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INTRODUCTION

The Members will be aware that the UK P&I Club has experienced, in common with all other P&I Associations in the International Group, an unprecedented increase in the value of claims from the 1987 policy year onwards, with further sharp increases becoming apparent in the 1989 and 1990 years.

When the first indications of this trend appeared in 1988, your Directors instructed the Managers to prepare a review of the underlying causes of major claims arising after 20th February 1987. The Managers' first report to the Directors in 1989 was based on a sample of just 77 claims. By January 1991 the review had grown to include 918 claims, involving some US \$543 million of paid and estimated liabilities.

This programme of review and analysis will continue in future, but has now developed to the point where its findings can usefully be shared and where some preliminary lessons can be drawn on how best to reduce the claims exposure of the Membership.

The scope of the review is described in the section below entitled 'Overview'. That is followed, in the section entitled 'Summary', by a description of specific areas of concern identified by the study. Comments on loss prevention measures follow in the section entitled 'Practical Suggestions'. Finally, there are five appendices containing detailed analyses relating to cargo, personal injury, property damage, pollution, and collision claims.

This analysis forms just one part of the larger programme of positive risk management, to which the Association is committed. Last year saw the introduction of a system for the inspection of entered ships, aimed at encouraging higher standards of safe operation and maintenance. These visits, carried out by the Association's own inspectors, have been widely welcomed. They provide a real opportunity for practical co-operation between the Club and its Members in seeking to prevent losses and, in future, will also serve as a means of focussing on the risk factors which the claims analysis identifies.

In the longer term, the only way for a mutual Association to minimise its calls is to minimise its claims, in close co-operation with each of its Members. Your Managers will therefore be very glad to receive any suggestions or comments which *you* may wish to send as a result of reading this document.



OVERVIEW

RISK PERIOD — 1987, 88, 89 AND 1990 POLICY YEARS

This review examines the underlying causes of the major claims of UK P&I Club Members arising between 20 February, 1987 and 20 December, 1990, based on information available at the end of December, 1990.

SIZE OF CLAIM

A 'major' claim in this context is one for which the amount paid and the amount of any outstanding estimate together total at least US \$100,000.

TYPE OF CLAIM

Insofar as the review comments on general trends it takes into account all major claims arising in the risk period, regardless of the type of liability involved. As of December, 1990 there were 918 such claims with a gross claim value of US \$543 million.

Of these claims, 855, with a gross value of about US \$485 million, are the subject of the more detailed analyses contained in the appendices. They consist of all the major claims in respect of cargo, personal injury, property damage, pollution and collision.

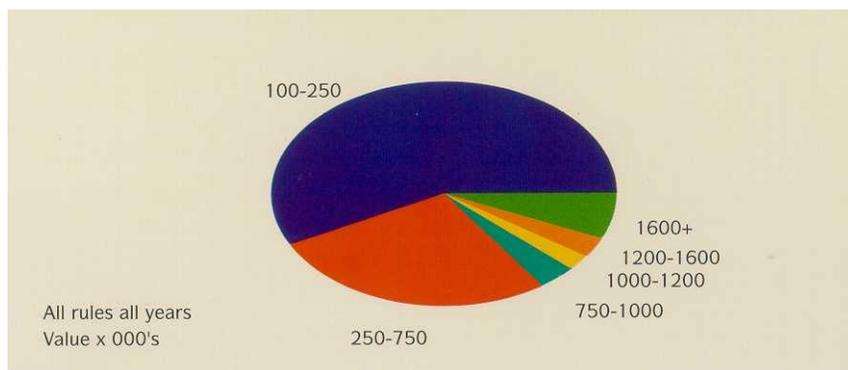
The remaining 63 claims, not included in the detailed analyses, related to a variety of liabilities including wreck removal, fines, and unrecoverable general average contributions.

REINSURANCE

The claim values used in the review are gross figures, with no allowance for reinsurance recoveries from the Pool or excess loss reinsuring underwriters. Conversely, the review does not include any of the payments (even if over \$100,000) made by the UK Club as contributions to the Pool claims of other Clubs.

In fact, as can be seen in table 1 below about 90 per cent (by number) of the major claims fall below the level at which the first layer of reinsurance — the Pool — comes into operation; this was US \$1.2 million from 1987 to 1989 and since 1990 has been US \$1.6 million.

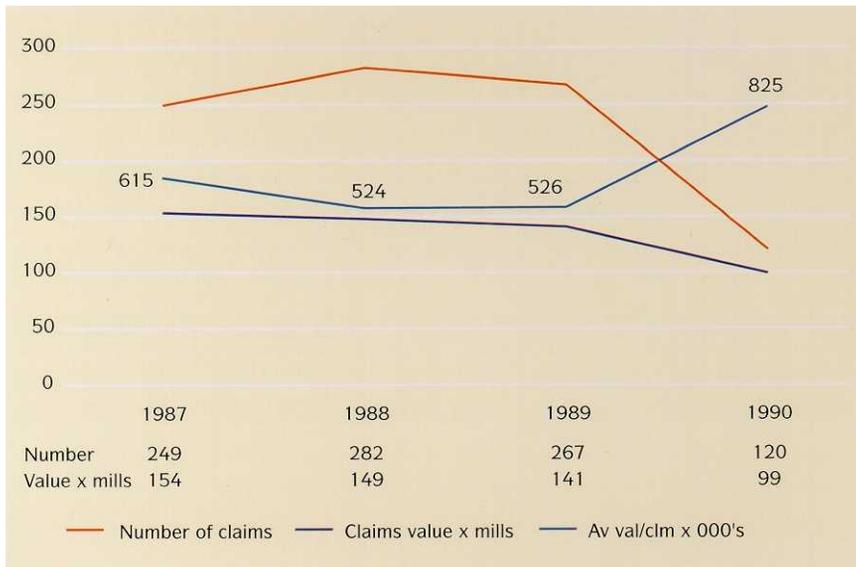
TABLE 1 — DISTRIBUTION OF MAJOR CLAIMS, BY NUMBER, OVER VALUE BANDS



UPWARD TREND OF MAJOR CLAIMS

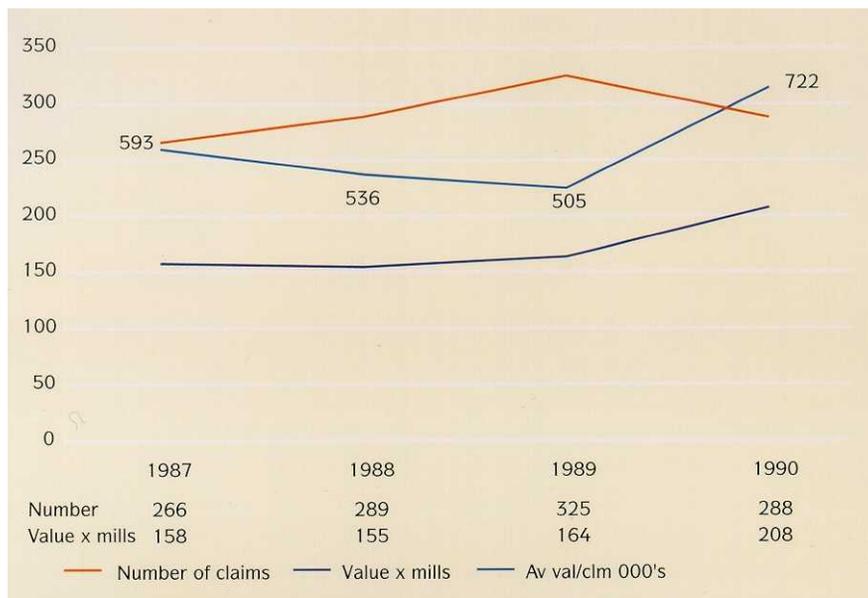
The numbers and values of all major claims, as observed in December, 1990, together with average claim values, are plotted by policy year in table 2 below. The table shows that there were (as of December, 1990) 120 claims, with a gross value of about US \$99 million, reported for the 1990 policy year. Twelve months earlier, the figures reported for the 1989 policy year at the same stage of development included only 97 claims, totalling US \$79 million.

TABLE 2 — DISTRIBUTION OF MAJOR CLAIMS, BY NUMBER AND BY VALUE, OVER THE POLICY YEARS (DATA AS AT DECEMBER, 1990)



In their report to the Directors, the Managers stressed that the 1989 and 1990 policy years are seen at relatively early stages of development and that the figures would certainly deteriorate. The Managers have subsequently run a computer check on the development of the figures up to September, 1991. This shows that there are now 325 claims totalling US \$164 million, reported for the 1989 year and 288 claims, totalling US \$208 million reported for 1990. This position, shown in table 3 opposite, confirms the further sharp increase in claims values for 1990 and should be borne in mind when comparing policy years in the appendices to this review.

TABLE 3 — DISTRIBUTION OF MAJOR CLAIMS, BY NUMBER AND BY VALUE, OVER THE POLICY YEARS (DATA AS AT SEPTEMBER, 1991)



SIGNIFICANCE OF 'MAJOR CLAIMS' AMONGST TOTAL UK CLUB CLAIMS

The major claims should be seen in the context of the total number and value of all claims, irrespective of size, notified to the Club (as at December, 1990) for the four policy years under review. The total claims for this period numbered more than 60,000 of which only 918 were claims above US \$100,000. However, the gross value of those 918 claims accounted for more than 60 per cent of the total gross value for all 60,000 claims of about US \$850 million. This is illustrated in tables 4 and 5 below.

There is accordingly no doubt that if lessons can be learned which would reduce the incidence of the major claims, then this would have a significant effect on the Club's overall loss exposure.

TABLE 4 —COMPARISON OF CLAIMS ABOVE AND BELOW US\$100,000 BY NUMBER

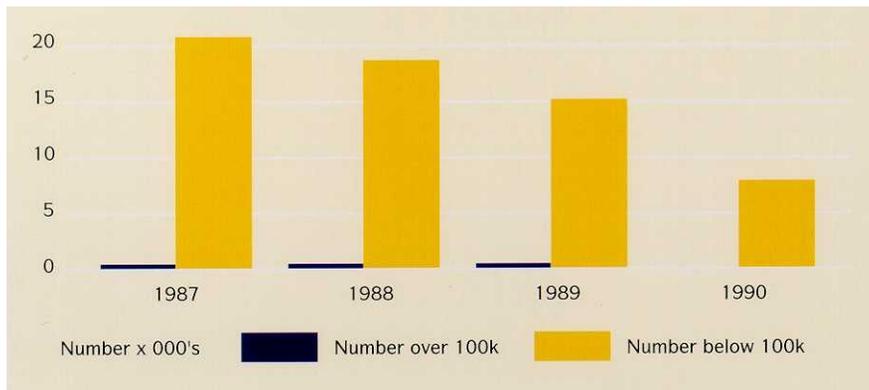
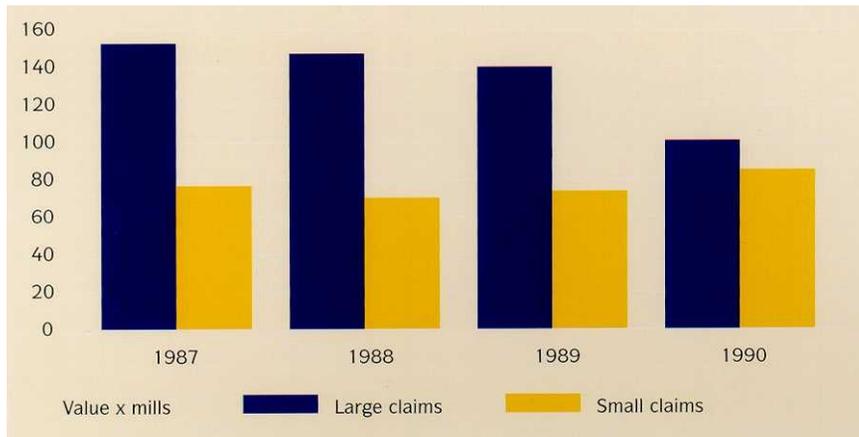


TABLE 5 —COMPARISON OF CLAIMS ABOVE AND BELOW US\$ 100,000 BY VALUE



PREMIUMS

It should be borne in mind that no attempt is made in this review to relate claims experience to premium income. Accordingly, no conclusions should be drawn from the review as to the adequacy of the premium income received by the Association in respect of any of the particular risks identified. An example of this can be found in the comments on page 27 relating to injury claims on rigs and supply ships.



SUMMARY

A detailed examination of the underlying causes of the major claims in the five key risk areas of cargo, personal injury (crew, stevedore and passenger claims), property damage, (including dock damage), pollution and collision can be found in the appendices to the review. For the purposes of the summary, the Managers have extracted three general themes which can be traced through all the claims areas. The three themes identified are:

- (a) The Human Factor
- (b) Quality of tonnage, with specific reference to the age of the ships
- (c) Legal regimes and jurisdictions

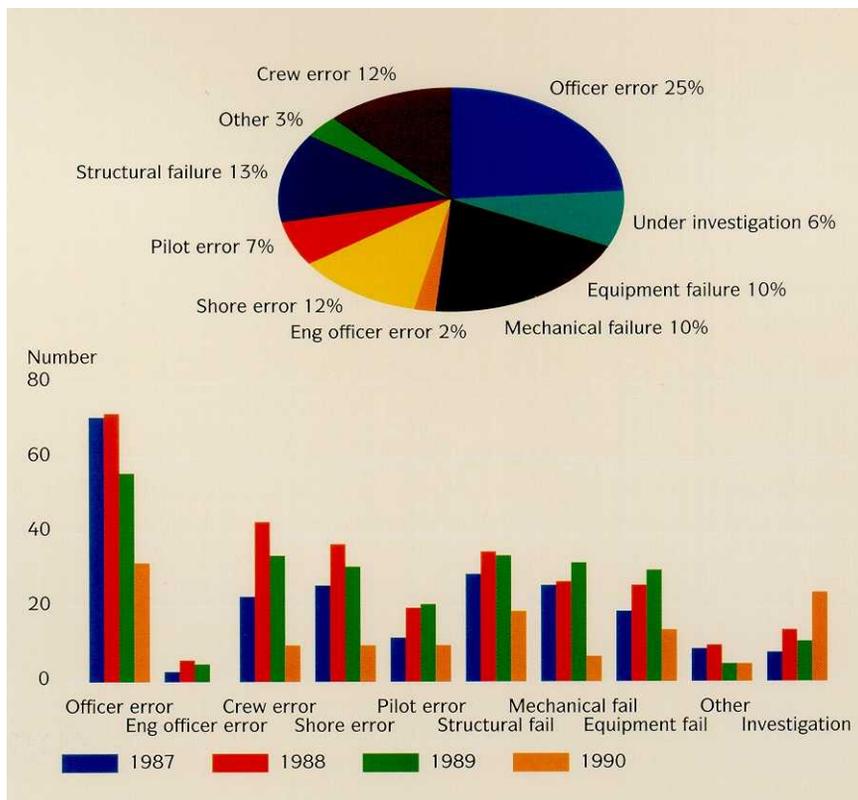
The impact of each theme varies depending on the risk examined, eg. the human factor was the dominant cause in the personal injury, property damage and collision claims, and contributed to approximately half the cargo and pollution claims.

