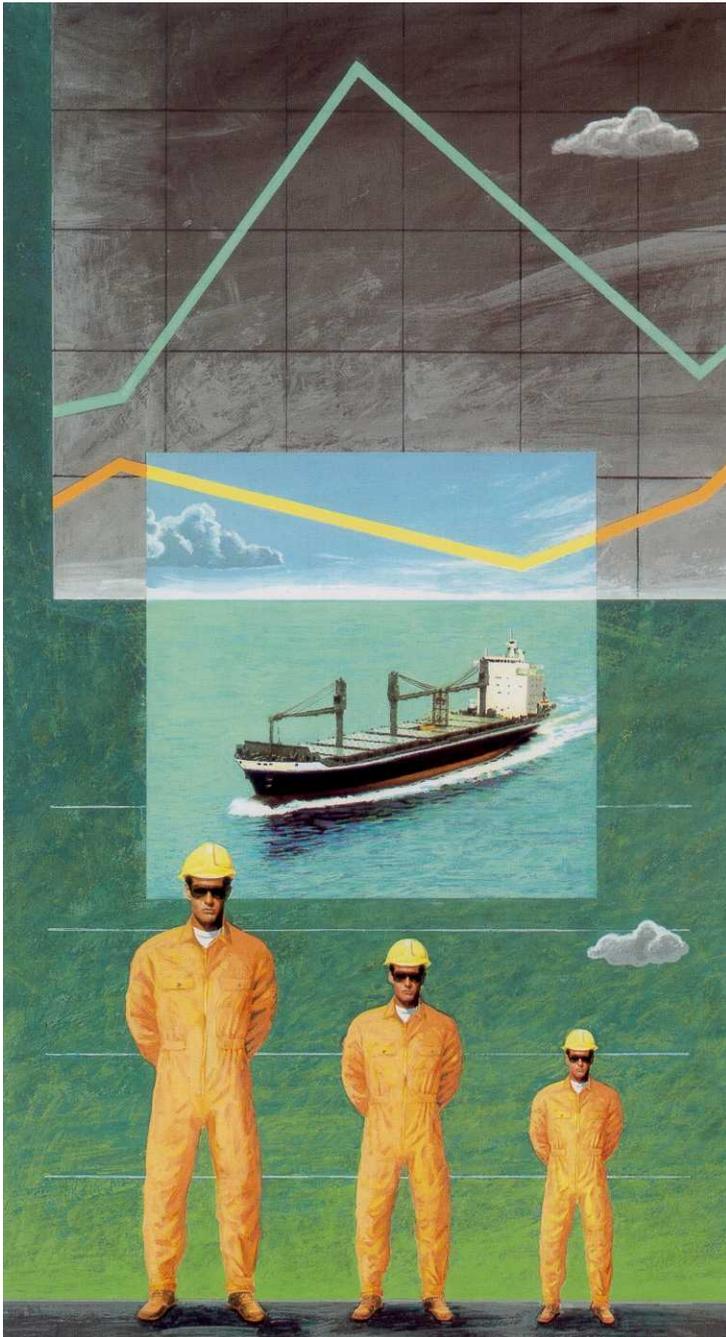




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**The first report of our analysis of major claims in October last year set a new landmark for this Club and for the industry. The quest for improved quality in our membership and a reduction in claims are aims which most P&I Clubs share, and it has been encouraging from an industry perspective to see how other Clubs have taken up the UK Club's initiative with their own similar claims analyses and are following our ship visit ideas in order to develop their own quality programmes.**

In this report, we have been able to improve our data with detailed analyses of a further 500 claims and have also completed the first phase of the ship visit programme. The capability of the Club to develop its unique and substantial data for analytical purposes provides a most valuable resource and we have now linked in our ship visit programme to the claims research in order to give greater focus to our underlying determination to maintain and develop a membership of the highest possible quality.

This second report prepared by the Managers develops the preliminary conclusions of the first report and also incorporates the ship vetting conclusions. Its aim is to share with Members of the UK Club the factual information behind the major claims, so that Members can themselves consider what action to take to reduce the likelihood of having such a claim with all its consequences in terms of cost, disruption and damage to reputation. The report also takes into account a number of Members' suggestions made in response to the first edition. The Managers would welcome further comment and ideas for improvement as they continue their research.

The detailed statistical data which underpins the report, together with the more general claims data which is now being collated by the Managers, provide a solid foundation for the UK Club to continue to lead in provision of practical advice to Members, improved services and more sophisticated underwriting techniques.

First class cover and support to all Members at the lowest possible cost is our continuing policy; the participation of the Member in applying the lessons emerging from the analysis is evidence of our mutual commitment to achieving the Club's aims.

M A Kulukundis  
Chairman  
October 1992



## OVERVIEW

### CONTENT

This year's report is in four sections. The overview describes the scope and size of the Analysis, and sets it in the context of the overall claims of the UK P&I Club. The relative importance of human error, structural failure, and jurisdiction are discussed in the second section 'Summary'. The third section 'Loss prevention' describes the activities and findings of those who carry out ship visits and condition surveys. The last section consists of appendices in which five principal types of risk are subject to detailed analysis.

### RISK PERIOD 1987, 1988, 1989, 1990, AND 1991 POLICY YEARS

This analysis examines the underlying causes of the major claims of UK P&I Club Members arising between 20th February 1987 and 20th December 1991, based on information available at the end of December 1991.

### WHAT SIZE OF CLAIM?

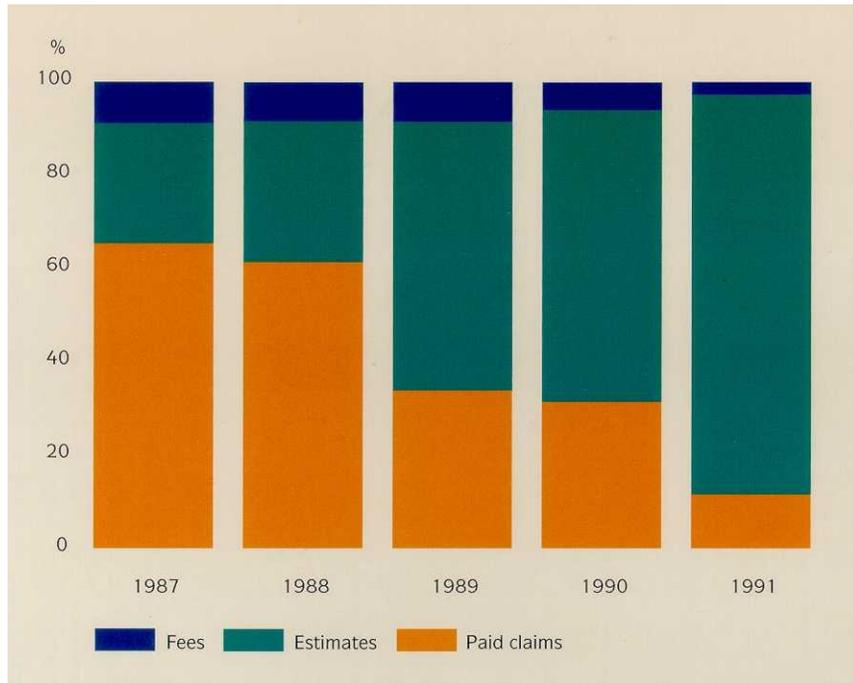
A 'major' claim in this context is one for which the amount paid and the amount of any outstanding estimate (in each case net of any deductible) together total at least US\$100,000. Although individual liability costs will have increased (at least by inflation) in the year since our last report, the threshold above which such claims are included in the Analysis has remained constant.

As will be seen below, the great bulk of the Association's claims are individually less costly than \$100,000. Other things being equal, the effect of keeping the major claim threshold fixed over a period of inflation will, in terms of numbers of major claims, be the same as would result from a reciprocal lowering of the threshold over a period of zero inflation. Absent any other factors, the average value of the claims included in the Analysis will therefore tend to decline from one policy year to the next as the average value of claims overall increases.

### ARE CLAIM HANDLING FEES INCLUDED IN THE VALUES?

Both paid fees and estimates of any future fees are included in the values. Table 1 overleaf shows a breakdown, by policy year, of the total amounts paid. They are divided into 'Paid Claims' (payments of Members' claims), 'Paid Fees' (fees which have been paid to surveyors, lawyers or other experts), and 'Estimates' (estimates of the total future payments for each file, including both claims and fees). Fees make up about 9 per cent of the cost of Major Claims in the older policy years, but rather less in the less developed years.

TABLE 1 — BREAKDOWN OF COST OF MAJOR CLAIMS, DISTRIBUTED BY POLICY



WHAT TYPES OF CLAIM?

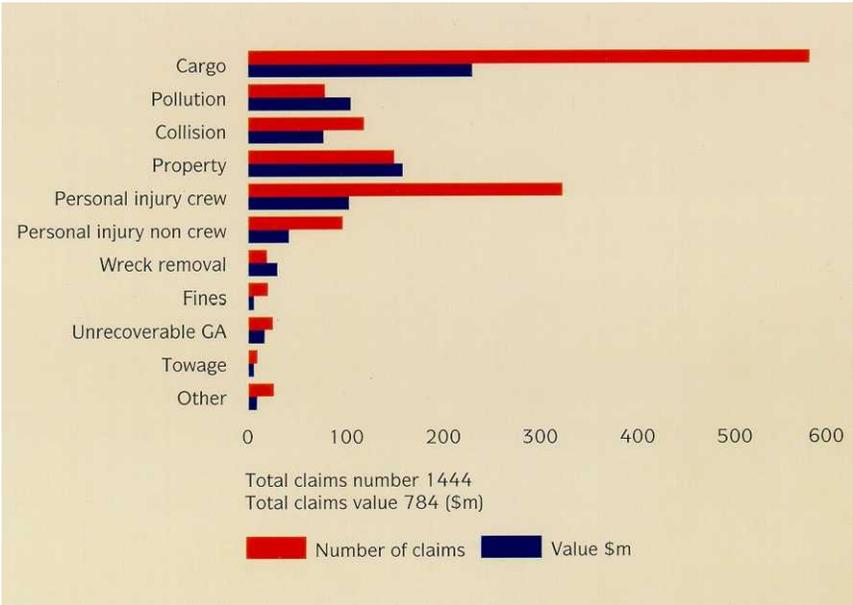
To the extent that the review comments on general trends it takes account of all major claims within the risk period, irrespective of the type of liability involved. As measured in December 1991 there were 1,444 such claims with a gross claim value of US\$784 million.

Of these claims, 1,380 are the subject of the detailed analyses contained in the appendices. They have a gross value of about US\$724 million and they consist of all the major claims in respect of cargo, personal injury (both crew and non-crew), property damage, pollution, and collision.

