts: one dealing with mandatory standards, the other giving recommended guidance.

New draft amendments have also been circulated to governments and were considered by the Sub-Committee on Standards of Training and Watchkeeping at its 27th Session (6-10 February 1995). These amendments were considered at a conference at IMO Headquarters in July 1995. At the same time, another

## Appendix D

conference considered the draft text for an International Convention on Standards of Training, Certification and Watchkeeping for Fishing Personnel.

The draft regulations concentrate on the issue of verifying compliance with STCW standards but only some are of real significance for those involved directly with vessels. Draft Regulation I/4 states that control exercised by a duly authorised officer, such as an inspector, should be limited to the verification of crew numbers and certificates and to the assessment of the ability of the seafarers to maintain watchkeeping standards as required by the Convention if there are clear grounds for believing that such standards are not being maintained. For example, these include, inter alia, when a ship has been involved in an accident or unsafe navigation or there is the “inability to provide rested persons for the first watch at the commencement of the voyage and subsequent relieving watches”. The issue of crew numbers is a new addition to the STCW Convention in this respect and, therefore, could force shipowners, charterers and ship managers to make fundamental changes to their working practices.

Other new draft amendments to Chapter I deal with the responsibilities of companies and the prevention of fatigue.