THE HUMAN FACTOR

Table 1 below shows the main cause of all the major claims as a percentage of the total number of claims. The lower section shows the actual number of incidents ascribed to a particular cause.

The table confirms that human error, either by crew or shore based personnel, is the main or contributory cause of most of the claims by number, accounting for 58 per cent of all claims.

TABLE 1 — MAIN CAUSE



The impact of the 'human factor' on each individual risk type examined can be summarised as follows:

Cargo claims

Table 6 entitled 'Main Cause' on page 20 confirms that human error accounts for around half the claims. When examined in greater detail by reference to the detailed cause (see table 5 at page 19) and specific cargo types (see table 4 at page 18) it can be seen that the errors consist largely of mistakes in stowage/handling and lack of knowledge relating to specific carriage requirements for various commodities.

Personal Injury claims

Table 5 at page 25 demonstrates that the majority of all personal injury claims (approximately eight out of ten) are caused by human error, either on the part of the individual performing the task or by the officer in charge failing to give clear instructions and to supervise the performance of the task. There is also evidence to suggest that language difficulties, even between officers and crew on board the same ship, have contributed to a number of the claims.

Property damage claims

Table 7 at page 34 shows that most claims occurred during close quarter manoeuvring during berthing operations. This helps to explain the very high percentage number of cases where error by the pilot was thought to be the main or contributory cause. Although it is often difficult to find the precise reasons for the error, there is no doubt that poor communication, aggravated by language difficulties, is a major factor. It is the Managers' intention to investigate the pilot error cases in greater depth and to report their findings to the Board of the UK P&I Club and the members in due course.

Pollution claims

Human error, whether during bunkering operations or as a result of a collision or grounding, accounts for half the major claims (see table 6 at page 37). Of particular concern is the high proportion of bunker related spills.

Collision claims

This is an area where most if not all claims are caused by human error. The disturbing features to emerge from the analysis are the number of collisions involving junior watch-keeping officers at night and the number of claims involving fishing vessels. Although improved training would play a part in reducing these incidents, there must be a suggestion that the adequacy of officer numbers on board ships in certain trading patterns is another possible factor.

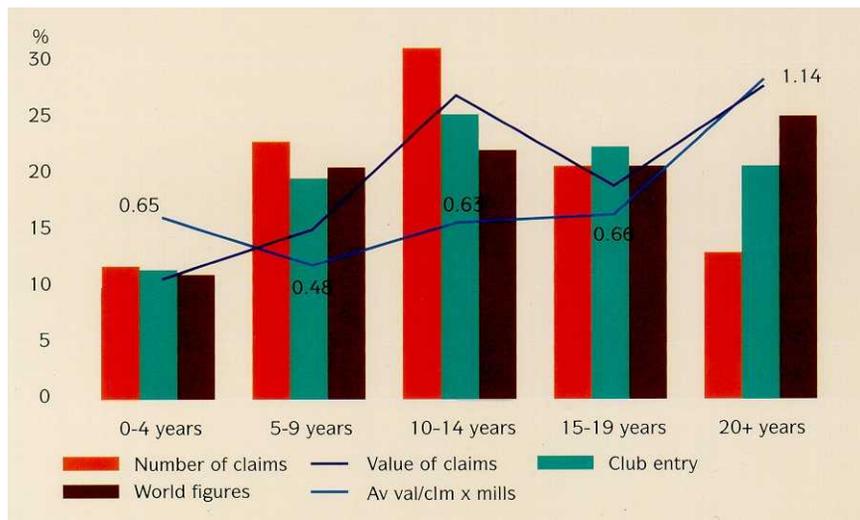
QUALITY OF TONNAGE, WITH SPECIFIC REFERENCE TO THE AGE OF THE SHIPS

In each of the five claims areas examined in the review, the Managers have investigated whether the age of the ship is a significant factor.

Table 2 opposite draws together the information on the age of the ship for *all* the claims analysed and shows the percentage number of claims compared to the

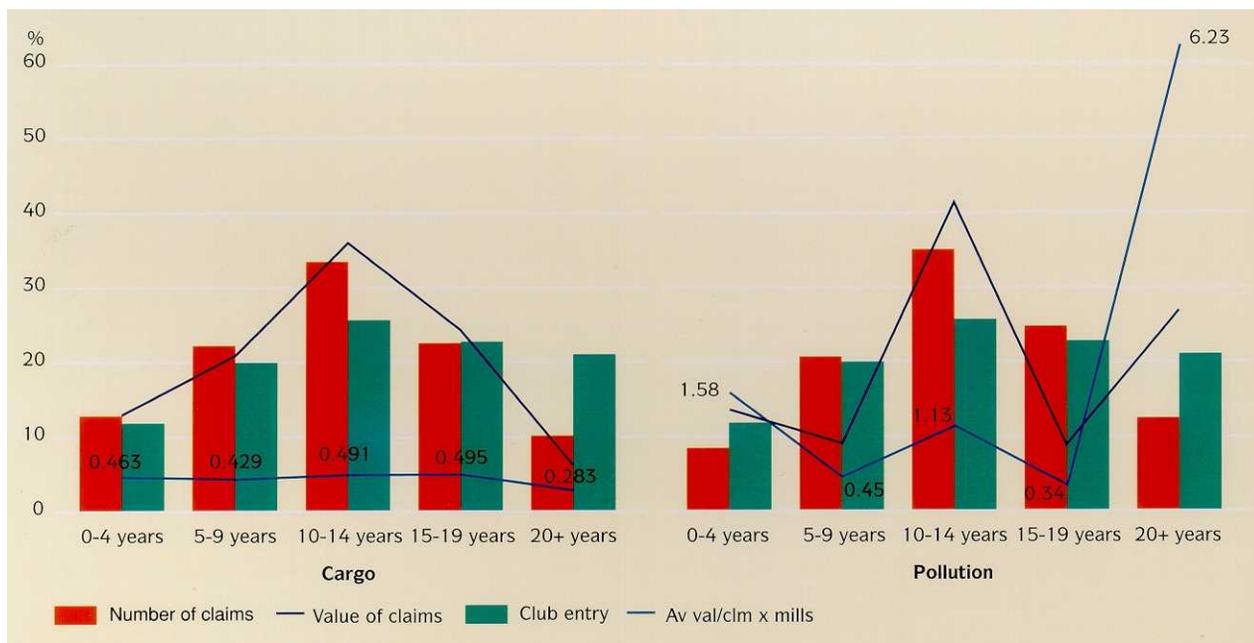
age of the ship, expressed in age bands. The table also shows the distribution of ships in the age bands for the Association as a whole as against world statistics.

TABLE 2 — DISTRIBUTION OF ALL CLAIMS BY AGE OF SHIP COMPARED WITH CLUB ENTRY AND WORLD STATISTICS



The table confirms that ships in the age band 10 — 14 years are more likely to expose the Association to large claims; this is particularly the case in the cargo and pollution claims, as can be seen from table 3 below.

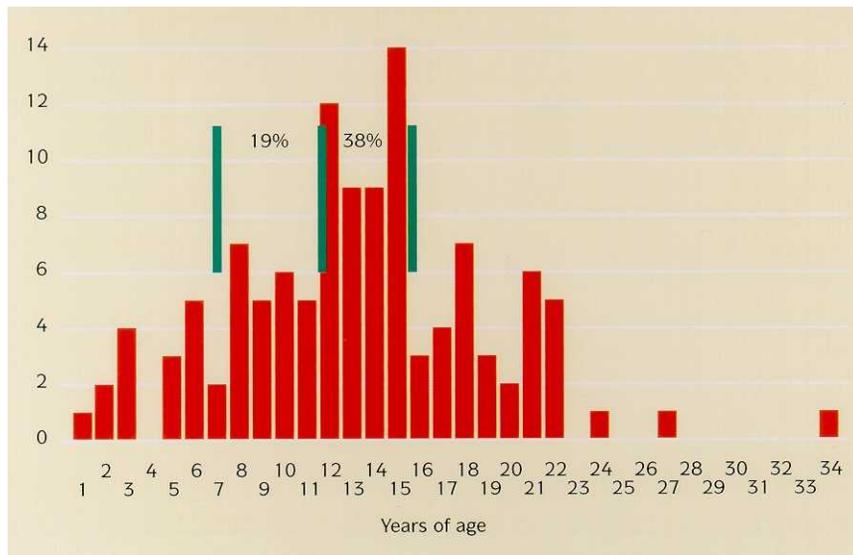
TABLE 3 — DISTRIBUTION OF CARGO AND POLLUTION CLAIMS BY AGE OF SHIP COMPARED WITH CLUB ENTRY



One interesting feature to emerge is that the risk profile of age compared to the Club entry appears to improve after the ship reaches fifteen years old. This feature is underlined in table 4 below which shows the number of 'structural failure' incidents by reference to the age of the ship involved. In this review structural failure has been given a broad definition. The definition includes a range of structural defects from the most serious shell plate failure to claims caused by leaking hatch covers.

Out of the 918 cases analysed in the review, 117 involved structural failure incidents within the definition given above.

TABLE 4—DISTRIBUTION OF STRUCTURAL FAILURE CLAIMS BY AGE OF SHIP



It is clear from table 4 that the major proportion of structural failure cases occur on ships between twelve and fifteen years old (38 per cent of the claims). It is the Managers' view that a significant number of such claims could be avoided if third special classification surveys were conducted when ships reach twelve years old, as was originally intended, and not fifteen years old as has become the norm. However, this is not a complete answer as there are signs, evidenced by table 4, that the same problems are beginning to show at an earlier stage, with 19 per cent of the problems occurring on ships between seven and eleven years old. The reasons vary, ranging from lower standards of construction to poor maintenance.

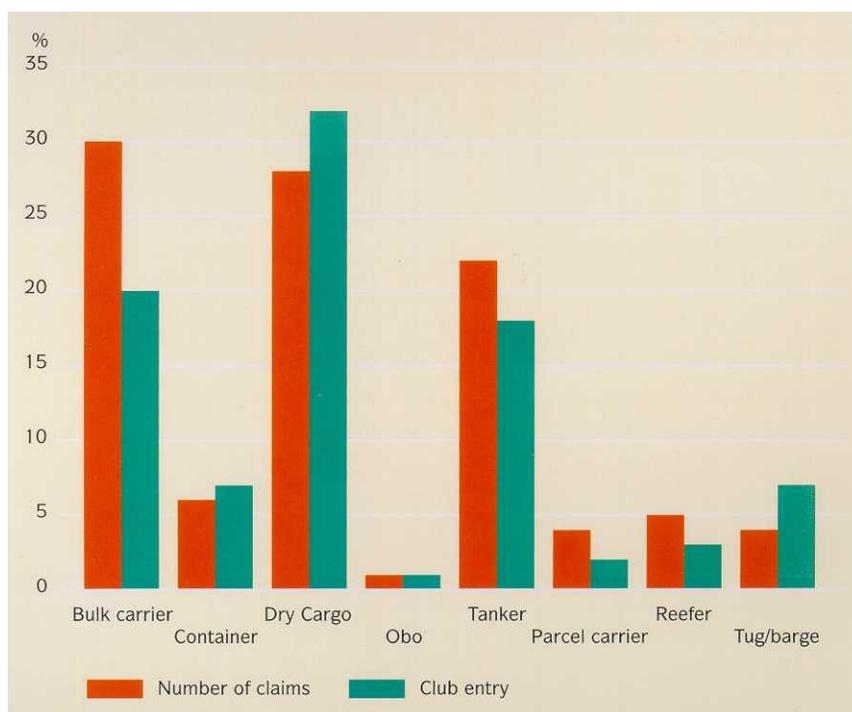
At present it is customary for the Managers to require a condition survey on first entry of ships of fifteen years of age and over. As a result of these findings, the Managers are reducing the threshold for such surveys to ten years of age.

The fact that the claims profile improves after the ship has reached fifteen years old should be treated with a degree of caution as much depends upon the standards

of maintenance and management. In the future, the Managers will closely monitor the claims profile of such ships in order to see whether there is a correlation between claims exposure and a change of management or ownership, which is likely to occur on ships at around this age.

When the types of ship involved in structural failure claims are analysed, justification is found for present concerns in the industry about the structural integrity of bulk carriers. It can be seen from table 5 below that although bulk carriers comprise 20 per cent of the ships entered in the Association, they were involved in almost 30 per cent of the structural failure claims.

TABLE 5 — DISTRIBUTION OF STRUCTURAL FAILURE CLAIMS BY TYPE OF SHIP

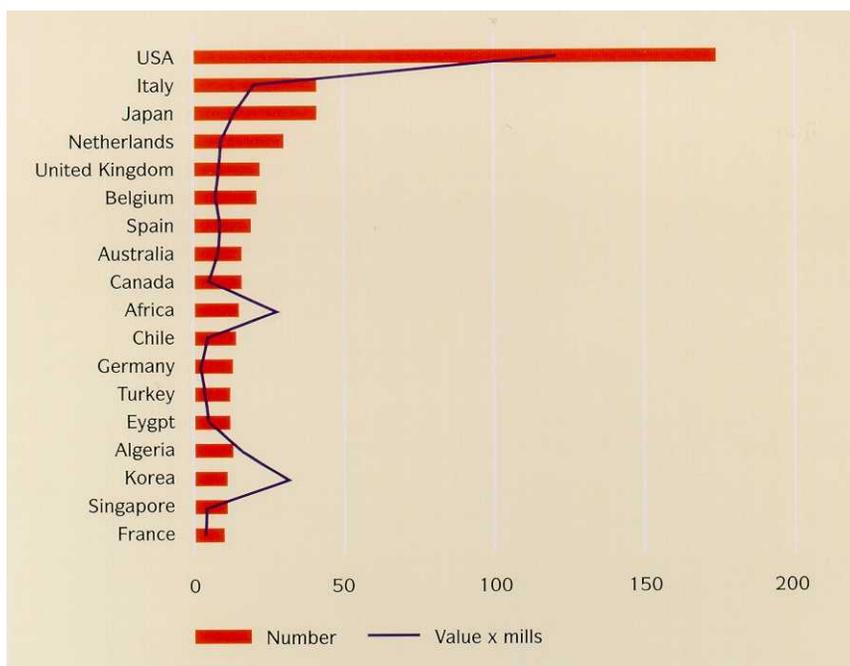


The problems associated with age are not confined to the older ships and structural failure. The analysis of the personal injury and collision claims reveals a disproportionate number of claims on the younger ships in the age bands 0 — 4 years and 5 — 9 years (see tables 10 and 5 on pages 28 and 41 of the appendices), eg. 22 per cent of the collisions involved entered ships under four years old, which is approximately twice the number of cases that the Club entry of ships of this age would suggest. Lack of training and familiarisation with new equipment may play an important part in the cause of these claims.

Legal regimes and jurisdiction

Table 6 below lists by reference to the number and to the overall value of the claims the countries where 10 or more of the major claims occurred.