The remaining 64 claims, not included in the detailed analyses, related to a variety of liabilities including wreck removal, fines, and unrecoverable general average contributions.

The frequency and value distribution of claims, by risk type, is shown in table 2 opposite.

TABLE 2 —DISTRIBUTION OF MAJOR CLAIMS BY RISK TYPE

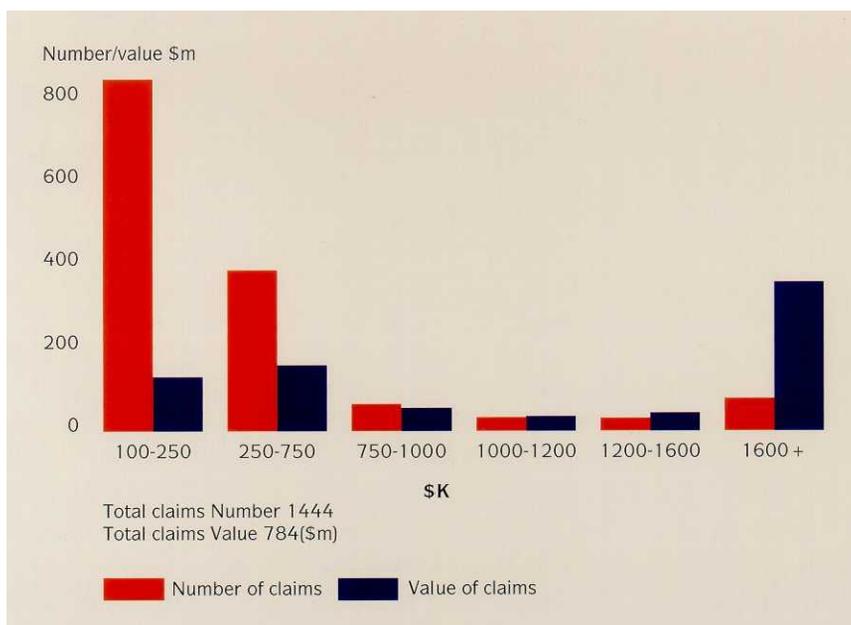


DO THE CLAIM FIGURES TAKE ACCOUNT OF REINSURANCE?

Claim values referred to in this review are gross figures, with no allowance for reinsurance recoveries from the Pool or general 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.

The level at which the first layer of reinsurance — the Pool — comes into operation was US\$1.2 million from 1987 to 1989, US\$1.6 million from 1990 to 1991, and is now US\$2 million. Only 7.5 per cent by number of the claims in this review exceed the 1987 pooling threshold; of these, two thirds also exceed the 1990 threshold. These relatively few claims account for almost half the gross value of major claims, as can be seen in table 3 below.

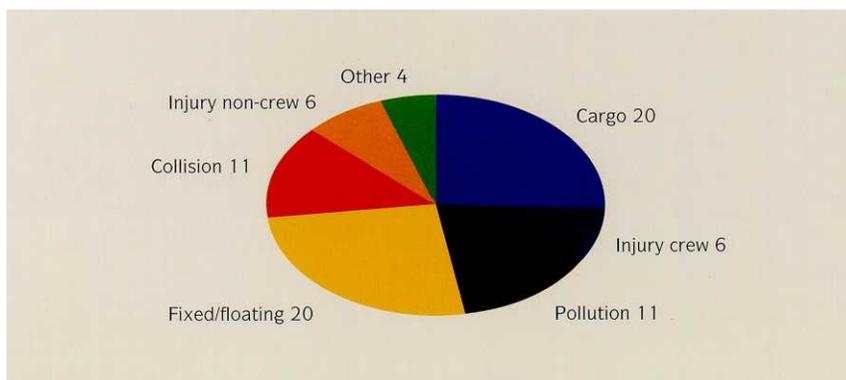
TABLE 3 - DISTRIBUTION OF MAJOR CLAIMS BY VALUE BANDS



WHAT CAUSES THE VERY HIGH VALUE CLAIMS WHICH EXCEED THE POOL RETENTION?

78 of the claims which occurred during the risk period covered by this study were individually more costly than \$1,600,000, Table 4 below shows the frequency distribution of these 78 claims by risk type. Property damage and cargo claims predominate, followed by pollution and collision.

TABLE 4 —VERY HIGH VALUE CLAIMS, DISTRIBUTED BY RISK TYPE



20 of those 78 claims were in respect of cargo, and their detailed causes are shown in table 5 below. There were 8 dry bulk cargoes, 3 crude oil, 2 oil products, and 2 reefer cargoes, the remainder being bagged bulk, cars and containerised cargo. The causes are split evenly between ship failures and human errors. Not shown in the table, but of interest, is that almost half these very high value cargo claims arose in Africa. There were none in North America.

TABLE 5 — VERY HIGH VALUE CARGO CLAIMS, DISTRIBUTED BY DETAILED CAUSE

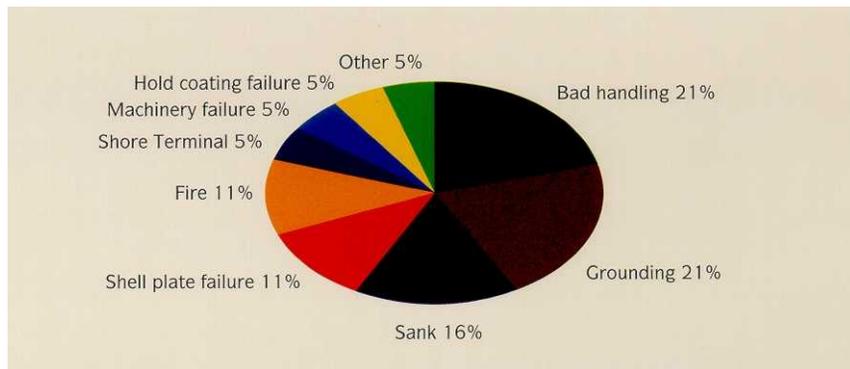
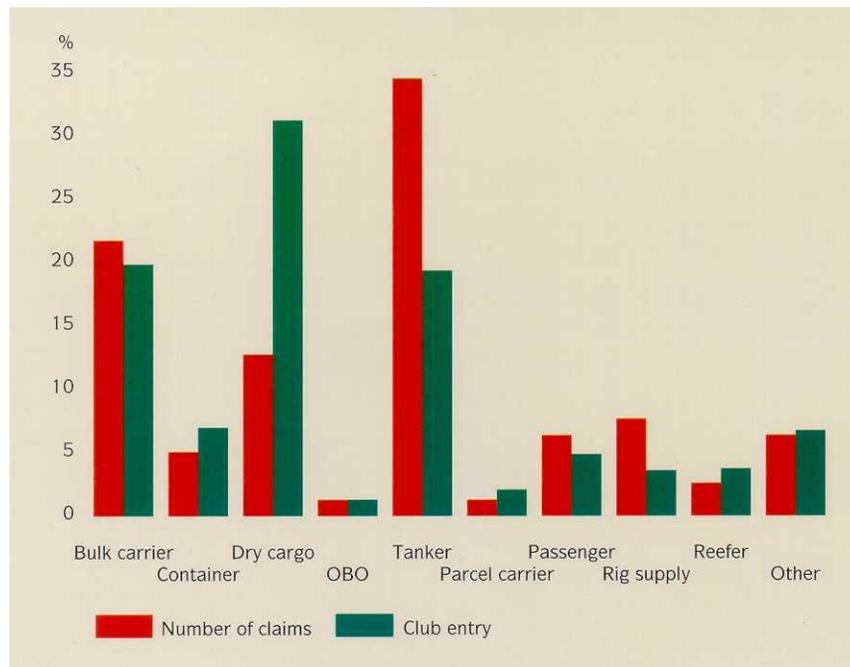


Table 6 below shows the distribution of the 78 claims by ship type, compared with the profile for all entered ships. Tankers stand out, as much because of their involvement in high value cargo claims as because of their involvement in pollution claims.

TABLE 6 —VERY HIGH VALUE CLAIMS, DISTRIBUTED BY SHIP TYPE



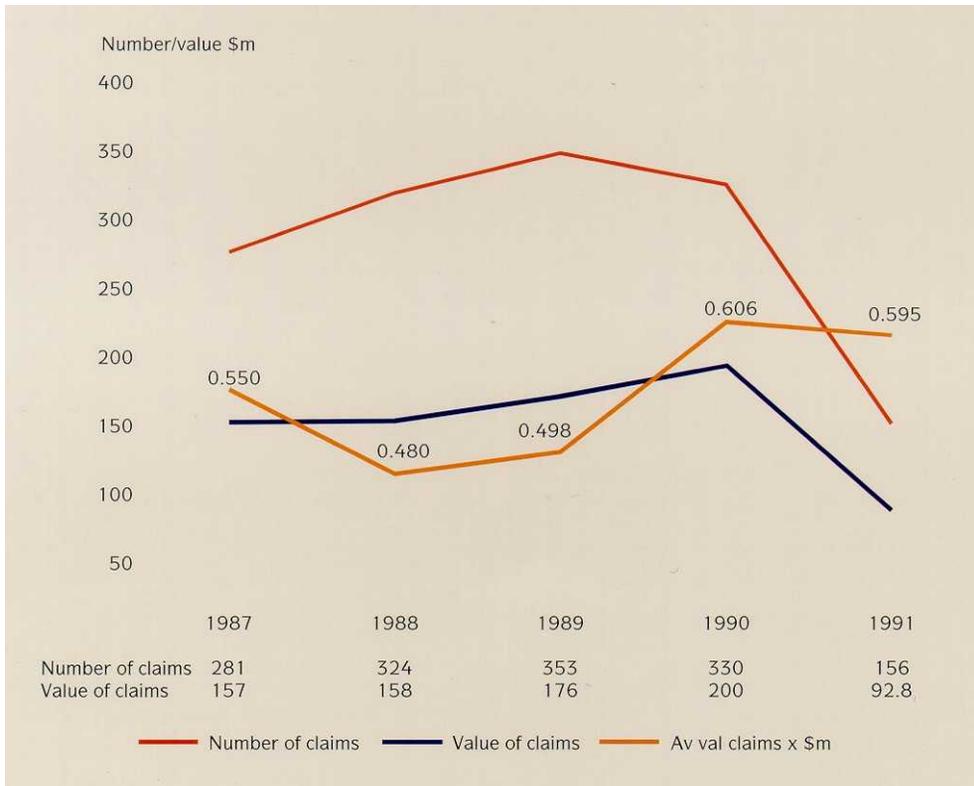
WHAT IS THE TREND OF MAJOR CLAIMS?

Table 7 below shows the numbers and values for all major claims, as measured in December 1991, distributed by policy year. The average claim value for each policy year is also shown.