TABLE 6 —COUNTRIES WHERE MORE THAN 10 INCIDENTS OCCURRED



It is clear that in terms of both the number and the total value of claims the United States of America dominates the major claims affecting the Association. To some extent this is inevitable given the size of the US economy and the consequent volume of trade. The figures also reflect the impact of the number of personal injury claims brought in the USA, where legal assistance is very expensive and claimants are encouraged to be litigious by the generosity of the courts in awarding compensation.

Other countries to feature include South Korea, where the value of the claims paid and estimated is second overall after the USA. The results for Africa are distorted by one very large property damage claim in 1987. Also of concern is the number and value of claims arising in Italy. The Managers are investigating the reasons for this. Early indications suggest there may be a particular problem in the port of Ravenna. Members will be advised in due course if special measures need to be adopted.



PRACTICAL SUGGESTIONS

It is in the common interest of the Members and the Association to take practical measures to minimise the exposure to claims.

Certain steps have already been taken by your Directors and Managers, while others are being studied for the future.

The ship inspection programme, set up in 1990, has accomplished its first year target of visits to more than half the owned fleets. The programme is the subject of a separate report which accompanies this review and is to be extended in future to include:

- (i) Inspecting ships which are shown, by the results of the claims analysis, to be at particular risk.
- (ii) Inspecting the other ships in fleets where one or more ships have already been surveyed under the condition survey provisions of Rule 5Q.
- (iii) Inspecting ships where the member reports a change in Classification Society.

Other measures include reducing, from fifteen years to ten, the age threshold at which the Managers will customarily require a pre-entry condition survey, for the reasons outlined in the Summary.

On the investigative side the Managers are committed to continuing their analysis of claims, including a separate study of those contributed to by pilot error.

The Managers' London agents have also appointed a senior member of staff to specialise in the development of new loss prevention programmes, who will oversee and co-ordinate risk management activity. The Managers' London agents will also seek ways of improving the speed and quality of loss prevention advice to the Members.

Although in its early stages, there are already preliminary lessons which can be drawn from the analysis concerning the importance of good ship management practice. Those already identified by the Managers include the following:

Cargo Knowledge

Proper, thorough instructions and guidance should be given by operators to ship's officers with regard to the carriage of cargoes — especially for those cargoes with which officers may be unfamiliar. The Managers are willing to assist if required and will continue to publish 'Carefully to Carry', the Association's practical guide to the carriage of certain cargoes. Members are recommended to place copies of these guides on their ships.

Loss Prevention Responsibility

Members should consider appointing a shore based senior staff member, answerable only to his Board of Directors, whose responsibilities include training a ship's safety officer on board each ship, investigating each incident and taking steps to prevent a similar incident happening again.

Positive Accident Prevention Incentives

Members should consider running detailed safety audits and bonus programmes for employees. This is already the practice in some parts of the marine industry, where competitions are held for safe working practices, and bonuses are awarded to the workforce where, within a given period, no accidents have occurred.

Briefing and De-Briefing Crew

Masters and chief engineers should travel to and from ships, at the beginning and end of their tour of duty, via the operator's office to be briefed and de-briefed. These de-briefings should specifically include information about recent P&I claims.

Manning Levels

Regardless of the manning scale laid down by the flag state, Members should ensure adequate manning for the trade in which they are engaged.

Training

The inadequacy of present training standards is apparent in the analysis of every type of claim. Better training and motivation of ship and shore personnel is of prime importance if higher standards of seamanship and maintenance are to be achieved.

Company Operating Manuals

Company rules and practical guidance to Masters with respect to operational, navigational and safety procedures should be provided and regularly reviewed. More attention should be paid to ensuring that communication between shore and ship is effective, including the communication of company policy.

Material Support

Members should ensure that ships are provided with sufficient materials, spare gear, stores and back-up help to make possible a continuous high standard of maintenance on board.

New Ships

The analysis suggests that officers and crew should spend longer periods of familiarisation before new ships are brought into service. This is highlighted in the appendices on collision and property damage claims.

Languages

Members should ensure that all on board their ships are able to communicate in a common language.

Due account must also be taken of any language differences between those who formulate policy ashore and those who will be expected to put it into practice on board.



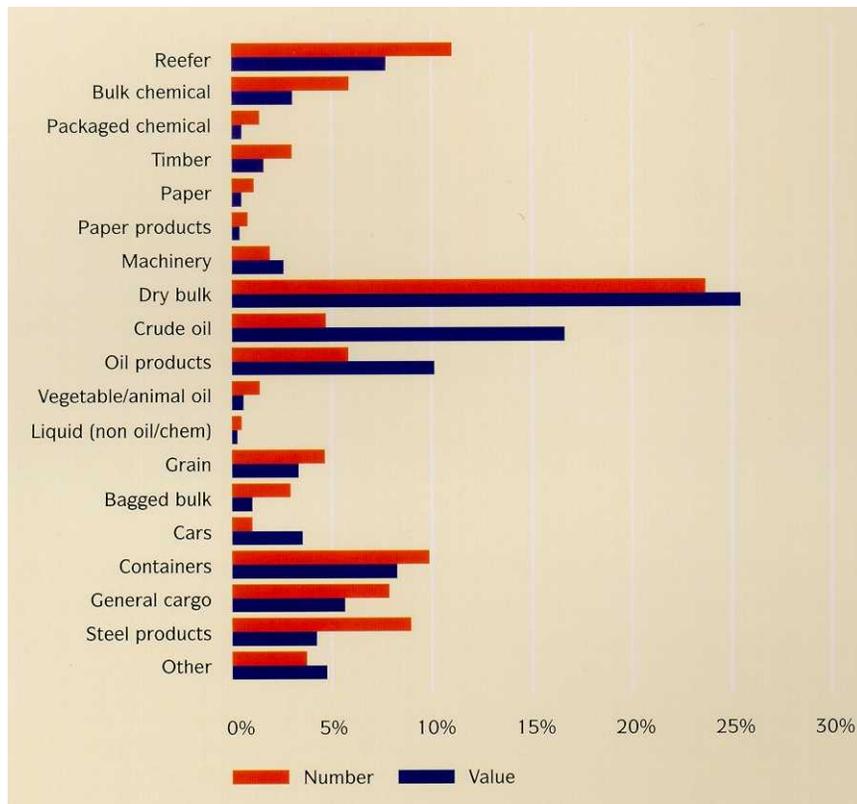
CARGO CLAIMS

(Sample analysed: 364 claims totalling \$165 million representing 40% of the total number of major claims and 30% of their total value.)

The value of these claims, distributed over the four policy years, shows a rising trend. They total \$35 million in 1987, \$41 million in 1988, and \$59 million in 1989. The 1990 year, seen at an early stage of development, already includes 46 claims totalling \$30 million. This is 25 per cent higher in number and 250 per cent higher in value than the comparable figures for the 1989 year when at the same stage of development.

Set out in table 1 below are the types of cargo involved, showing for each the number and value of claims as a percentage of all major cargo claims. The table confirms the prominent role of reefer, dry bulk, containerised and general cargoes and special attention has therefore been paid to these in the analysis which follows.

TABLE 1 — TYPE OF CARGO, ALL CLAIMS



Steel products, although not included in the cargoes selected for more detailed analysis, are also worthy of mention. There were 33 major claims, of which two thirds were in respect of wet damage attributable to leaking hatch covers; the remainder were divided equally between condensation damage and general physical damage.

The disproportionately high total values of crude oil and oil products claims in table 1 are in each case the result of a single very large claim inflating the overall value.

Table 2 below is a percentage distribution of claim by type of damage and shows in general terms what happened to the cargoes. (The category entitled 'physical' refers to damage such as that caused by breakage, bending, denting, crushing, heating, freezing, etc.)

TABLE 2 —TYPE OF DAMAGE, ALL CARGOES

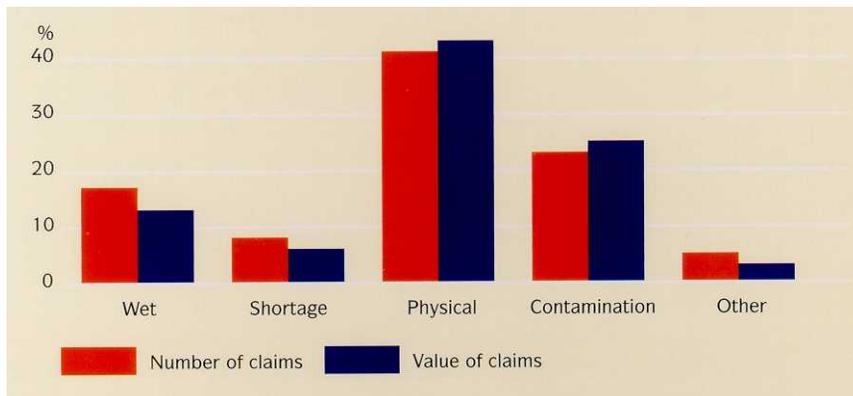
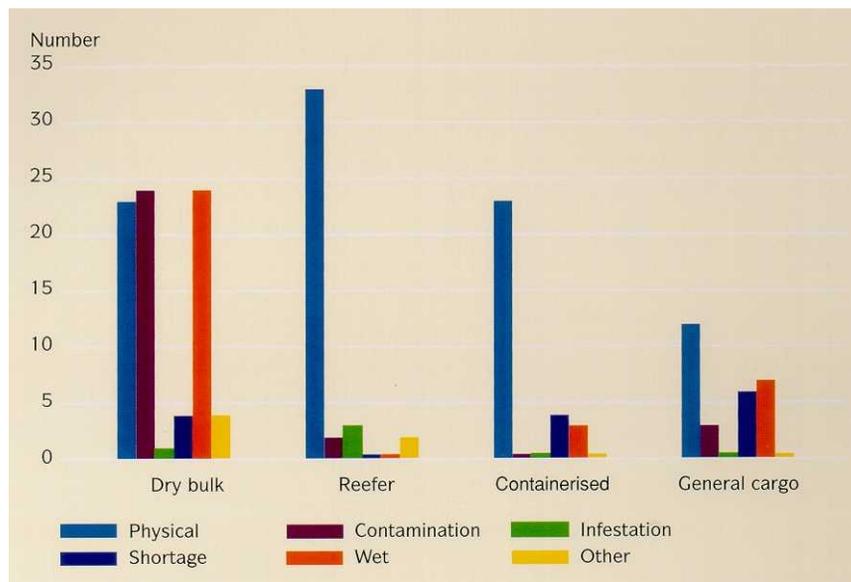


Table 3 opposite also shows claims distributed by type of damage, but concentrates solely on the four cargoes noted earlier in this report as being most frequently involved. In effect, the table charts the susceptibility of a given cargo to suffer damage of a given type and the results confirm what common sense would lead one to expect.

TABLE 3 — TYPE OF DAMAGE, FOUR SELECTED CARGOES



DRY BULK

It can be seen from table 3 that the most serious dry bulk claims are in respect of wet damage, contamination, or general physical damage. (There are few shortage claims because neither measurement error, nor opportunist theft, would usually have consequences of this magnitude.) The causes of the damage are set out in that part of table 4 overleaf which relates to dry bulk. The single most frequent cause is defective hatch covers which, together with shell plate failure, account for most of the wet damage to dry bulk cargo. Bad stowage and bad handling account for most of the dry bulk contamination claims. Fires, sinkings and a variety of other causes, including heating and inherent vice, account for the claims for general physical damage.

REEFER

The entry for reefer cargoes in table 3 is dominated by the claims for physical damage which tend to involve freezing or thawing as a result of failing to maintain proper carriage temperatures. Table 4 shows that much of this damage was caused by bad stowage (often involving obstructed airflows). However, an examination of the causes shown as 'Other' in table 4 reveals that two thirds involved simple mistakes in setting the wrong carriage temperature, while one third were the consequence of reefer machinery failure.

CONTAINERISED

Physical damage also dominates the table 3 profile for container cargo claims and, as table 4 identifies, most of the damage was caused by stowage defects, often involving the failure of the lashing systems. The few shortage claims were in each case caused by theft of an entire container while ashore.

GENERAL CARGO

Although table 3 shows more variety in the types of damage involved than for specialised cargoes, once again it is bad stowage which stands out in the causes shown in table 4.