All policy years show some increase in numbers of reported claims, smaller in earlier years, larger in later years. The rising trend from 1987 to 1989 can now clearly be seen, and the figures for both the 1990 and 1991 years, seen here at a relatively early stage, will certainly deteriorate further.

There are 156 claims reported for the latest year 1991; there were only 120 claims when the 1990 policy year was measured (in last year's Analysis) at the same stage of development. However those 156 claims have a much lower average value (\$595,000) than the 1990 claims had at that stage (\$825,000). Average values usually continue to drop as a policy year develops (because the very high value claims are notified very early). There is therefore some reason to hope that the major claims of the 1991 policy year will turn out to have been no worse than 1990.

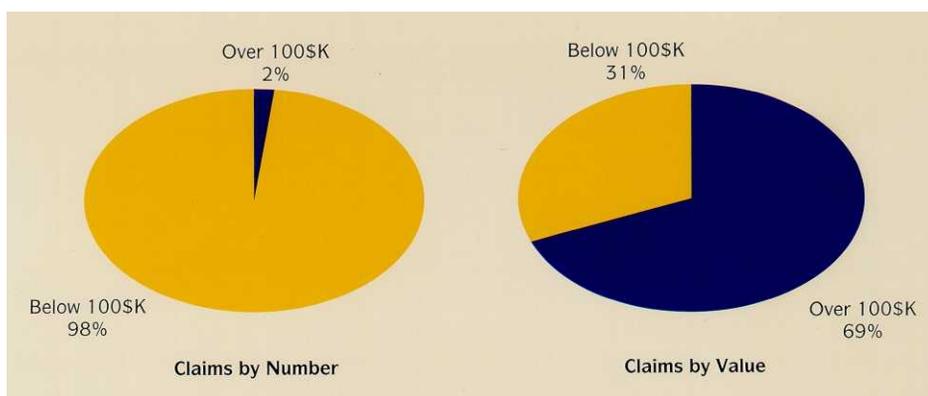
TABLE 7 — DISTRIBUTION OF MAJOR CLAIMS, BY NUMBER AND VALUE, OVER THE POLICY YEARS (DATA AS AT DECEMBER 1991).



#### HOW DO 'MAJOR CLAIMS' COMPARE WITH TOTAL UK CLUB CLAIMS?

The 1,444 major claims which occurred between 20th February 1987 and 20th December 1991 were just 2 per cent by number of the Club's total claims occurring in that period. However the other 85,000 or so claims accounted for only 31% of the total gross value (\$352 million out of \$1.13 billion). This is illustrated in table 8 below.

TABLE 8 —COMPARISON OF CLAIMS ABOVE AND BELOW \$ 100,000  
BY NUMBER AND VALUE



#### PREMIUMS

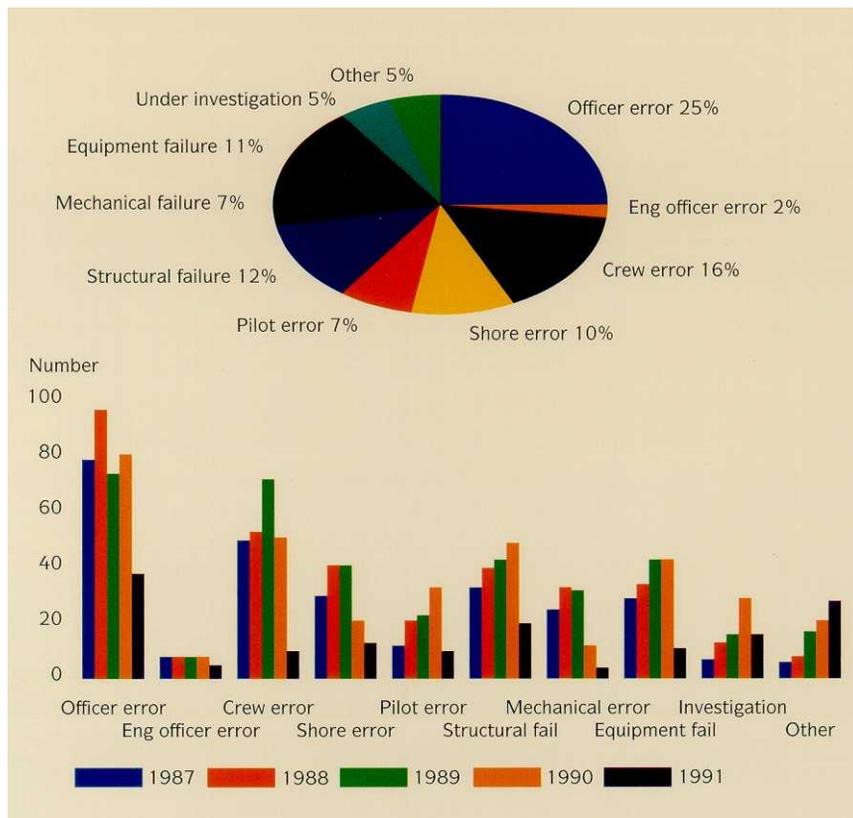
This study does not attempt to relate claims experience to premium income; no conclusion should be drawn as to the adequacy of premium income received by the Association in respect of any particular risk.



## SUMMARY

Table 9 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.

TABLE 9 — MAIN CAUSE



In the table above, and for each of the 5 risk types analysed in detail in the appendices to this report, the distinction is drawn between claims caused by various kinds of ship failure and those caused by various kinds of human error.

There is a sense in which this distinction is artificial. Most instances of ship failure are themselves the result of prior human errors, occasionally in judgments as to the design of the ship or the suitability of materials used in its construction, but more frequently in the process of planning or implementing programmes of maintenance. Nevertheless, the distinction is useful because it serves to focus on the relative importance of different elements in a wider picture of human failings; and it is a reminder that even a ship in perfect condition can, in a careless moment, become the vehicle of disaster.

This section, then, looks more closely at the respective roles of ship failure and human error in the explanation of these claims. As in last year's Analysis, particular attention has also been paid to the age of ships and to the jurisdictions in which the claims occurred.

## HUMAN ERROR

Human error was the main cause of half the cargo claims, half the pollution claims, 65 per cent of the personal injuries, 80 per cent of the property damage, and 90 per cent of the collisions.

The term 'error', is used here somewhat loosely to encompass any human action or omission identifiable as the immediate cause of the event from which the liability arises. So defined, a wide range of more or less blameworthy behaviour, from simple mistakes in arithmetic, through errors in judgement, to deliberate risk taking, is included.

Error, in this wide sense, has many sources. It may arise from a lack of knowledge or experience. On the other hand, even well-informed and properly trained personnel can become over-confident, careless, or even reckless in responding to commercial pressures. Then there are temperamental factors such as fatigue, discomfort, boredom, anger, unhappiness, illness, or confusion, which all make people more prone to mistakes than might otherwise be the case.

Pride is an interesting example; the 'macho' climate associated with the offshore oil industry, particularly in the United States, is manifested in a tendency for workers to carry out, singlehandedly, tasks which really require some assistance from another person; as was noted in last year's Analysis, many injury claims seem to arise in this way.

Simple confusion is a frequent source of error in property damage claims, particularly where there is inadequate discussion between the Master and the pilot of one another's intentions, or where misunderstandings arise from the use of different languages.

Fatigue seems to have a role in the causation of collision claims, with the majority of major collisions occurring between the hours of four and eight in the morning, often just before dawn. In one claim resulting from a serious grounding, the combination of illness of one officer and exhaustion of another who relieved him (and then fell asleep at the wheel) left the ship on a rock.

Minor slips in making mathematical calculations were causative in a number of major cargo losses, sometimes through instability of the ship, sometimes through excessive container stack weights.

Such forms of human error, to the extent that they arise from the natural distractions of human temperament and mood are, by their very nature, not possible to completely eliminate. At best, well designed working environments and procedures can help to reduce them.

Many other, less innocent errors, are avoidable. Commercial pressures can sometimes be an encouragement to take calculated risks, such as deciding not to reduce speed in heavy weather, or deciding not to call an additional tug for a difficult berthing. Masters and officers are sometimes surprisingly ignorant of the workings of their own ships; examples can be found in the section entitled 'Loss prevention'. Stevedores will sometimes use wholly inappropriate methods

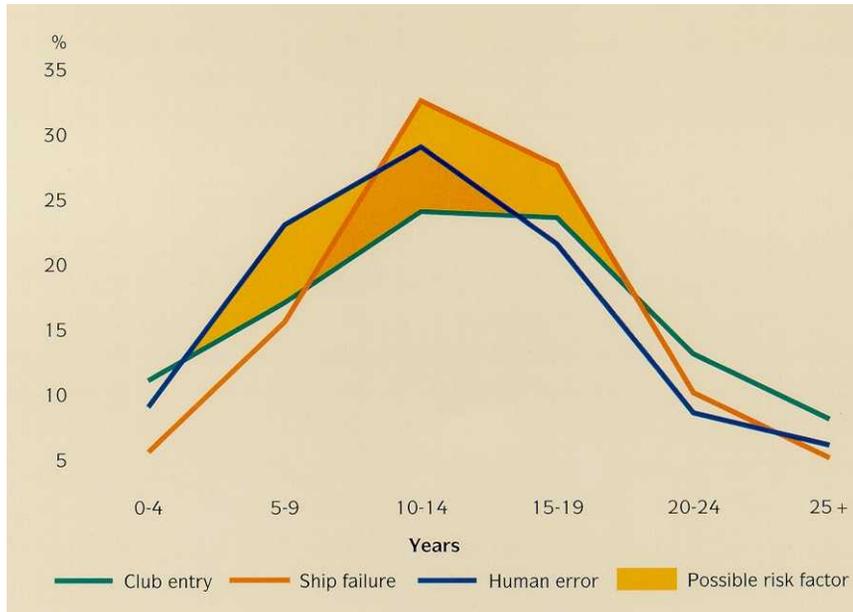
of handling cargo; a terminal operator may have decided not to make the investment necessary to ensure that his security measures effectively deter theft.

An interesting statistic is shown in Table 10 below, in which the major claims caused by human error (about 860) are distributed by age band of the ships involved, together with a similar distribution for major claims caused by ship failure (about 450), and for the entry of all ships in the Club. Ship failures (i.e. claims caused by structural failure (see next section), mechanical failure, or equipment failure) peak in ships aged 10-14 years, then decline somewhat in ships aged 15-19, there after dropping sharply. Human errors rise in ships aged 5-9 years, but they too peak in ships aged 10-14 years and thereafter decline.

Why is it that both human errors and ship failures peak in 10-14 year old ships?

There is no doubt that age is causally relevant to ship failure; given the correlation of risk factors, it seems reasonable to suggest that the difficulties of running ships which are beginning to fail may account in turn for the high incidence of human error amongst those who work such ships. Certainly this table lends some support to the views of those who think it possible that a good many human errors might have been avoidable had the ships involved been maintained to a higher standard.