TABLE 4 — DETAILED CAUSE OF DAMAGE, FOUR SELECTED CARGOES

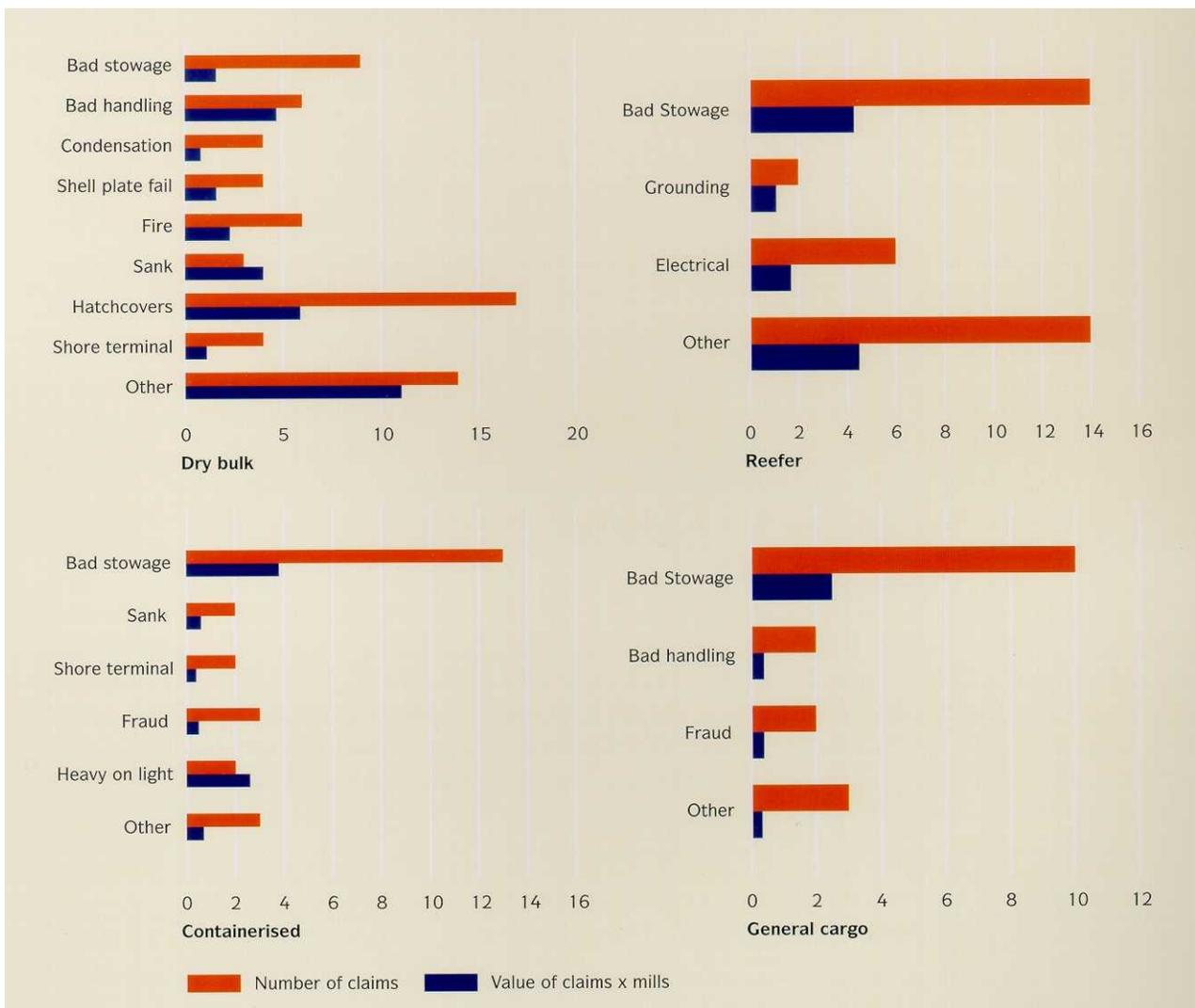
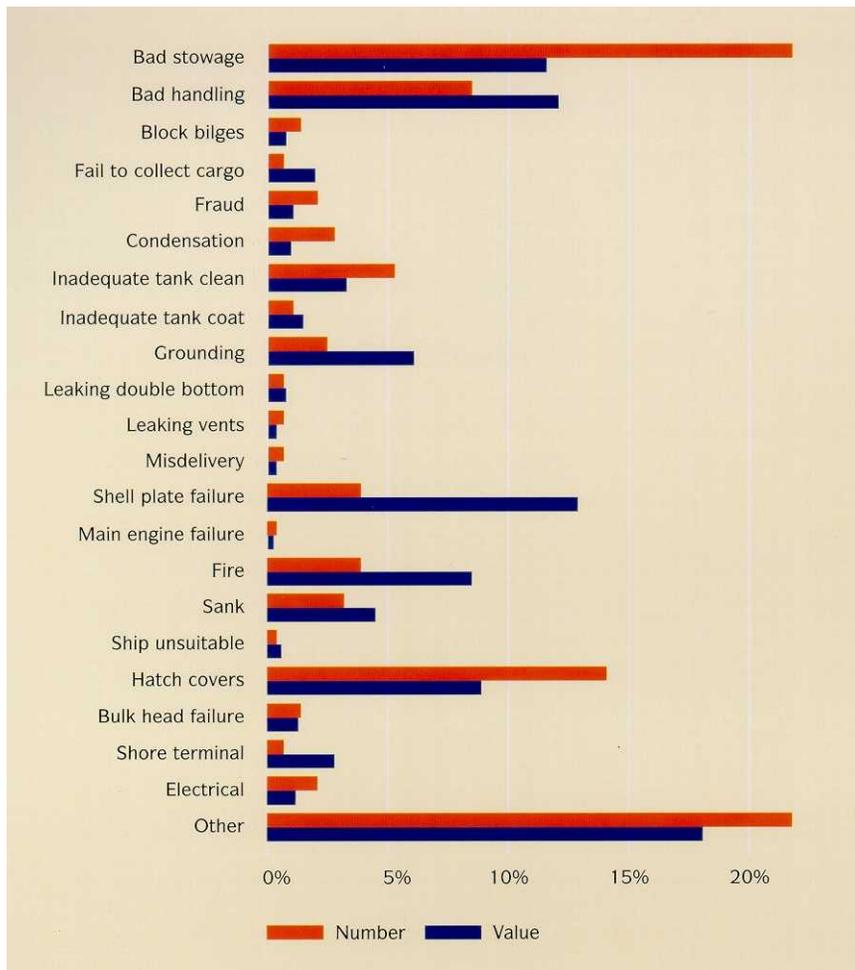


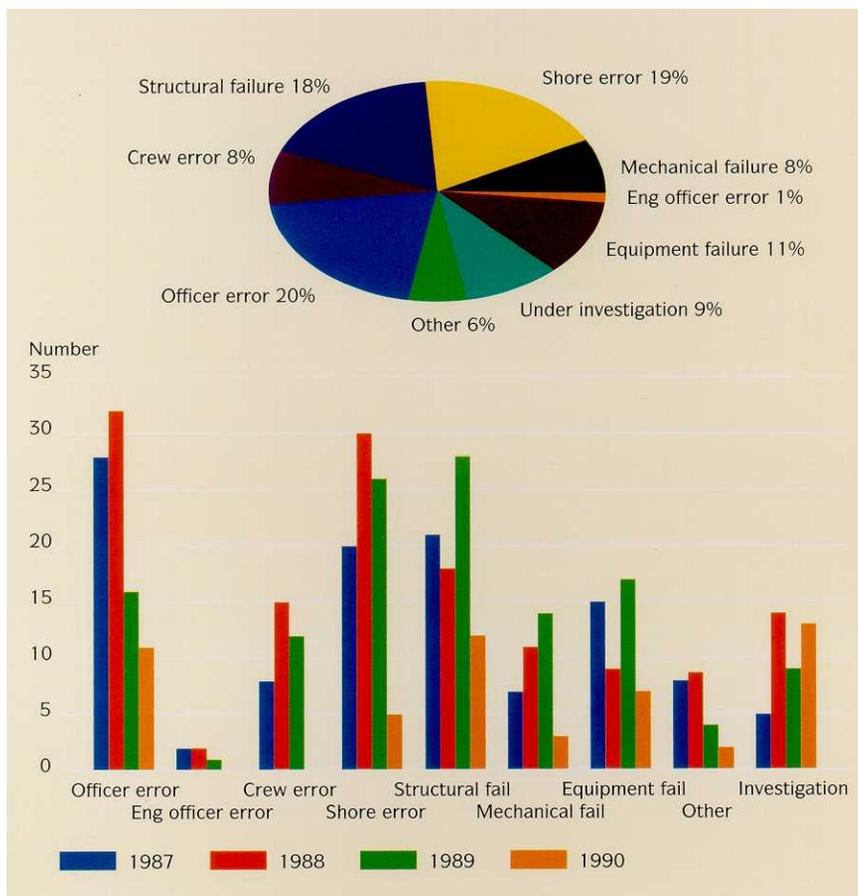
Table 5 below shows the distribution of claims by detailed cause, taking all cargoes into account. Bad stowage, hatch cover defects and bad handling are the most common problems, accounting between them for almost half the claims. Inadequate tank cleaning, shell plate failure, fire and sinkings account for another 15 per cent or so. The category worded 'other' covering sixty two claims included nine involving valve or pipe failure, and sixteen involving damage believed, but not proven, to have existed prior to shipment.

TABLE 5 — DETAILED CAUSE OF DAMAGE, ALL CARGOES



In table 6 below the causes are categorised by reference on the one hand to failures of structure, equipment or mechanisms and on the other hand to the failings of various people involved. The table shows these causes as percentages of the total number of major cargo claims. The lower section shows the actual number of incidents attributed to each cause, distributed over the four policy years. Human error accounts for almost half the claims. However, it should be noted that the bar charts show a significant increase in structural, mechanical and equipment failure in the 1989 policy year. It remains to be seen whether this signals a continuing trend.

TABLE 6 — MAIN CAUSE OF DAMAGE, ALL CARGOES



Ships of between 10,000 and 30,000 grt make up one third of the number of ships entered in the Association, but attracted half of the major cargo claims. Ships aged 10 — 14 years make up one quarter of the Association's entry, but attracted one third of the cargo claims.

Table 7 below shows the distribution of claims by number and by value over the age bands of the ships involved, but focuses solely on claims involving dry bulk, reefer, containerised or general cargoes. It will be recalled that many dry bulk claims involve hatch cover problems and in this connection it is of interest that 70 per cent of all hatch cover problems included in this analysis were on ships aged between ten and twenty years.

TABLE 7 — DISTRIBUTION BY AGE OF SHIP, FOUR SELECTED CARGOES

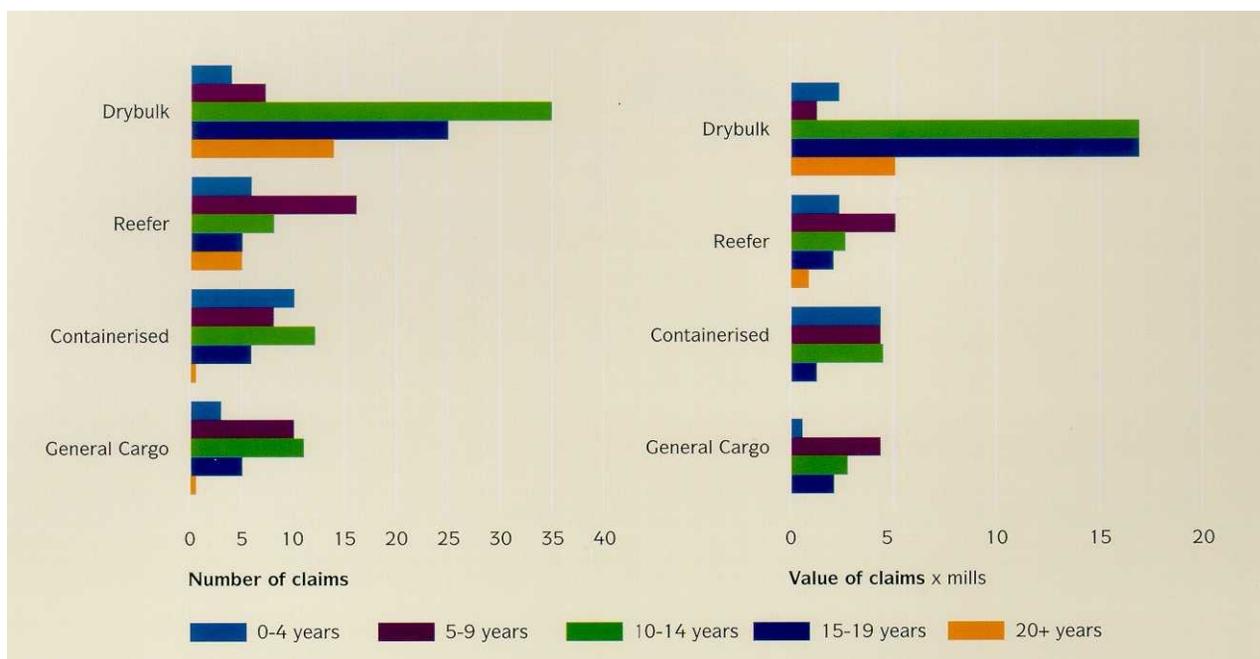
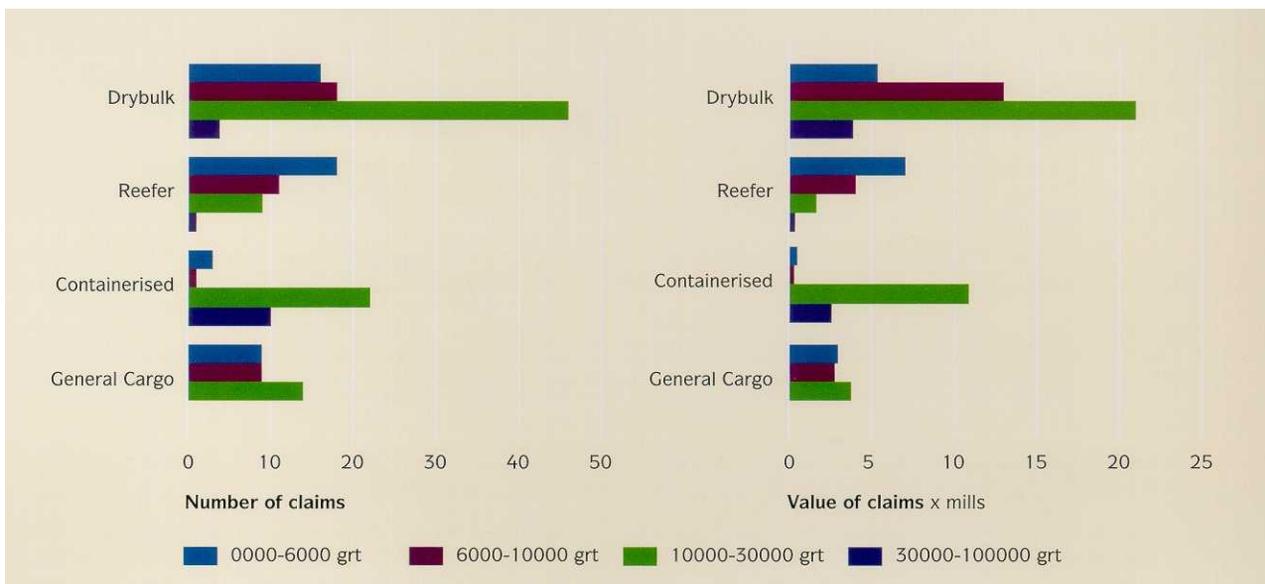


Table 8 below shows the distribution of claims by number and value over the size bands of the ships involved, again being restricted to claims involving four key cargoes.

Most of the dry bulk and container claims occurred on ships between 10,000 and 30,000 grt. Claims involving general cargo were more equally spread, while claims involving reefer cargo more frequently arose on smaller ships; it is not presently known whether this indicates that smaller reefer ships are more likely to have problems, or whether it merely reflects the size profile of reefer entries in the Association.

TABLE 8 — DISTRIBUTION BY SIZE OF SHIP, FOUR SELECTED CARGOES



SUMMARY

To summarise, the risk factors associated (in this analysis) with the greatest frequency of major cargo claims are:

- (a) Involvement of dry bulk, reefer, containerised, general or steel cargo.
- (b) Ships aged between ten and fourteen years.
- (c) Ships of 10,000 to 30,000 grt.

Perhaps to these should be added one more; the most prominent country of incident was the USA in which 15.4 per cent of the cargo claims occurred; the only other countries which stood out were Italy (8.5 per cent), Japan (6.6 per cent) and Netherlands (5 per cent).

In order of importance, bad stowage, bad handling and leaking hatch covers were the most frequent causes of damage. Failings on the part of the people involved with the ships played a more influential role than failures in the structure or equipment of the ships themselves, but the latter appear to be increasing.