TABLE 10 — DISTRIBUTION BY SHIP AGE BAND OF ALL (863) HUMAN ERROR CLAIMS, & DISTRIBUTION BY AGE BAND OF ALL (451) SHIP FAILURE CLAIMS, COMPARED WITH CLUB ENTRY.



Much has been written about the need for better training of officers and crew in order to minimise the incidence of avoidable errors; to this we add the observation made above that better ship maintenance should also have the effect of reducing human error. But what of the residue of accidental errors of the kind which, it is suggested above, can never be eliminated; what can be done about those?

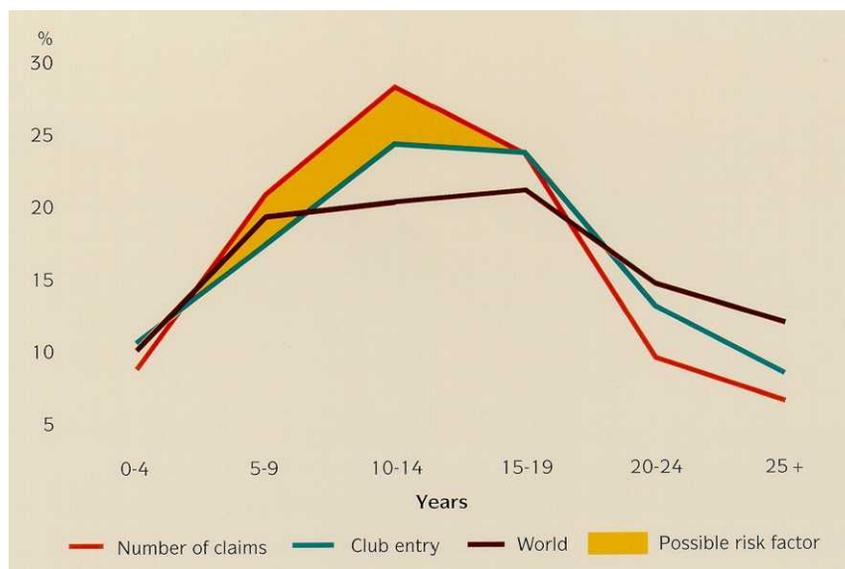
The event that gives rise to such a liability has direct causes and direct effects. The causes are for the most part the same kinds of error as give rise to much smaller claims every day of the week. It is the sizeable effects of those events that turn them from routine mishaps into major claims. Assuming that such errors will always be with us, then the role of loss prevention in this area must be to try to minimise their effects. More attention should therefore be paid to fail-safe systems, positive reporting systems and to contingency planning, using lessons learned from other transportation industries, particularly airlines and railways.

#### QUALITY OF TONNAGE, WITH SPECIFIC REFERENCE TO STRUCTURAL FAILURE

This section examines the relationship between the age of the ship at the time of the incident and the frequency of claims caused by one specific type of ship failure, namely structural failure.

Table 11 below draws together the information on the age of the ship for all the claims analysed and contrasts the percentage number of claims with 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 against world statistics. Separate analyses of the relationship between the age of the ship and each of the five key risk areas can be found in the appendices.

TABLE 11 — DISTRIBUTION OF ALL CLAIMS BY AGE OF SHIP COMPARED WITH CLUB ENTRY AND WORLD STATISTICS



The results are very similar to those noted last year. Ships in the age band 10-14 years continue to stand out, with almost 30 per cent of the claims against a Club entry of 25 per cent. This is only part of the picture, however, as the number of claims from the younger ships, particularly in the age band 5-9 years, is also disproportionately high when compared to their Club entry. The ships older than twenty years seem to be consistently less likely to expose the Association to large claims.

This year's report takes the same broad definition of what constitutes a structural failure as last year. The definition includes a range of structural defects from the most serious shell plate failure to claims caused by leaking hatch covers. This year the analysis has been extended to include an examination of the impact of structural failures on the five key risk areas (cargo, personal injury, etc), the types of ship most at risk and the flag of the ships affected.

Out of the 1,444 cases analysed in this review, 185, totalling \$120 million, involve structural defects within the definition given above. This represents 13 per cent of the total number of major claims and 15 per cent of their value. Interestingly, the percentage number of claims involving structural failure is almost exactly the same as last year.

The first analysis highlighted the fact that the risk profile of age compared to the Club entry appeared to improve after the ship reached fifteen years old. This feature, which was clearly apparent from the age of ship profile for all claims was supported by a separate table which showed the number of structural failure incidents by reference to the age of the ship involved. Although a similar picture emerges this year, there is now evidence to show that the structural failure problems have increased on the older ships, particularly those in the age band 15-19 years. Two factors have combined to produce this result; firstly, a high incidence of structural problems affecting bulk carriers (and to a lesser extent tankers) over fifteen years old; secondly the high number of claims resulting from hatch cover defects, particularly on ships aged between fifteen and nineteen years old. The impact of these two factors on structural failure claims is examined in more detail below. These points are illustrated in tables 12 and 13.

TABLE 1 2 — DISTRIBUTION OF STRUCTURAL FAILURE CLAIMS BY AGE OF SHIP

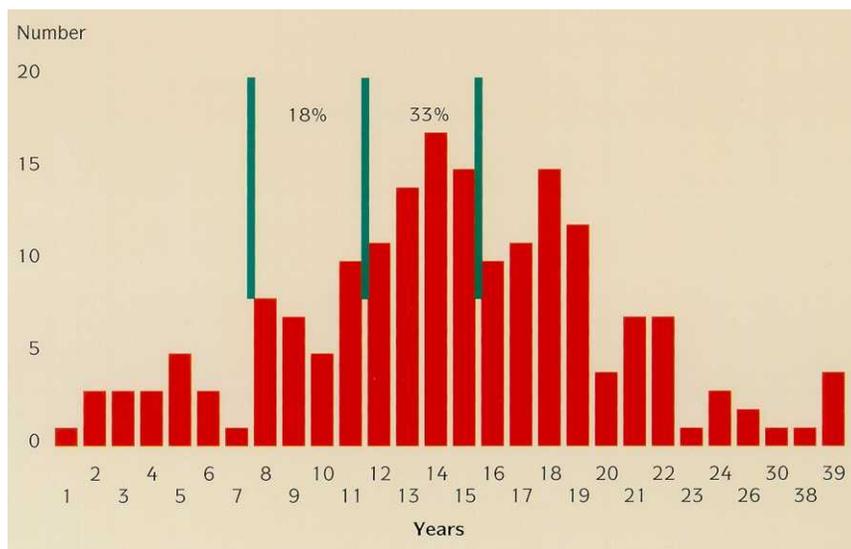
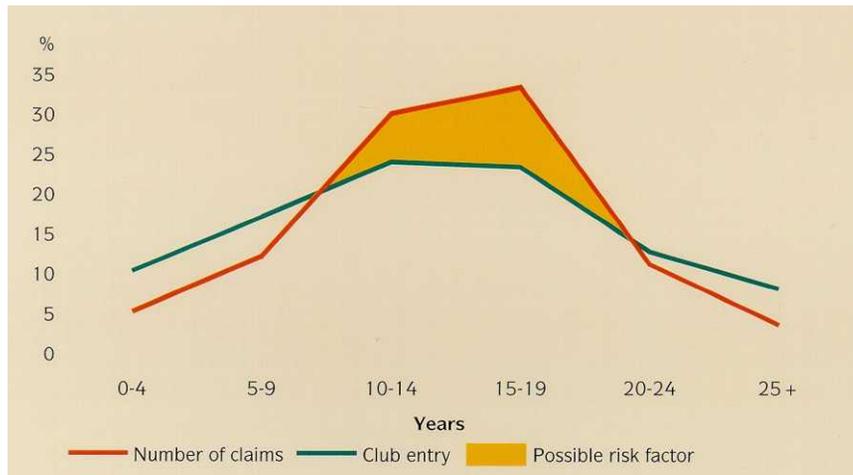


Table 12 above confirms last year's findings that structural problems are causing claims at an earlier stage than was first thought to be the case, with 18 per cent of the claims occurring on ships between eight and eleven years old. This underlines the importance of the UK Club's decision to reduce the age threshold for the customary condition survey on first entry of ships into the Association from fifteen to ten years of age. A review of these condition surveys can be found in the report on the section entitled 'Loss Prevention'.

The correlation between the age of ship and exposure to claims has been highlighted in the recently published 1992 Hull Casualty Statistics compiled by the ILU. Although these statistics are based on total losses only, it is interesting to note that the hull market has experienced particularly heavy losses on ships between fifteen and nineteen years old. The fact that the proportion of ships in this age category are growing steadily means that neither the hull nor the P&I insurers can afford to let their standards of vigilance drop.

TABLE 13 — DISTRIBUTION OF STRUCTURAL FAILURE CLAIMS BY AGE OF SHIP IN AGE BAND COMPARED WITH CLUB ENTRY



Last year's report commented on the role of classification societies in helping to maintain standards and concluded that a significant number of the structural failure cases might well have been avoided if the third special classification surveys had been conducted when the ship reached twelve years old, as was originally intended, rather than fifteen years old as has become the case. As there is no prospect of returning to the survey timetable originally intended, it is the Managers' view that the emphasis must now be placed on the second special survey at ten years, and the fact that this view is shared by a number of classification societies is greatly to be welcomed.

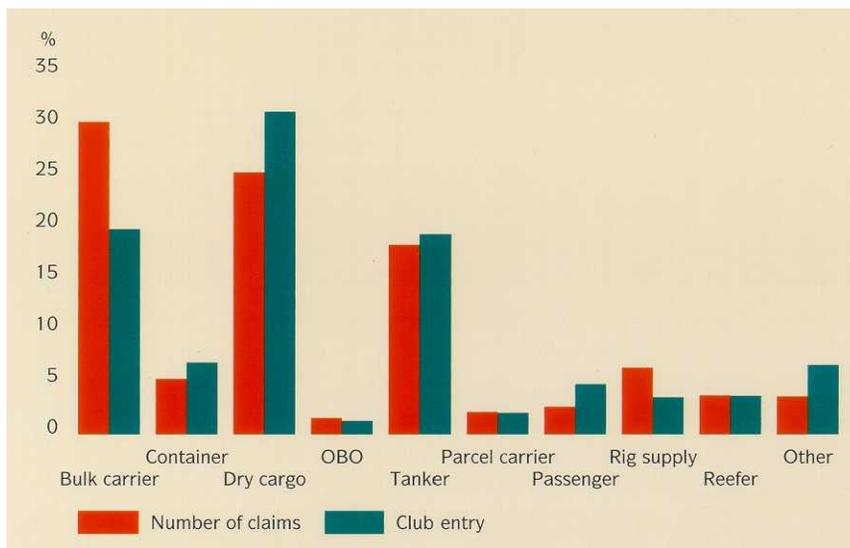
As important as the timing of the survey is the manner in which it is conducted. To carry out an effective structural survey a ship must be clean, in port and not working cargo. The inspection should be conducted by a team of surveyors over a period of days. The days of a lone surveyor carrying out a visual inspection of an ageing bulk carrier over a limited period must end if standards are to improve.

Finally, although classification societies have a vital role to play in maintaining standards, it is important not to lose sight of the fact that it is the shipowner who carries the ultimate and non-delegable responsibility for the maintenance and operation of his ship.

An analysis of the types of ship involved confirms last year's findings that it is the bulk carriers which present the greatest risk; this provides further confirmation, if any was needed, that the present concerns in the industry about the structural integrity of these ships are well founded. The position is illustrated in table 14 opposite which shows the structural failure incidents by type of ship. The main difference in this table from last year is a slight reduction in the tanker claims percentage, which is partly a result of the increase in the number of structural failure related claims on bulk carriers. There is also evidence that the risk

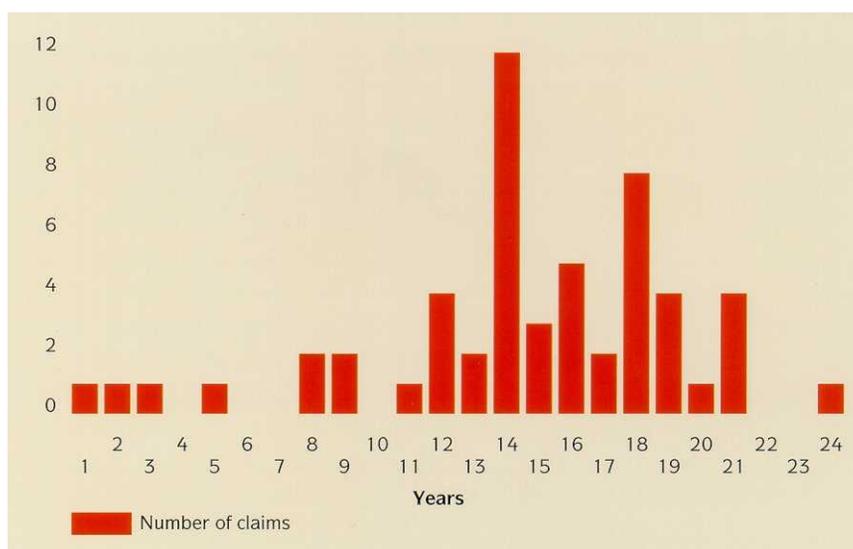
of pollution increases on the older tankers, particularly those in the age band 15-19 years, (see Pollution on pages 68 to 75).

TABLE 14 — DISTRIBUTION OF STRUCTURAL FAILURE CLAIMS BY TYPE OF SHIP



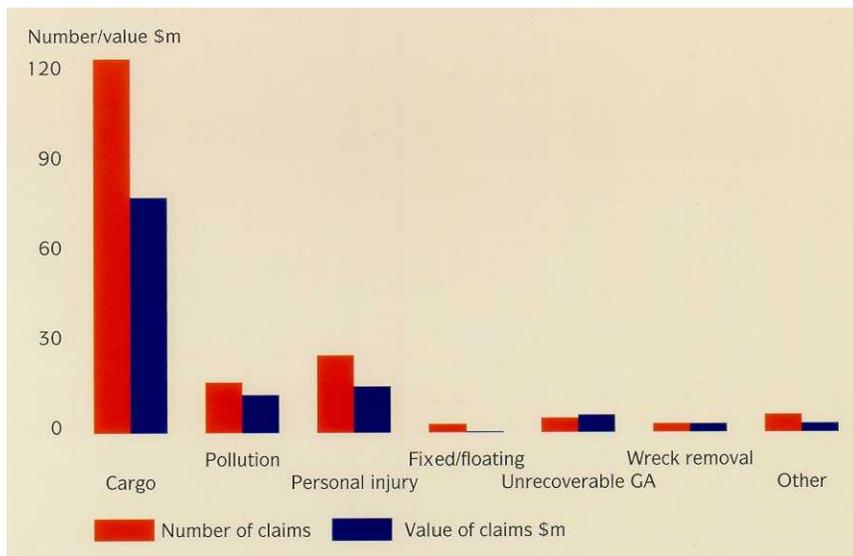
The number of structural failure claims involving bulk carriers is clearly a cause for concern. The analysis contains 56 such claims totalling \$31 million. When the age of the bulk carriers is examined, it is apparent that the problems are most acute between fourteen and nineteen years of age. This finding is supported by the 1992 Hull Casualty Statistics and is shown in table 15 below. As a result of this finding the ship vetting department will continue to target bulk carriers in this age bracket for particular attention.

TABLE 15 — DISTRIBUTION OF STRUCTURAL FAILURE CLAIMS ON BULK CARRIERS BY AGE



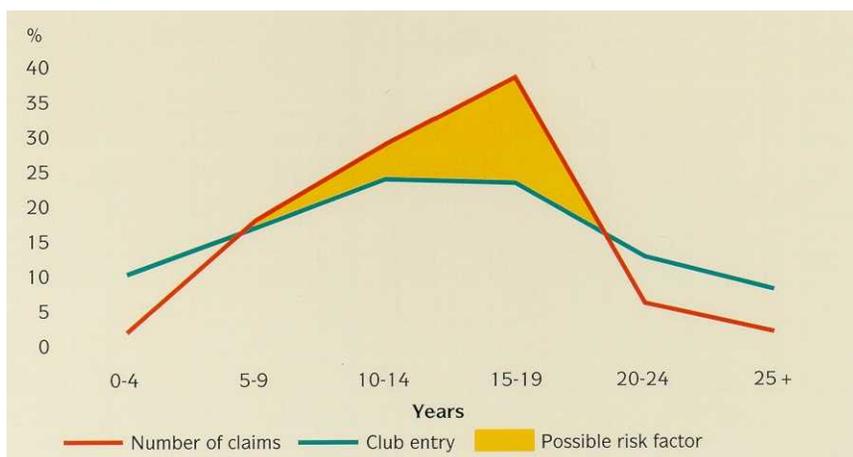
What is the impact of structural failure claims on the five key risk areas? Not surprisingly the risk most affected was cargo. Out of the 185 structural failure related claims, 125 resulted in a major cargo claim. This is shown in table 16 below, which also highlights the number of personal injuries arising from structural defects.

TABLE 16 — DISTRIBUTION OF STRUCTURAL FAILURE CLAIMS BY RISK TYPE



One explanation for the high number of cargo claims is the inclusion of hatch cover defects in the definition of structural failure. 40 per cent of the cargo-claims in this category resulted from hatch cover problems. If the hatch cover cases are examined by reference to the age of the ships involved, once again it is the ships in the age band 15-19 years which are shown to pose the highest risk, although, as table 17 below shows, the problems start as early as 5 years old.

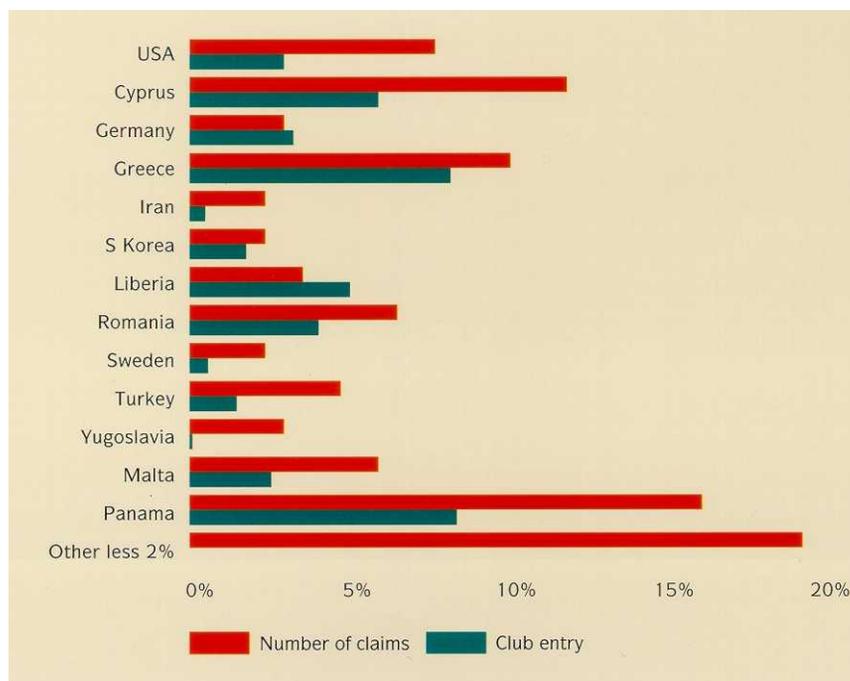
TABLE 17 — DISTRIBUTION OF CARGO CLAIMS CAUSED BY HATCH COVER FAILURE, BY AGE OF SHIP



The table provides a clear warning that hatch covers must be maintained continuously from an early age and not left until the ship enters dry dock. As will be seen from the report on the activities of the ship vetting department, hatch cover maintenance is an area receiving their particular attention. Although not shown in table 17 opposite, it is interesting to note that the smaller ships, ie. those below 6,000 tonnes grt, have a significantly better hatch cover claims profile than ships in all other tonnage ranges. This is surprising given that it is the smaller, single hatch, ships which tend to be affected by heavy weather.

Is the flag of the ship relevant in structural failure related claims? Table 18 below shows the distribution of claims by the flag of the ship as a percentage of the total number of claims and compares this to the Club entry, flags with less than four claims are not shown. The table is as significant for the flags which do not appear as it is for those that do. Of the ones which feature, Panama and Cyprus stand out, as do, to a lesser extent, USA, Turkey and Malta.