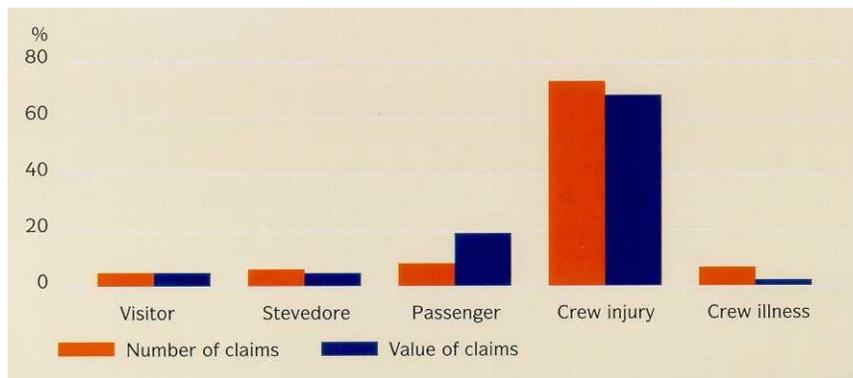


CREW, STEVEDORE AND PASSENGER CLAIMS

(Sample size: 268 claims totalling \$93 million representing 29% of the total number of major claims and 17% of their total value)

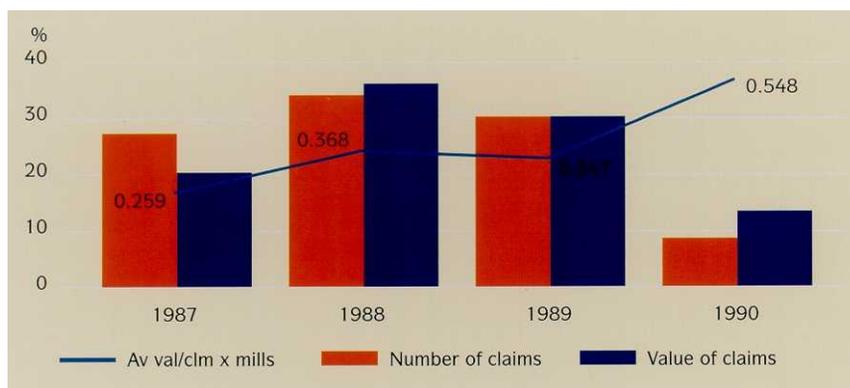
About three-quarters of these claims, by number and by value, relate to crew injuries, the others being fairly evenly split between crew illness, passenger claims, stevedore claims and claims relating to other visitors on board the entered ship. This is illustrated in table 1 below.

TABLE 1 — DISTRIBUTION BY TYPE OF CLAIM



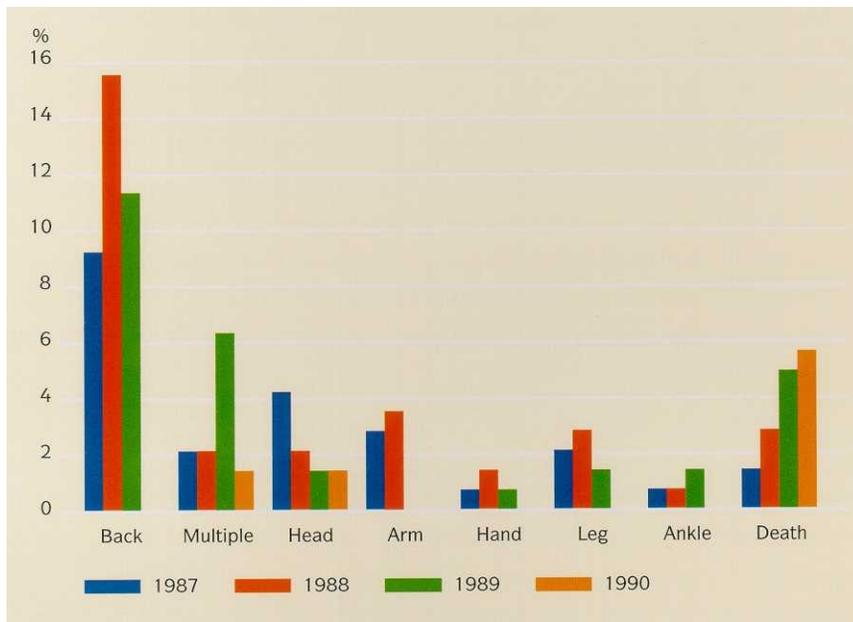
The distribution of these claims over the four relevant policy years is shown in table 2 below. The distribution indicates an upward trend in both numbers and values. From 1987 to 1988 the total number of claims increased by about 20 per cent, while their total value increased by some 40 per cent. Given the 'long tail' nature of injury claims, we can expect that the figures for the 1989 year will rise at least to levels similar to those of 1988. The 1990 year, at this early stage of development, already shows total claim values approaching those of 1987, and an average claim value which (at \$548,000) is higher than in any previous year.

TABLE 2 — DISTRIBUTION OF CLAIMS, BY POLICY YEAR



The main types of injuries involved are identified in table 3 below, distributed by number over the four policy years. Death claims, by reason of their immediacy and seriousness, are not subject to the same 'long tail' as claims for injury; a steady rise in their number from 1987 to 1990 can therefore already be seen, suggesting that this is the pattern which will be observed for the other claims when the policy years are fully developed. That there are many back injuries resulting in this size of claim is apparent from the table; not shown there, but of some interest, is the fact that the average value of a back injury is about \$333,000, compared with an average of about \$285,000 for deaths and \$350,000 for multiple injury claims. The fact that death claims are on average less costly than those for serious injuries is attributable to the high cost of medical treatment, particularly in the USA where many of the injury claims are brought.

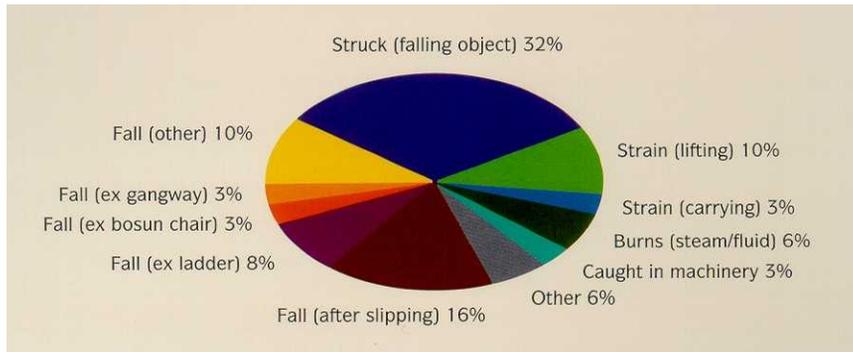
TABLE 3 —TYPE OF INJURY AS PERCENTAGE OF TOTAL NUMBER OF INJURIES, DISTRIBUTED OVER FOUR POLICY YEARS



What kinds of accident caused these injuries? More than one in three involved the victim falling, sometimes from a ladder, scaffolding, gangway or bosun's chair, but more often following a slip on deck. In another 30 per cent of cases the victim was struck by a flying or falling object. In 15 per cent of cases the victim suffered some form of strain injury as a result of lifting, carrying, or pulling a heavy load. Table 4 opposite shows a more detailed breakdown.

Not shown in the table, but worth mentioning, is the fact that the most dangerous place as measured by the frequency of serious injury accidents, is the weather deck on ships and the drill floor on oil rigs. In second position, with half as many claims, is the engine room, followed by the holds.

TABLE 4 —TYPE OF ACCIDENT, AS PERCENTAGE OF TOTAL NUMBER OF ACCIDENTS RESULTING IN MAJOR CLAIMS



Why did these accidents happen? About 22 per cent were the result of mechanical (ie. heavy machinery) or equipment failure, but there were twice as many (48 per cent) resulting from various kinds of human error, as shown in table 5 below. The remaining 30 per cent under the column marked 'no help' were the result of another special kind of human error, namely that of one person trying, without assistance, to do something requiring the help of a second person. These figures suggest that any serious attempt at loss prevention must include a commitment to higher standards of crew training.

TABLE 5 — MAIN CAUSE

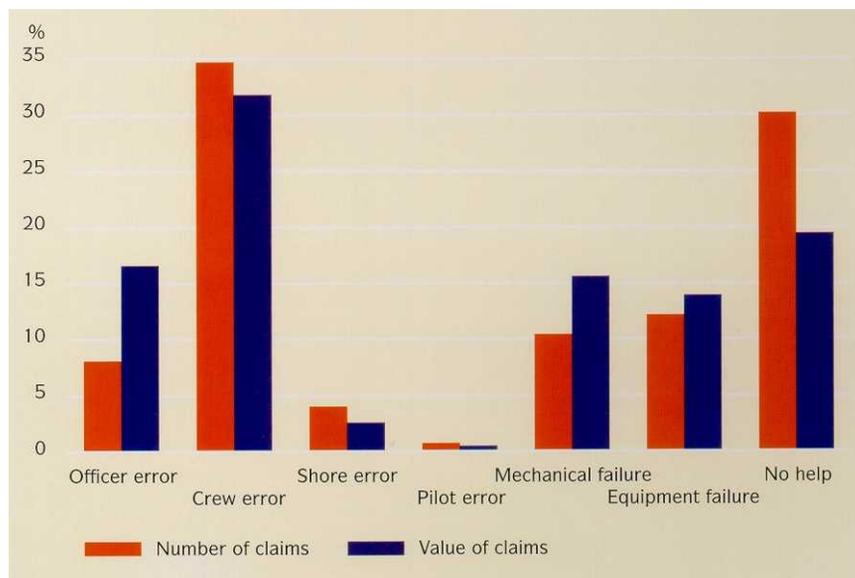
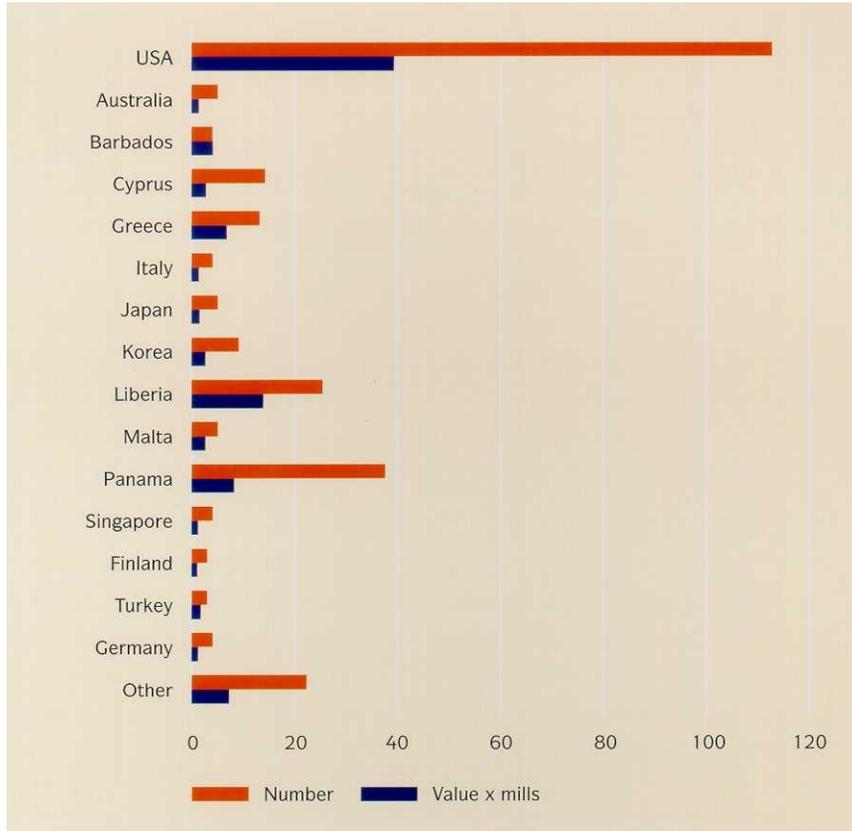


Table 6 below shows the distribution of claims by flag and is dominated by those which involve US flag vessels. This is partly due to a large number of injuries arising on rigs (see table 9, page 28), most of which were US flag.

TABLE 6 — DISTRIBUTION BY FLAG OF VESSEL INVOLVED



However, a more obvious factor contributing to the dominant role of the United States in claims of this size is that its injured are encouraged to be litigious by the generosity of its courts in awarding compensation. (For this very reason the pattern for large claims should not be assumed to be representative of the pattern for claims below \$100,000.) Tables 7 below and 8 opposite show the nationality of the claimant and the jurisdiction in which their claims were brought.

TABLE 7 — NATIONALITY

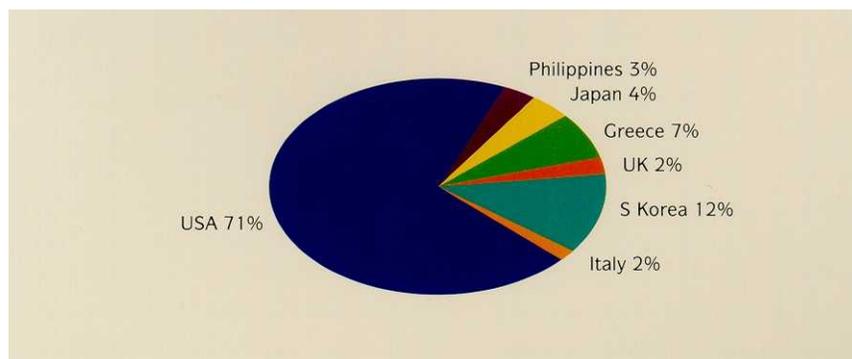


TABLE 8 — JURISDICTION

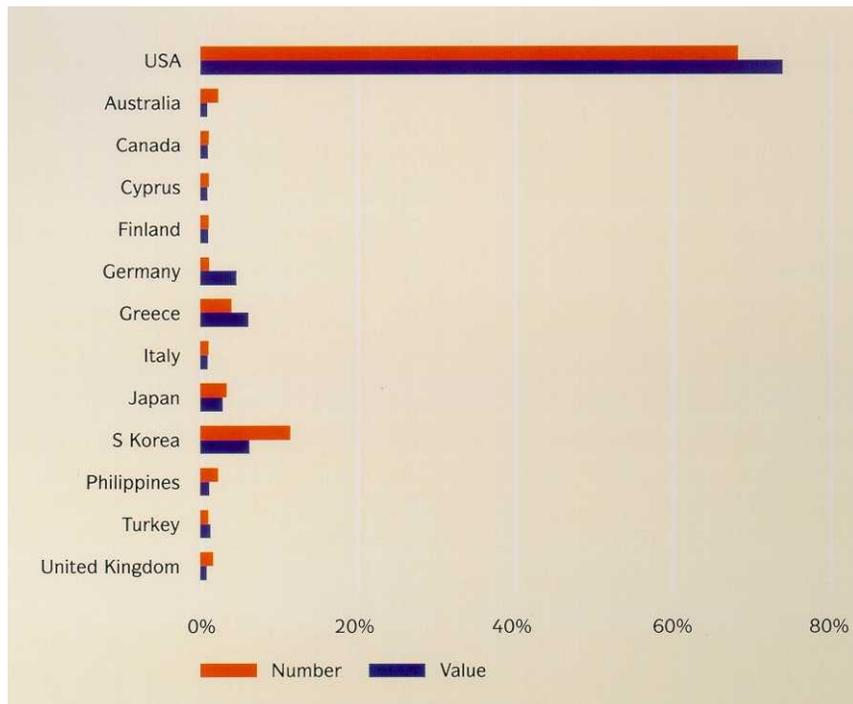
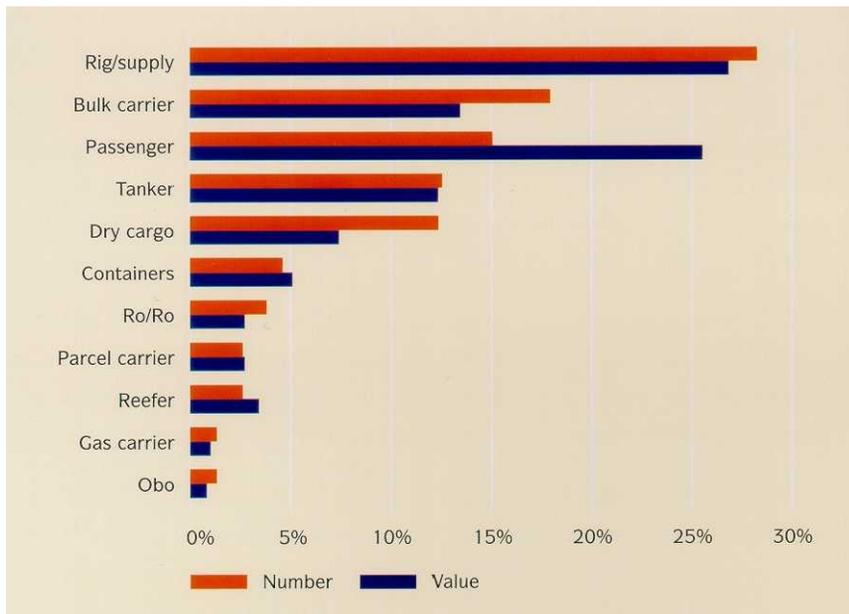