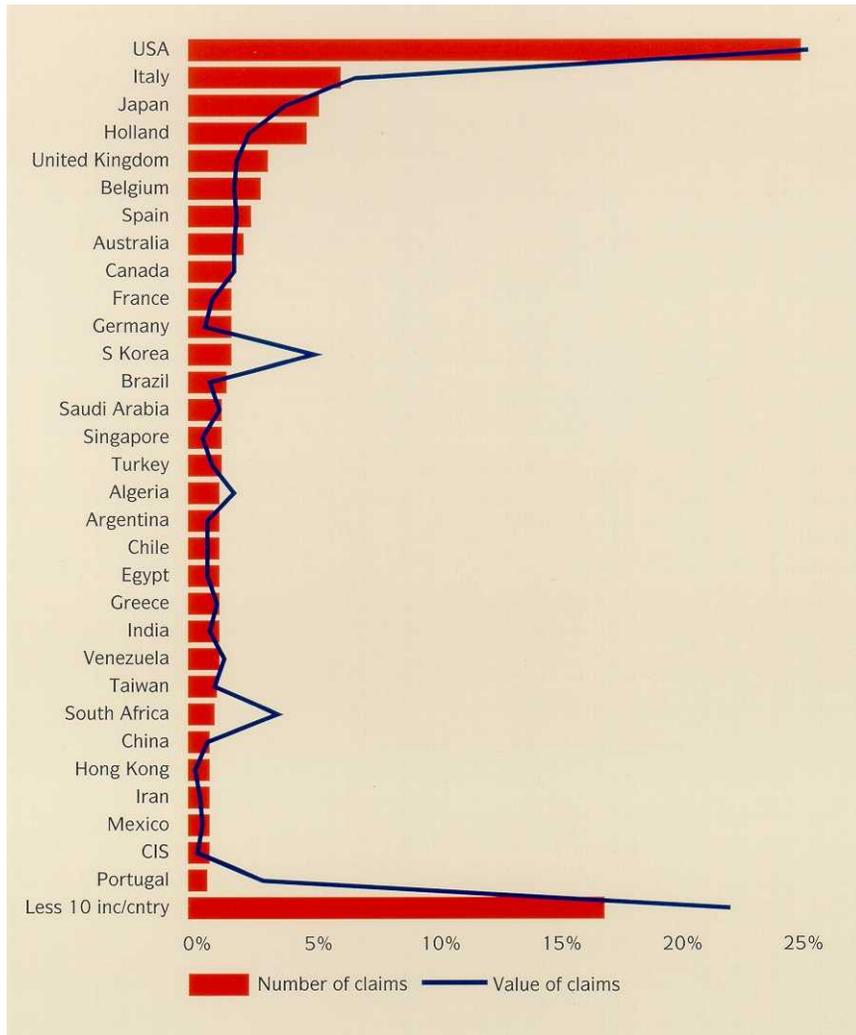
TABLE 18 — DISTRIBUTION OF STRUCTURAL FAILURE CLAIMS BY FLAG



LEGAL REGIMES AND JURISDICTION

Where do the major claims occur? Table 19 below reproduces the table which appeared in last year's analysis, updated with the latest information. The table lists by reference to the percentage number and value of the claims, the countries where 10 or more of the major claims occurred.

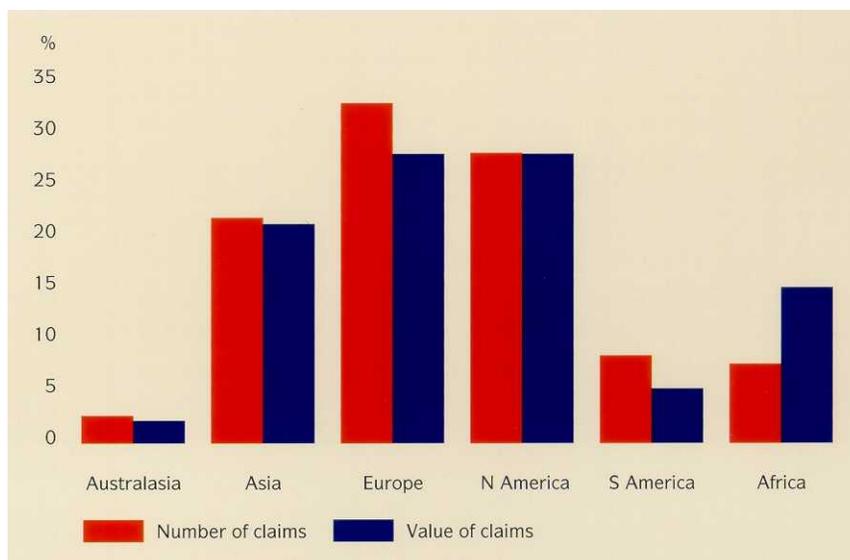
TABLE 19—COUNTRIES WHERE MORE THAN 10 INCIDENTS OCCURRED



The result appears to be almost identical to last year, in that the United States of America continues to dominate the major claims affecting the Association.

However, this finding should be treated with caution for three reasons. First, it is worth remembering that given the size of the US economy, its position at the top of the table is to some extent inevitable. Second, the figures reflect the impact of the particularly high number of personal injury claims brought in the USA. If other types of claim are examined, the USA picture is not disproportionate to that which is expected. For instance, over the five years under review there were 88 major cargo claims and 12 major pollution claims in the USA, which contrast favourably with Italy, which over the same period had 48 major cargo claims and 9 major pollution claims. Third, it is possible to produce a more balanced view if the claims are looked at on a regional, rather than a country, basis. This is demonstrated by table 20 below which shows the region of incident.

TABLE 20 — REGION OF INCIDENT



Other countries to feature include South Korea where the percentage value of claims is dominated by the three oil pollution incidents noted in last year's and this year's report. Last year's report noted the number and value of claims arising in Italy. This year's report confirms Italy in second place on the table with 76 claims totalling \$47 million representing 6 per cent of the total number of major claims and 7 per cent of their value. Investigation into the problems in Ravenna, for example, noted in the last report continue. Members will receive appropriate loss prevention advice in a forthcoming edition of UK Club News.



## LOSS PREVENTION - SHIP VISITS AND CONDITION SURVEYS

Last year's Analysis included a number of suggestions as to practical measures that can help to prevent losses. One obvious area in which the Club and its Members can co-operate in assessing how well such measures are implemented is through the Association's programme of ship visits and surveys. This section on 'Loss prevention' therefore focusses this year on the findings of those involved in this programme, which consists of:

'Ship Visits' — these typically last for three hours, are relatively informal, and are carried out by inspectors who are employees of the Managers.

'Condition Surveys' — these usually last for two days, are rather more stringent, and are carried out by independent surveyors.

### SHIP VISITS

#### **General**

The programme of ship visits began in June 1990, with an initial objective of visiting, within two years, at least one ship in each underwriting Group or fleet entered in the Association. The visits were not intended to be detailed surveys; instead the inspectors, who have marine backgrounds, were asked to exercise their judgement on various aspects of the ship's performance. They were to concentrate as much on the standards to which ships are operated and managed (including manning), as on their physical condition. The scope of the project was subsequently widened to include (a) ships perceived to be at greater risk in the light of the Major Claims Analysis (presently bulk carriers, reefer ships and large tankers); (b) fleets where ships have been surveyed under Rule 5Q and found to be unsatisfactory; and (c) ships whose owners, in accordance with the Club rules, report a change in Classification Society.

#### **Ship inspectors**

There are currently six inspectors employed by Thomas Miller & Co, all of whom have been in command of ships, but who also have experience in other areas including surveying, superintendency, ship management or related activities.

Since 1990 the ship inspectors have operated both in areas of intense shipping activity, such as Rotterdam, Bremen and Hong Kong, and in some of the less frequented areas including ports in Argentina, Venezuela, Brazil, Australia, New Zealand and Malaysia. Their experience to date does not indicate that the number of substandard ships is proportionally any greater in the more remote ports than in other, supposedly better regulated, ports.

### Procedures

The inspectors usually spend about one month in one given area. During that time they identify ships due to arrive in port which are suitable for a visit. Permission is sought from the owner by the Managers' London agents, if possible with at least three days' notice; when this is agreed the inspector boards the ship. The master is usually informed of the arrangements by the owner.

During his three hour visit the inspector endeavours to put himself in a position to comment on the standards to which the ship is operated in respect of cargoworthiness, pollution control, manning and safety. At the conclusion of the visit, the findings are discussed with the master and a brief report is sent to the Managers' London agents. After review this report is forwarded to the owner, together with a letter setting out any recommendations for future action by an owner.

### Results

Between June 1990 and July 1992 the total number of ships visited was 832, from 560 separate underwriting groups. Of those visits, 360 took place during the calendar year 1991. Table 21 below shows that, for 1991, 37 visits resulted in such adverse reports that the ships concerned were required to undergo a condition survey under the Association's Rule 5Q. This failure rate of about 10 per cent can be seen to be consistent with the overall picture since June 1990; (it is, however, worth reporting that in the opening weeks of 1992 out of a total of 100 ships visited the number of condition surveys required was 19).

TABLE 21 — RESULTS OF SHIP VISITS

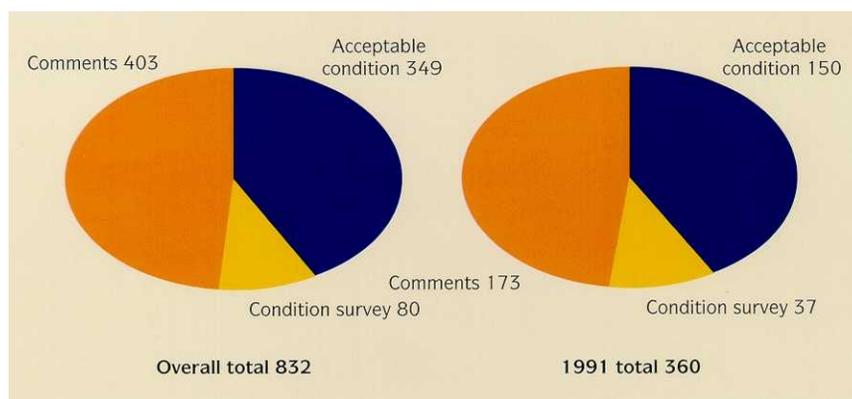
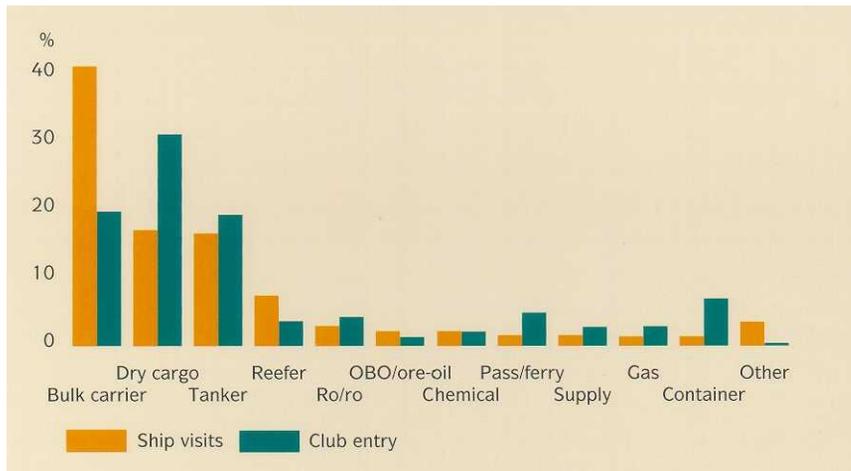


Table 22 below shows the types of ship visited in 1991. Bulk carriers and reefer ships have received more attention than other categories, being targeted in the light of findings in last year's Claims Analysis.

TABLE 22 — NUMBER OF SHIPS VISITED IN 1991, DISTRIBUTED BY TYPE



### Common defects

The most commonly reported defects were listed in the report issued to the Members in October 1991 and the trend since that time shows little change. Cargoworthiness, standards of general maintenance and maintenance of safety equipment as well as standards of training and manning all come in for comment. Recently a bulk carrier was visited where it was found that sections of the weather deck plating had been cropped at sea and where the new plates lay ready for fitting, all this being done by a riding crew without the knowledge or approval of the Classification Society. Another bulk carrier which had just completed a Special Survey sank as a result of side shell failure with a total loss of cargo but thankfully no loss of life. The cause of the shell plating failure was corrosion in way of the welding of vertical frames in the cargo holds.

Turning to human error, some crew members show a demonstrably poor level of familiarity with their own ships; one recent example was a Chief Officer who did not know the whereabouts of the emergency shutdowns for the main engine or the location of the firefighting breathing apparatus. Some officers cannot operate emergency machinery such as the emergency fire pump and others are not aware whether it is fitted.

A common fault is the failure to provide properly corrected navigational charts and nautical publications. A frequent excuse is that owners do not supply Notices to Mariners. Many masters and officers are apparently not aware of the fact that these are readily available in most major ports free of charge, simply by asking the local agent to pick them up from the local shipping office.

Despite the rocketing costs of oil pollution claims and the publicity surrounding the whole topic, many ships continue to adopt a sloppy approach to bunkering operations with no properly laid down procedures or proper supervision.

Many shipping companies do not provide masters with formal guidance as to how the ship should be run, there being no policy statement laying down standards for such matters as maintenance, training, safety or health and welfare.

#### **Future programme**

Starting in August 1992 a new cycle of visits to all fleets in the Club was commenced. In future, owners with larger fleets may expect to receive more routine visits than the single visit which they have received in the past. This will apply particularly where the fleet is composed of mixed types of ships. In addition, as has been the case for the last year, visits will be arranged to those types of ships which this Claims Analysis shows to be at risk, as well as those in fleets where other ships fail condition surveys or where ships change their Classification Societies. Inspectors may, in future, spend longer periods of time on board ships, subject always to operational considerations. They will be expected to pay more attention to management control systems, standards of manning and training as well as the structural condition of the ship where indicated.

### CONDITION SURVEYS

#### **General**

For a number of years it has been the Association's practice to carry out condition surveys on older ships prior to entry or as soon as possible thereafter. Any new entry over 10 years of age is automatically surveyed, but condition surveys may also be carried out on entered ships as a result either of claims experience or of adverse reports following a visit by a Club inspector.

Condition surveys are conducted by independent marine surveyors, all of whom have been carefully selected for their integrity and technical expertise and who, to ensure consistency in standards, have a clear understanding of the Association's requirements.

Frequently the surveys coincide with a period of repairs. In such cases, the surveyors usually attend at the time of the ship's arrival in the repair yard in order to be in a position to indicate what repairs may be necessary to satisfy the Club's requirements.

#### **Procedures**

The surveyor is required to check all the Classification Society and statutory certificates to ensure that they are valid. This check includes records of surveys of cargo gear, the oil record book, MARPOL records where relevant and the results of the latest Port State Control inspections. The surveyor also examines the condition of the hull including internal plating, frames, bulkheads and stringers, all watertight openings and ventilators, air pipes and sounding pipes.

He reports upon cargoworthiness including the state of cargo holds or tanks, hatch covers and securing devices, ladders and tank tops.

The machinery spaces are examined in some detail including emergency machinery, firefighting equipment and safe working practices. All navigating bridge equipment is examined as well as the radio room and the emergency equipment stored therein. Lifesaving and firefighting equipment is checked to ensure compliance with the SOLAS convention and at the same time the general condition of the ship is reviewed. Manning levels are checked against the manning scale and all officer and crew certification and records of training are reviewed. The proficiency of the crew is considered as well as their means of communication and whether or not there may be any language barriers to communication.

Finally, the operation and management of the ship is scrutinised in consultation with the master to establish what procedures are followed by the owner including frequency of communication with the master, frequency of superintendency visits and general policy statements.

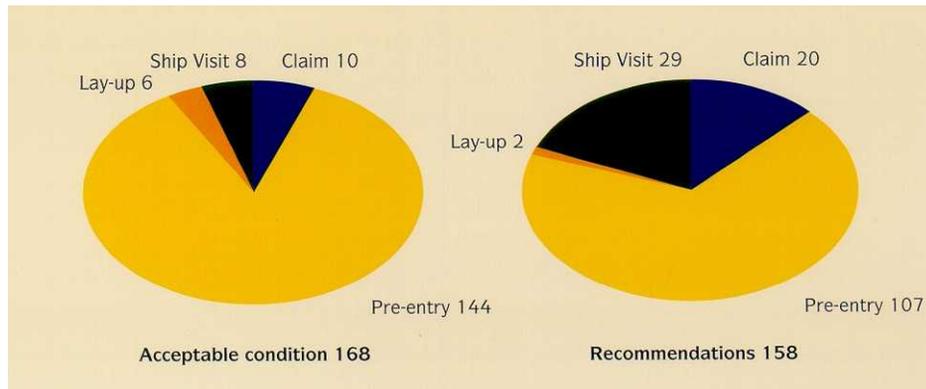
On completion of the survey the surveyor considers whether any defects relevant to the P&I Club need attention. A list of these defects is handed to the master and is faxed to the Managers' London agents, who review it in the light of the surveyor's preliminary report. If it is necessary for the Managers to make recommendations under the Association's Rule 5Q, then a date is set by which the repairs must be completed. Whilst every endeavour is made to be flexible in imposing the deadlines for completion of repairs taking into consideration the trading pattern of the ship and the owners' arrangements for routine drydocking repairs, any failure to comply within the time laid down is treated as a breach of the Association's Rule 5Q with its attendant consequences.

### **1991 Results**

In the calendar year of 1991 a total of 326 surveys were carried out in countries worldwide, including Europe, North America, Japan, Singapore, and Brazil. Not all these surveys were entry surveys: 75 were as a result of poor claims experience, or of adverse reports following a visit by a Club inspector.

In 168 cases the ships surveyed were found to be in an acceptable condition and no further action was required. However, in 158 cases, the Managers made recommendations for work to be carried out within a specified period. 13 ships did not comply with the requirements of the Managers and were considered to be in breach of the Association's Rule 5Q. These comparisons can be seen in table 23 opposite.

TABLE 23 — 1991 CONDITION SURVEYS — DISTRIBUTION BY REASON FOR SURVEY



Looking at the 158 ships where recommendations were made by the Managers concerning repairs, table 24 below shows these ships by type, comparing this with the distribution of all ships subject to condition survey and the distribution of all ships entered in the Association. Once again bulk carriers are prominent as well as reefer ships and this tends to support the finding of the Major Claims Analysis regarding the Club's exposure to claims where ships of these two classes are concerned.

TABLE 24 — 1992 CONDITION SURVEYS RESULTING IN RECOMMENDATIONS, DISTRIBUTED BY TYPE OF SHIP

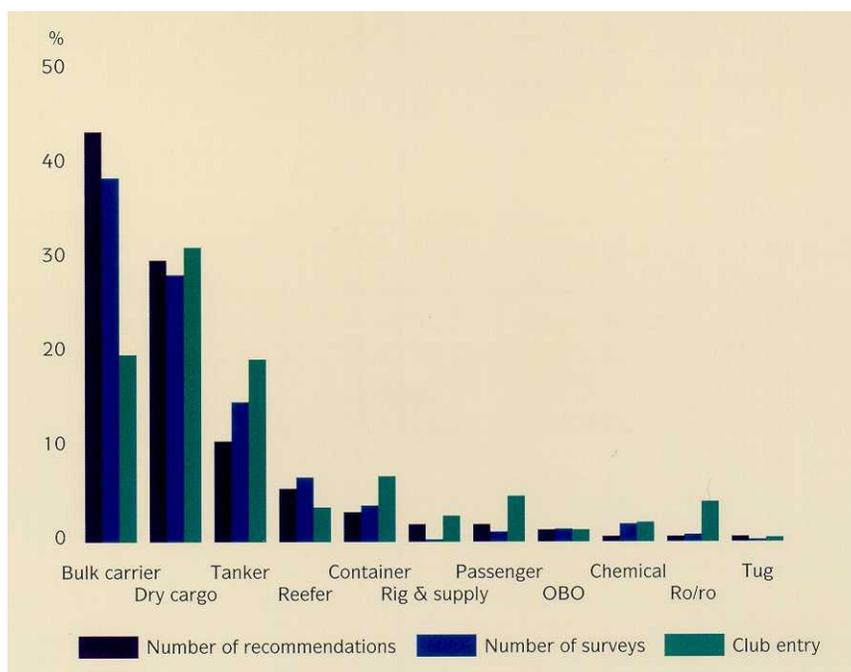


Table 25 below shows the age bands of the 158 ships, comparing this with the age bands for the total of ships subject to condition survey and those for all entered ships. It should be borne in mind that every ship of more than 10 years of age newly entered in the Association is automatically subjected to condition survey, while those under 10 years of age are less likely to receive attention. About 38 per cent of all condition surveys involve ships aged 15 to 19 years, but they make up 43 per cent of the surveys which gave rise to recommendations; about 28 per cent of the condition surveys involved ships aged more than 20 years, and these account for another 37 per cent of the recommendations. The latter statistic is particularly interesting, bearing in mind that ships of that age are involved in proportionately fewer major claims than most other ships.