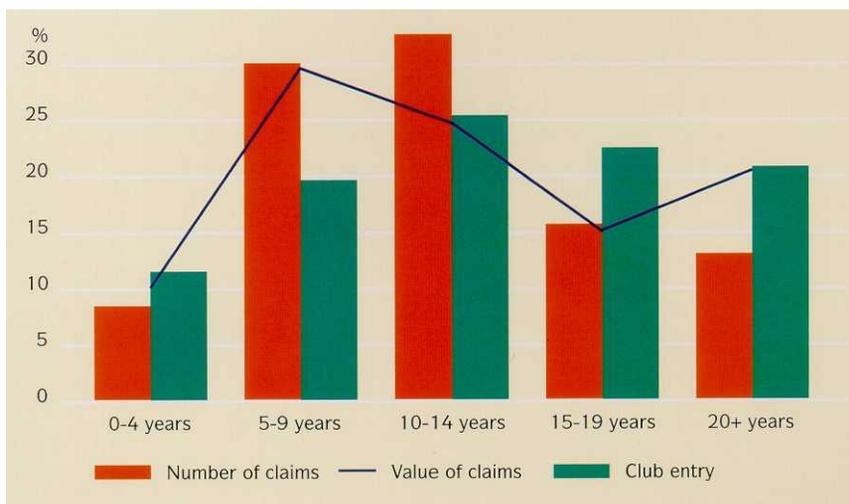
Table 9 overleaf shows claims by number and value, distributed over the kinds of ships involved. Passenger ships comprise 5 per cent of the Association's entry, but attracted 15 per cent of the claims by number and 25 per cent by value. (The high percentage value of passenger claims, compared to their percentage number, does not necessarily indicate high settlement levels. Where more than one person is involved in an accident, that accident is counted as a single claim for the purpose of this analysis. A single casualty in which many passengers are compensated will therefore raise the percentage value of the claims without a corresponding rise in percentage number.) Although rigs and supply ships presently comprise only 3 per cent by number of the vessels in the Association, they were the location for almost 30 per cent of the claims. However, rigs are the subject of a separate reinsurance programme, pay commensurately high premiums and from 1990 all have high deductibles.

TABLE 9 — DISTRIBUTION BY TYPE OF SHIP



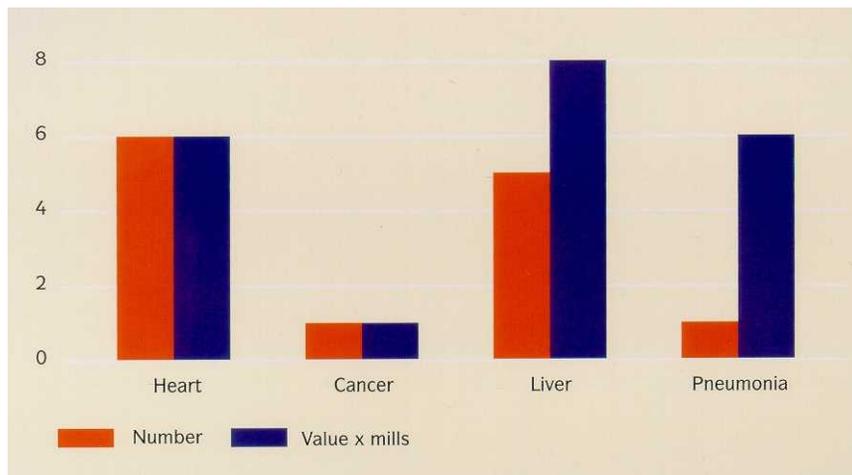
A comparison of claim numbers and values against ship ages is shown in table 10 below. Ships aged 5 — 9 years were the least safe, attracting 50 per cent more claims by number than their entry in the Club would warrant. Ships aged 10 — 14 years attracted about 30 per cent more claims than their numbers would justify. Ships of all other ages were safer than their Club entry would indicate. It is difficult to judge what significance to attach to these figures. As we have seen that eight out of every ten injury claims result from some form of human error, it seems likely that the standards of crewing make a more crucial difference than the ages of the vessels involved.

TABLE 10 — DISTRIBUTION BY AGE OF SHIP, COMPARED WITH CLUB ENTRY



Finally, we turn to crew illness. Very few claims exceed \$100,000. The sample is therefore limited to thirteen claims, in which heart and liver related illnesses are prominent.

TABLE 11 — DISTRIBUTION OF ILLNESS CLAIMS, BY TYPE OF ILLNESS



SUMMARY

Statistics for claims of this size are dominated by the high level of awards in the United States.

About 80 per cent of the claims were caused by human error.

Crew training and/or manning levels are called into question by the high number of injuries in the 'no help' category.



PROPERTY DAMAGE

Including dock damage (sample analysed: 110 claims totalling \$136 million, representing 12% of the total number of major claims and 25% of their value).

The distribution of the major property damage claims over the four year period under review is set out in table 1 below. It has become clear that 1987 was an exceptionally bad year, especially in terms of the value of the claims paid. Since 1987, there is evidence of a downward trend in the value of the claims in 1988 and 1989. Unfortunately, this trend appears to have arrested in 1990 which is already showing signs of being a particularly heavy year, both in the numbers of claims and their values. The claims values for 1990 at \$23.8 million are nearly four times greater than were the claims for 1989 when measured in December, 1989. (See figures in brackets against 1989 in table 1 below.)

TABLE 1 — DISTRIBUTION OF CLAIMS. BY POLICY YEAR

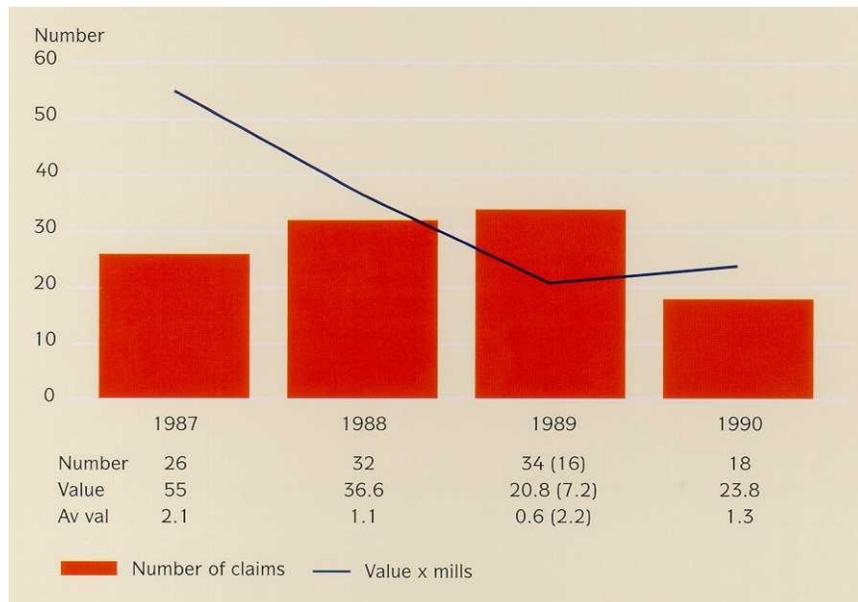


Table 2 opposite shows the percentage number and value of claims attributable to the size of ship expressed in tonnage ranges. The table also shows the distribution of ships in the tonnage ranges for the Association as a whole. As can be seen from the table, ships in the tonnage range 10,000 — 30,000 grt comprise 33 per cent of the Association's entry but caused 50 per cent of the claims in terms of both number and value. However, it can be seen from the average value line, also plotted in the table below, that although fewer claims are caused by ships in the tonnage range 30,000 — 100,000 grt each such claim will be almost twice as expensive.

TABLE 2—DISTRIBUTION BY SIZE OF SHIP, COMPARED WITH CLUB ENTRY

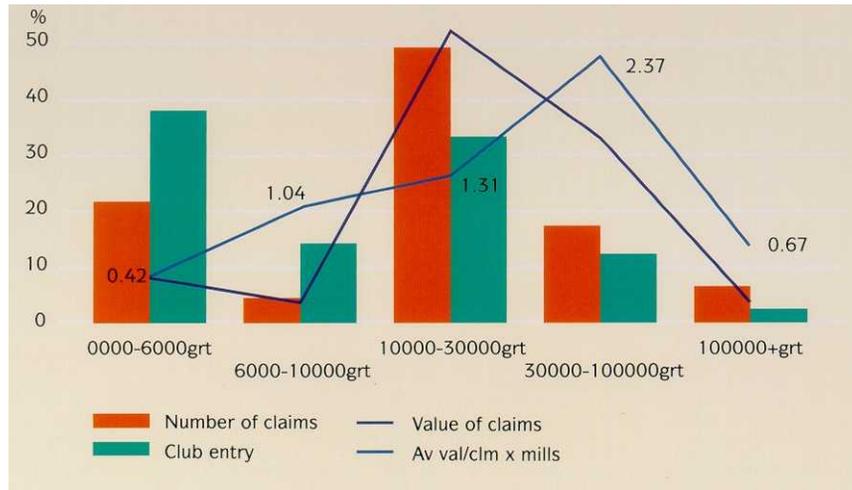


Table 3 shows the main causes expressed as a percentage of the total number of incidents. This demonstrates the very high percentage number of claims caused by human error, and highlights in particular the heavy contribution of pilot error in all years under review.

TABLE 3 — MAIN CAUSE

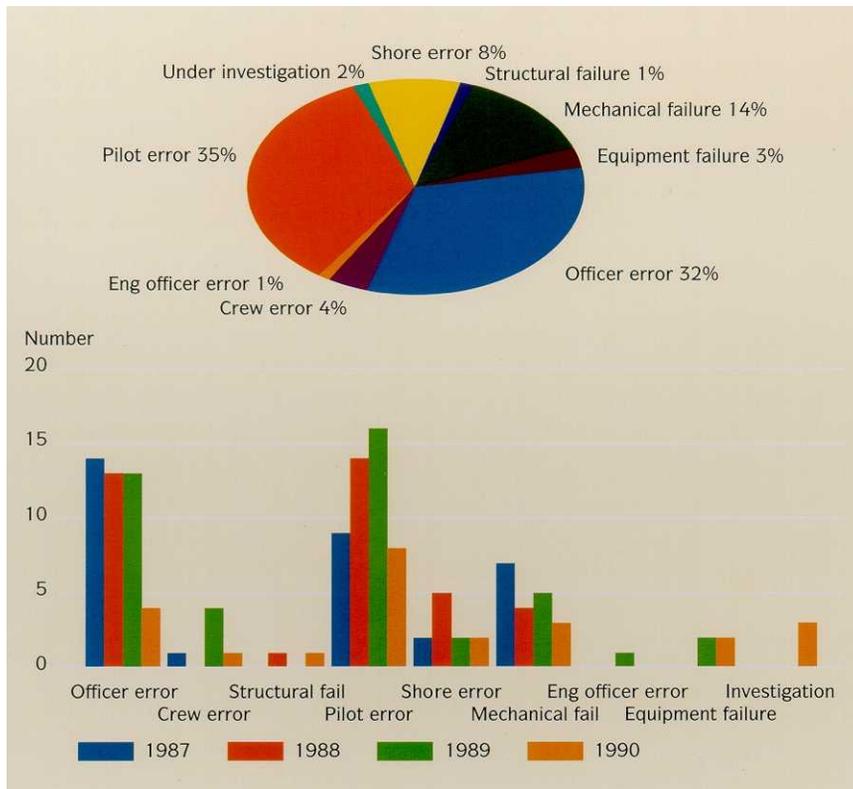


Table 4 below shows the percentage number and value of claims attributable to a particular type of ship. It is interesting to note that although bulk carriers and tankers account for approximately the same number of incidents, claims involving tankers account for almost 55 per cent of the total value of claims paid and estimated.

TABLE 4 — DISTRIBUTION BY TYPE OF SHIP

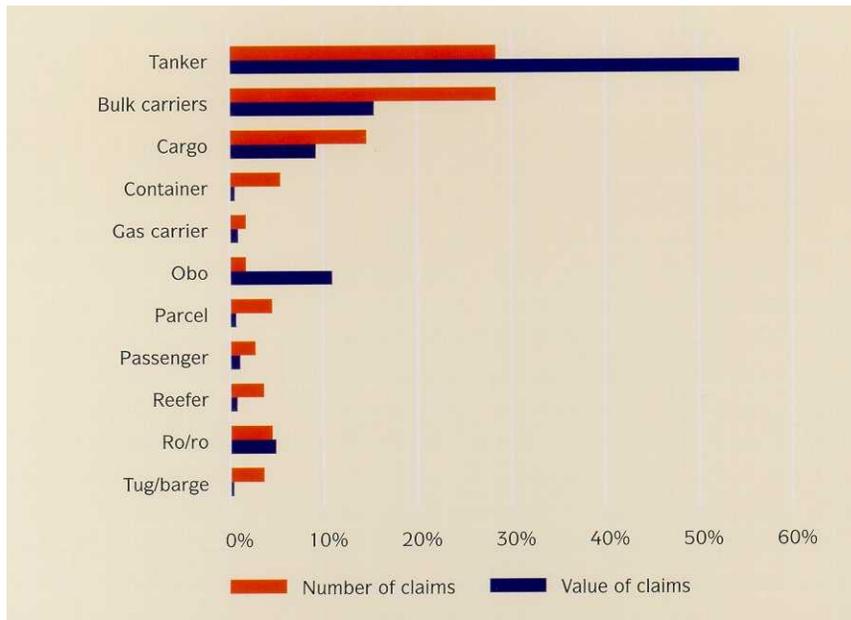


Table 5 opposite shows the age of the ships involved expressed as a percentage of the total number of incidents and compares this to the Club entry. There is no obvious trend, though it is interesting to note the high average value attributable to ships in the age band 15 — 19 years, the very low number and value of claims involving ships over twenty years old and the disproportionate number of claims involving the younger ships.

TABLE 5 —DISTRIBUTION BY AGE OF SHIP, COMPARED WITH CLUB ENTRY

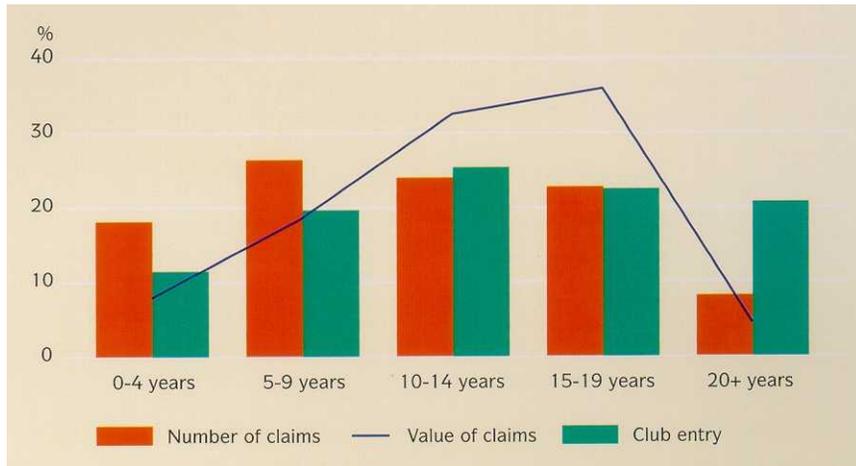


Table 6 shows the country of incident where there were more than five major claims over the four years under review. Two points need comment; (a) the fact that these claims occur mainly in developed countries and (b) although a very high average value is shown for the USA, this is distorted by a single very large payment on one claim.

TABLE 6—COUNTRY OF INCIDENT

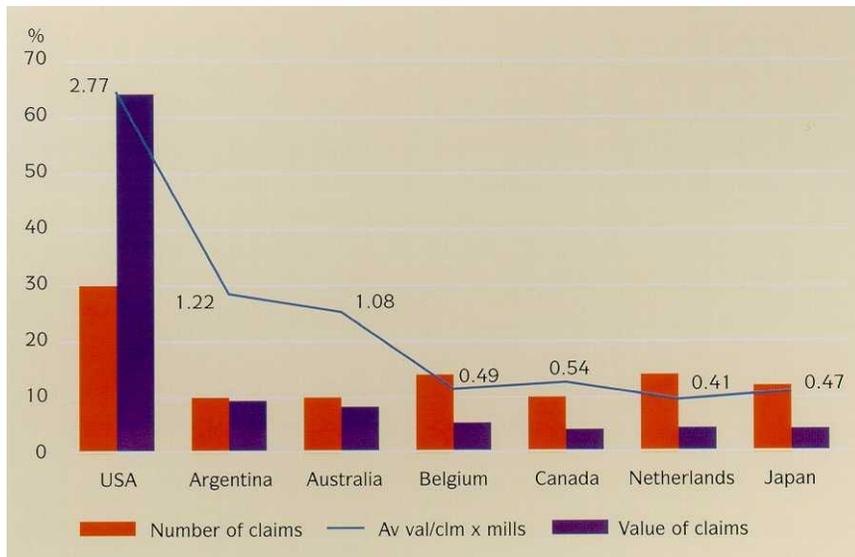
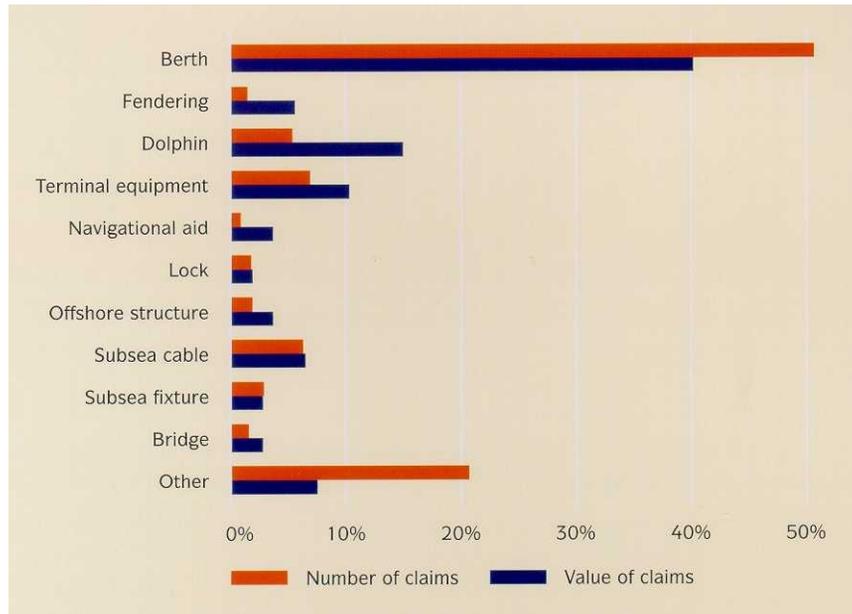


Table 7 shows the type of property damaged expressed as a percentage of the total number and value of incidents.

TABLE 7 — TYPE OF PROPERTY DAMAGED



SUMMARY

Ships in the tonnage range 10,000 to 30,000 grt are more likely to cause this type of damage.

The majority of the claims (80 per cent) can be attributed either in whole or in part to human error and of these claims the most significant element is pilot error.

45 per cent of the claims involved ships under ten years old.



POLLUTION CLAIMS

(Sample analysed: 49 claims totalling \$46 million, representing 5 per cent of the total number of major claims and 8.5 per cent of their total value.)

Table 1 shows the percentage number of claims attributable to the type of ship.

(Note that although tankers account for 50 per cent of the total number of claims, their share of the total value of claims is 69 per cent.)

TABLE 1 — DISTRIBUTION BY TYPE OF SHIP

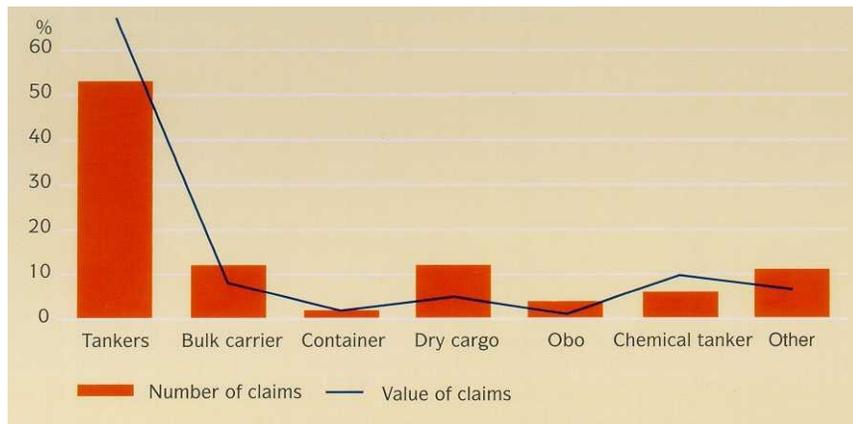


Table 2 shows the percentage number and value of claims attributable to the size of the ship expressed in tonnage ranges. The table also shows the distribution of ships in the tonnage ranges for the Association as a whole and the average value of claim by range. The abnormally high average size of claim for ships in the tonnage range 6,000 — 10,000 is the result of three very expensive claims.

Two of the claims involved groundings and the other a bunkering accident. Note should also be taken of the high percentage number of claims in the 30,000 — 100,000 tonnage range.

TABLE 2 — DISTRIBUTION BY SIZE OF SHIP

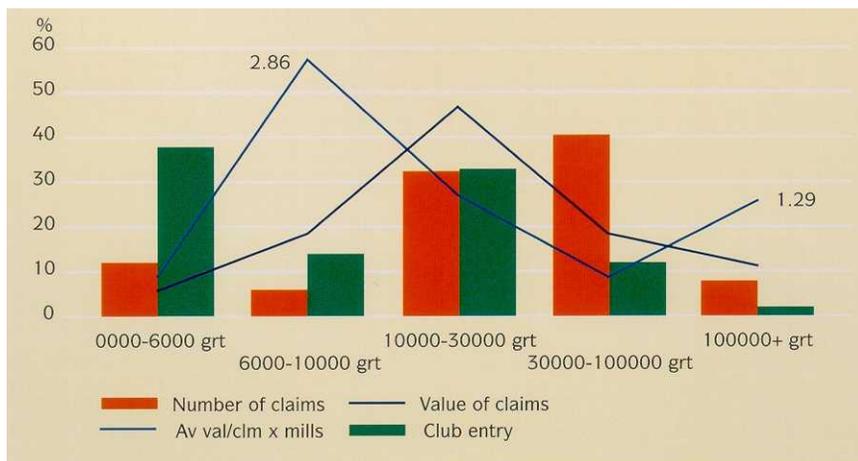
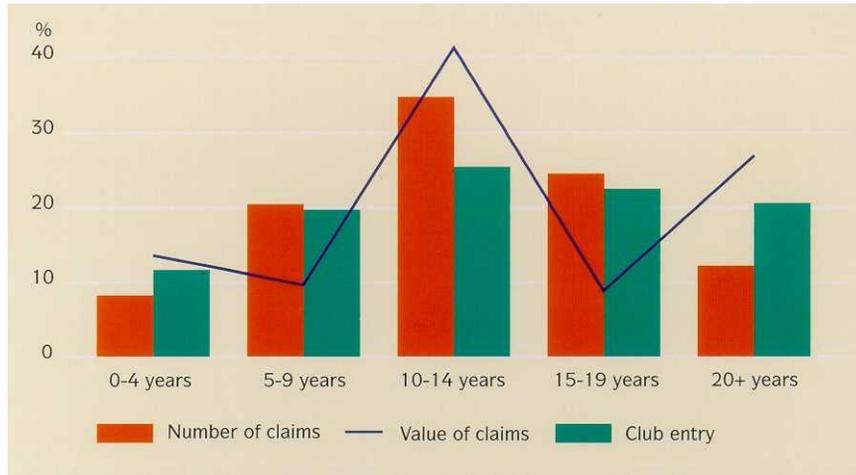


Table 3 shows the age of the ships involved as a percentage of the total number of incidents and compares this to the Club entry. Although 31 out of the 49 claims occurred on ships under fifteen years old, it is disturbing to note the high percentage number of claims in the age bands 10 — 14 years.

TABLE 3 — DISTRIBUTION BY AGE OF SHIP, COMPARED WITH CLUB ENTRY



It is interesting to compare the age profile for all types of ship in the Association (table 3 above) with the age profile for tankers only (see table 4 below). Once again the problems associated with ships, in this case tankers, aged between ten and fourteen years old is clearly evident.

TABLE 4 — DISTRIBUTION BY AGE OF TANKER

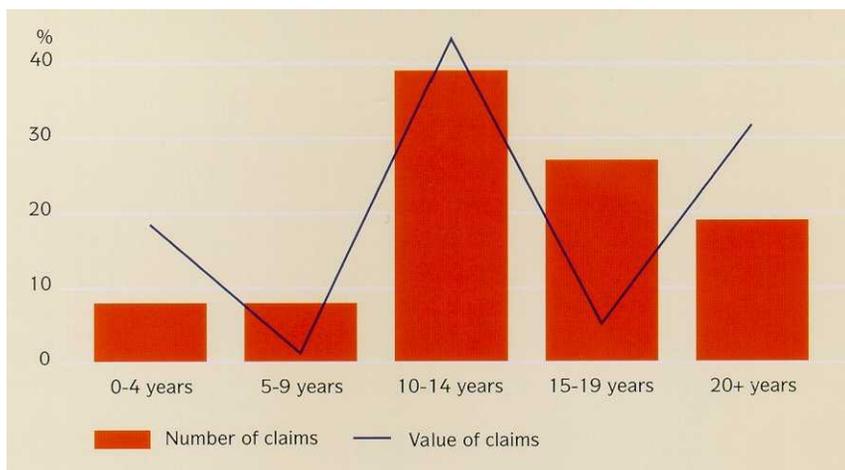


Table 5 below contains two charts showing the main products spilled and their contribution to the total value of claims made. It is evident from the first graph that 1987 was a particularly bad year for major bunker spills.

TABLE 5—MAIN PRODUCTS SPILLED

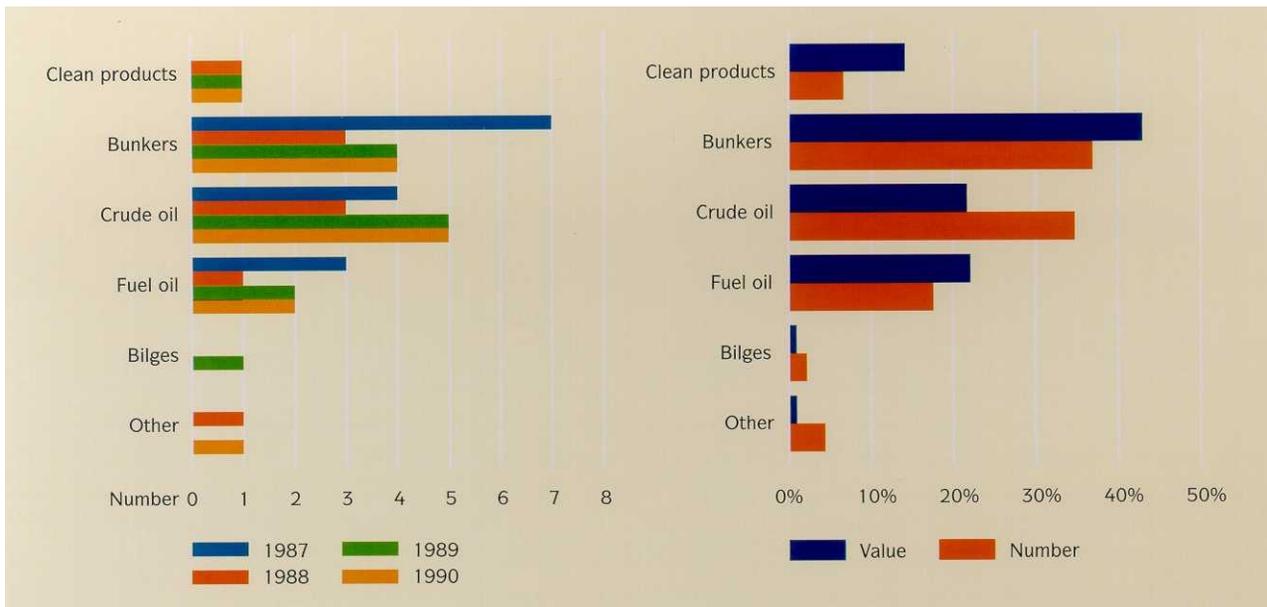
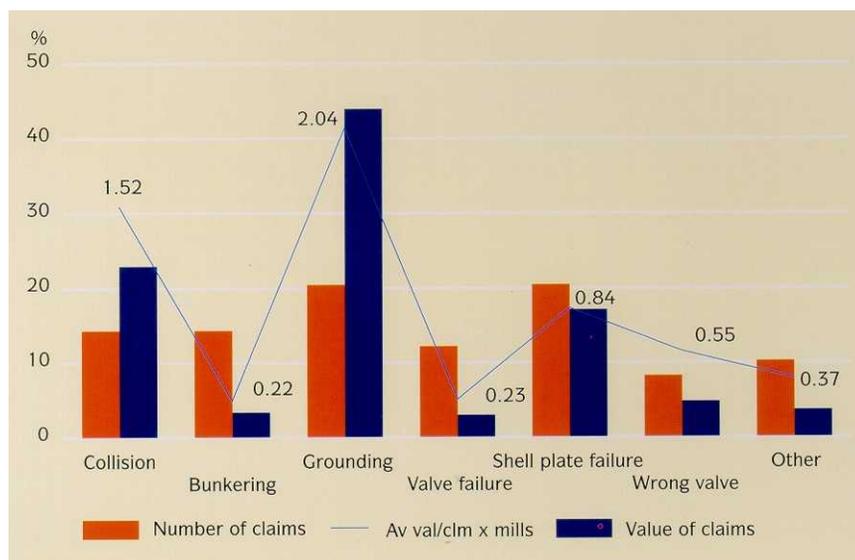


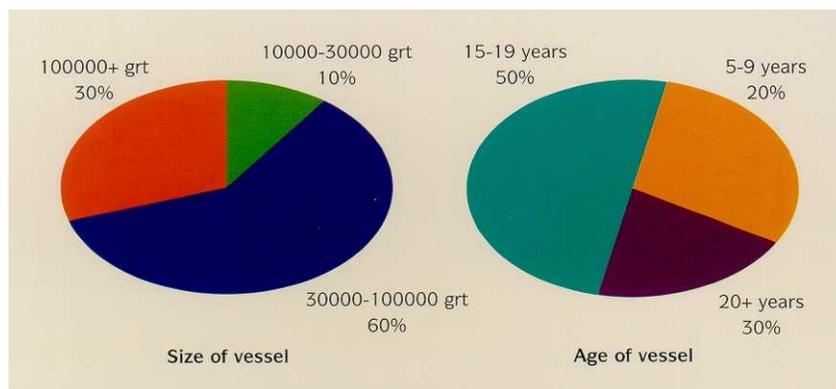
Table 6 shows the main cause as a percentage of the total number and value of the claims. As can be seen from the table, human error is a major factor, with groundings accounting for 44 per cent of the total claims paid and estimated. The fact that groundings occur in coastal waters, and therefore close to land, helps to explain the high cost of these incidents.

TABLE 6 —MAIN CAUSE



As can be seen from table 6, shell plate failure accounts for 20 per cent of the total number of claims (ten incidents) and 18 per cent of their total value. Table 7 below examines the ships involved in the shell plate failure incidents by size (in tonnage ranges) and age. 8 out of the 10 claims involved tankers.

TABLE 7 — SHELL PLATE FAILURE BY SIZE AND AGE



SUMMARY

Human error, whether during bunkering operations or as a result of a collision or grounding, accounts for 50 per cent of the total number of claims and over 75 per cent of the total value of claims paid and estimated.

Tankers account for 50 per cent of the total number of claims.

Ships of all types in the age band 10 — 14 years present a disproportionately higher risk compared to the number of ships in that age band entered in the Club (see table 3, page 36).



COLLISION CLAIMS

(Sample analysed 64 claims totalling \$42 million, representing 7 per cent of the total number of claims and 8 per cent of their total value.)

84 per cent of the cases involved the entered ship being in a status described as 'underway' (table 1 below). The term 'underway' means that the ship was 'full away on passage' and not involved in close quarter manoeuvring such as anchoring or berthing.

TABLE 1 — STATUS OF THE ENTERED SHIP

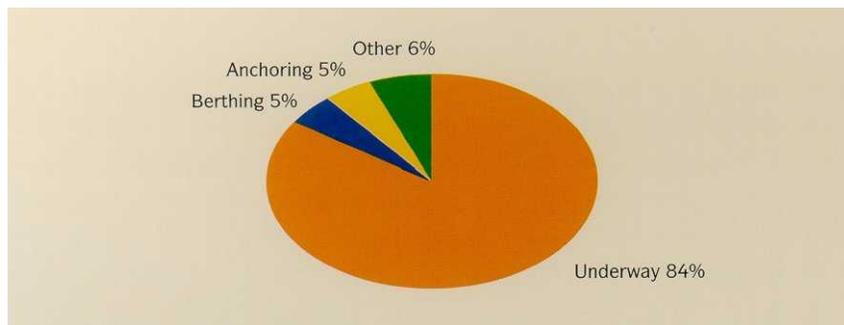
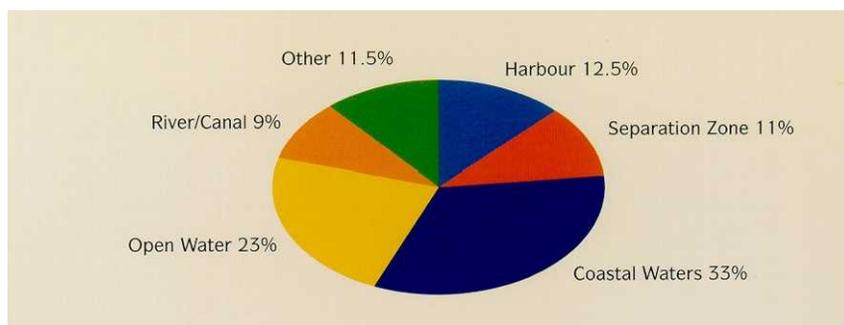


Table 2 below shows where the major collision claims occurred. Not surprisingly the results show that collisions are more likely to occur in coastal waters (33 per cent). The proportion of coastal water collisions to the total would almost certainly increase if all collision claims, including those claims with a value of less than \$100,000, were included in the sample. Although not shown here, open water collisions account for a larger proportion of the value of claims, at 30 per cent, than coastal collisions at 19 per cent.

TABLE 2 — PLACE OF OCCURRENCE



The status of the 'other' ship is shown in table 3 overleaf. The 'other' (not entered) ship was underway in 55 per cent of the cases. An interesting feature to note is the relatively high proportion of collisions involving fishing vessels (15 per cent). The fishing vessel cases are evenly split between those that occurred in good visibility and those that occurred in poor visibility. It appears also that the seniority of the officer on watch on the entered ship is a significant factor. The Master was on the bridge in only one incident involving a fishing vessel.

TABLE 3—STATUS OF THE 'OTHER' SHIP

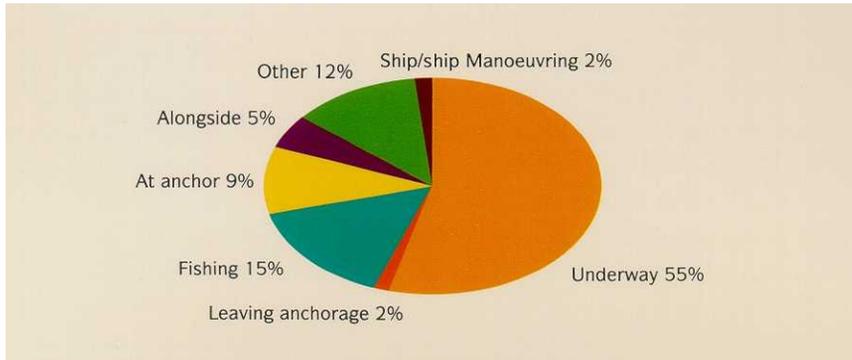


Table 4 below shows the type of collision ('crossing', 'overtaking', etc) as a percentage of the total number. As can be seen from the table, the greatest number of collisions occur in crossing situations (47 per cent). Once again, the seniority of the officer on the bridge is a significant factor. The Master was on the bridge in only 33 per cent of all crossing situation collisions. Second officers were involved in three times as many collision cases as the other watch keeping officers. The fact that 60 per cent of crossing situation collisions occurred at night suggests that serious collisions are more likely to occur during the second officer's night watch. Members' loss prevention programmes should look seriously at this aspect of training.

Although not shown in the table, pilot error was identified as a factor in 17 per cent of the collision cases.

TABLE 4 —TYPE OF COLLISION

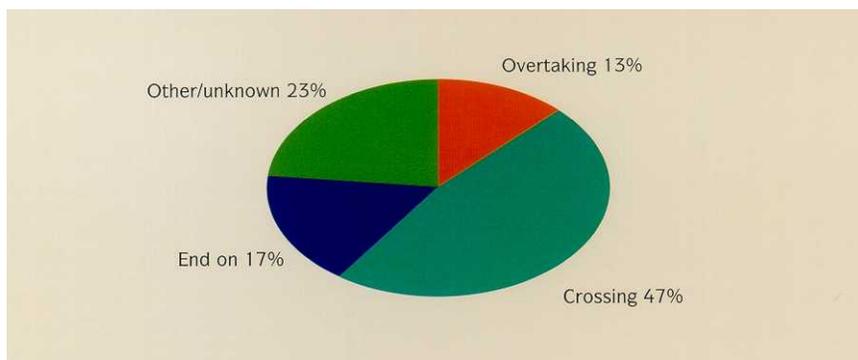
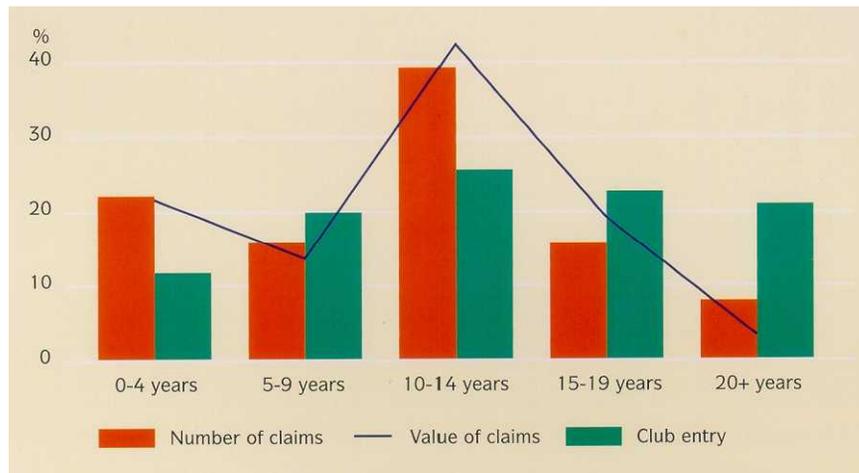


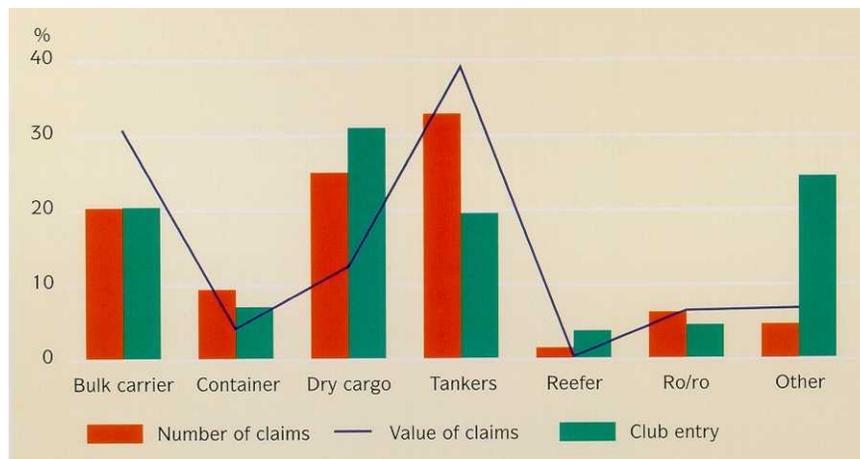
Table 5 opposite shows the age of the ships involved as a percentage of the total number and value of claims and compares this to the Club entry. It is interesting to note that ships in the age band 0 — 4 years, at 22 per cent of the total number of cases, were involved in almost twice the number of major collisions as their Club entry would suggest. This points to a need for improved training procedures, particularly 'pre delivery', where new ships are involved.

TABLE 5— DISTRIBUTION BY AGE OF SHIP, COMPARED WITH CLUB ENTRY



As can be seen from table 6 below, tankers appear to be involved in a disproportionate number of major collisions if compared to their Club entry. This can probably be attributed to the poor manoeuvring characteristics of this type of ship. Moreover, the table also demonstrates that the momentum of larger ships, such as tankers and bulk carriers, causes more serious and costly damage.

TABLE 6 — DISTRIBUTION BY TYPE OF SHIP AND VALUE OF THE CLAIMS

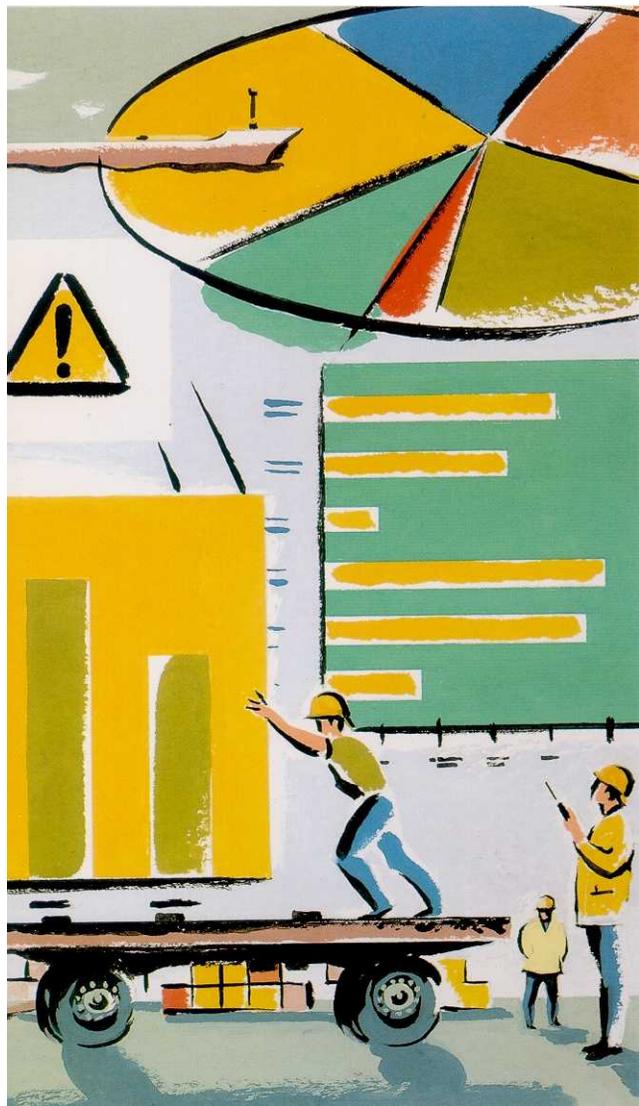


SUMMARY

Almost all collision cases are caused either in whole or in part by human error.

The risk of a collision occurring appears to increase at night, particularly during the junior officers' watch.

Inexperience (or lack of training) and officer fatigue are important contributory factors in many of the collision cases examined.



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