TABLE 25 — 1992 CONDITION SURVEYS RESULTING IN RECOMMENDATIONS, DISTRIBUTED BY AGE BAND

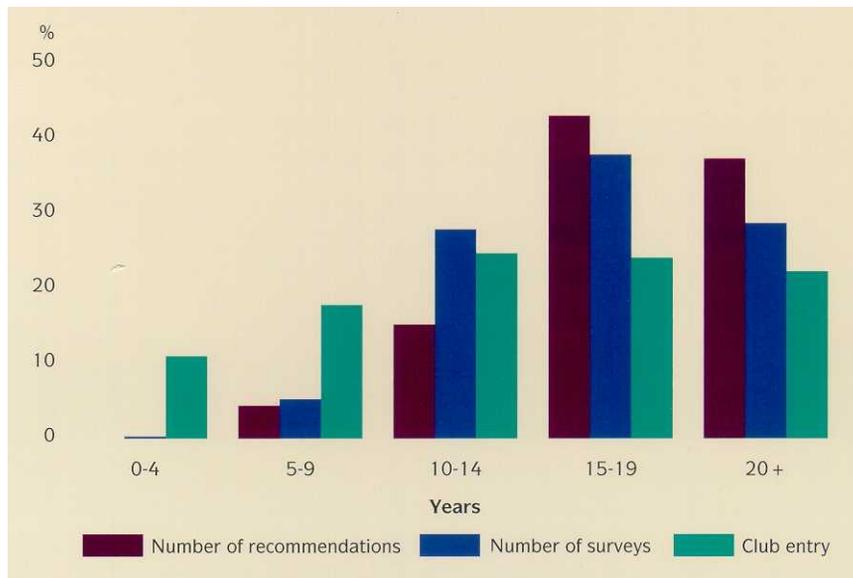
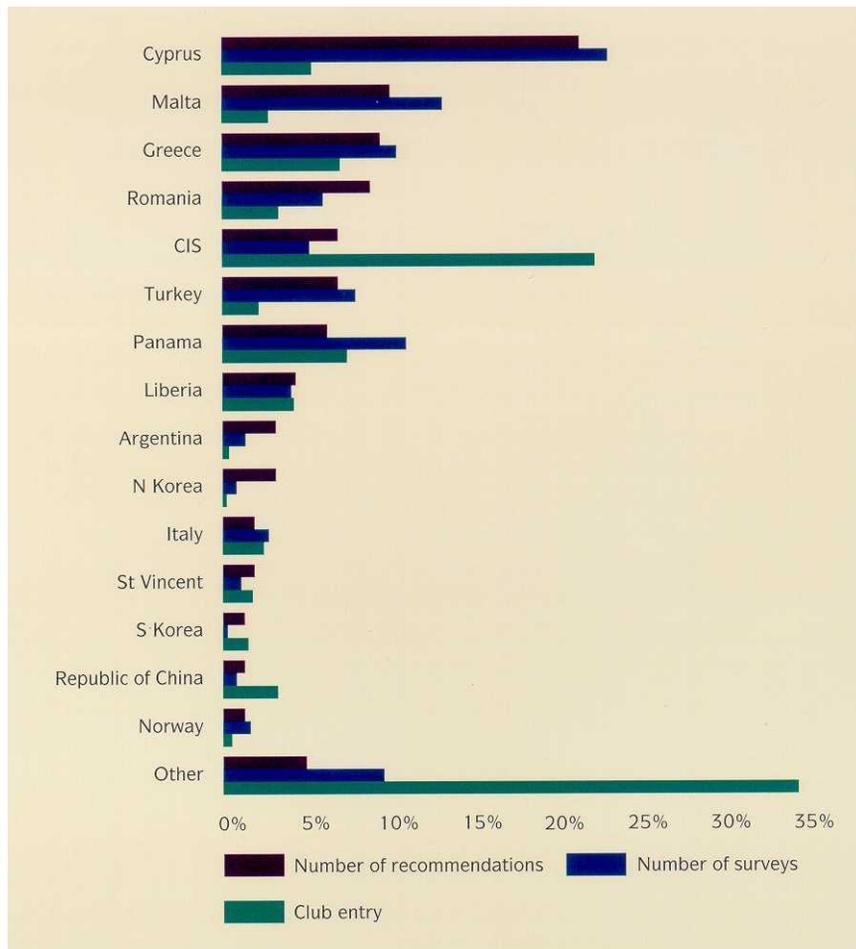


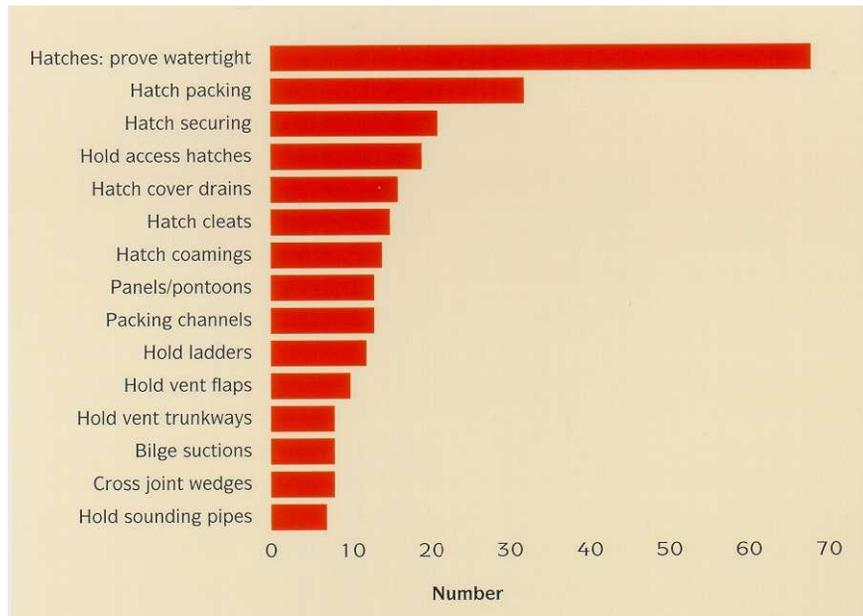
Table 26 below illustrates the flag under which the 158 ships were registered, comparing this with the distribution by flag for all ships subject to condition survey, and for all ships entered in the Association. Those flags against which a poor performance is recorded are flags which have also been identified by other inspecting bodies as being in need of closer scrutiny.

TABLE 26 — 1991 CONDITION SURVEYS RESULTING IN RECOMMENDATIONS, DISTRIBUTED BY FLAG

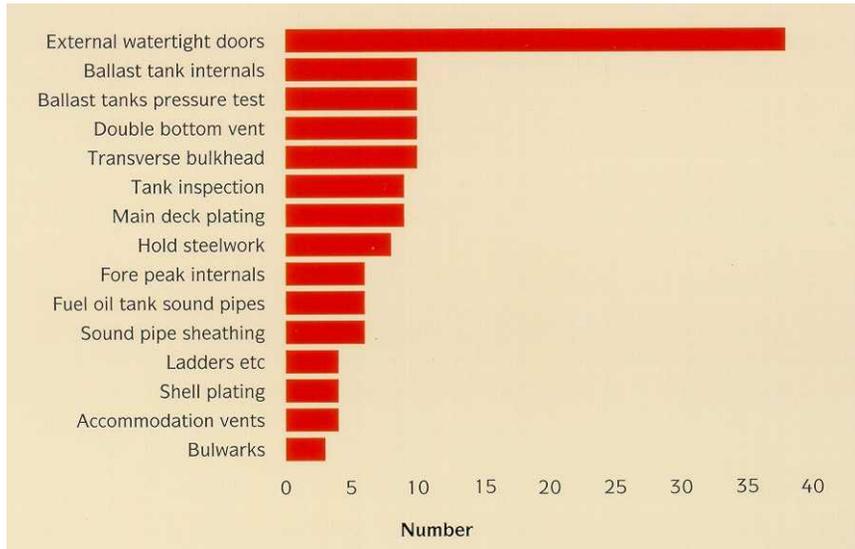


Tables 27 to 30 show the recommendations most frequently made under the headings of Cargoworthiness, Structure, Safety, and Navigation, machinery and pollution.

TABLE 27 — 1991 CONDITION SURVEYS — DISTRIBUTION BY CARGOWORTHINESS RECOMMENDATION



**TABLE 28- 1991 CONDITION SURVEYS-DISTRIBUTION BY STRUCTURAL RECOMMENDATION**



**TABLE 29- 1991 CONDITION SURVEYS-DISTRIBUTION BY SAFETY RECOMMENDATION**

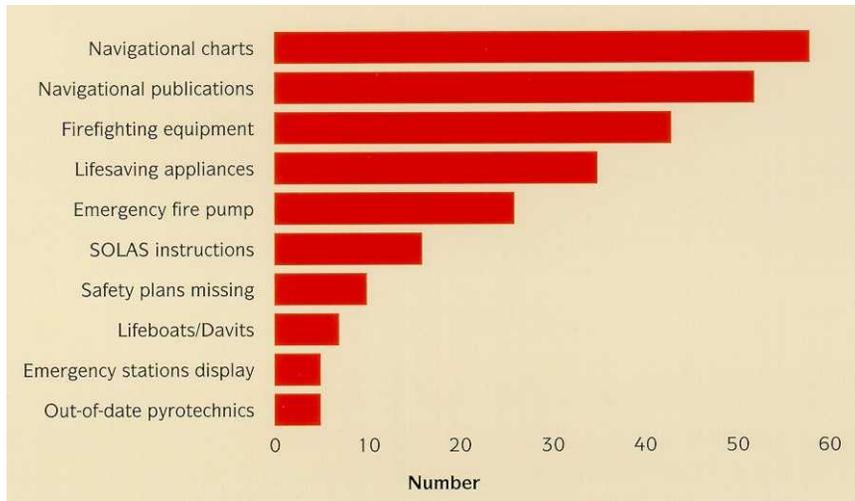
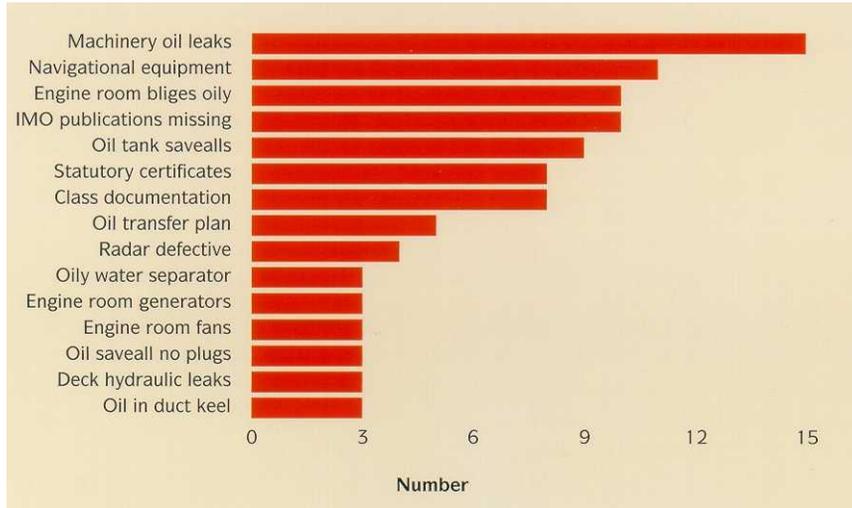


TABLE 30— 1991 CONDITION SURVEYS — DISTRIBUTION BY NAVIGATION, MACHINERY, POLLUTION RECOMMENDATIONS



**Future advice**

There is a need to ensure that Members are advised of the findings of the ship inspectors and of the surveyors carrying out condition surveys, so that the most common defects or weaknesses are known to all and can be protected against. For this purpose, a video presentation to illustrate the work of the Club ship inspectors is being prepared. It is also intended that a series of short articles or notices may be circulated to the Members to provide guidance on those topics which are of particular interest, or where there appears to be a need for further clarification.

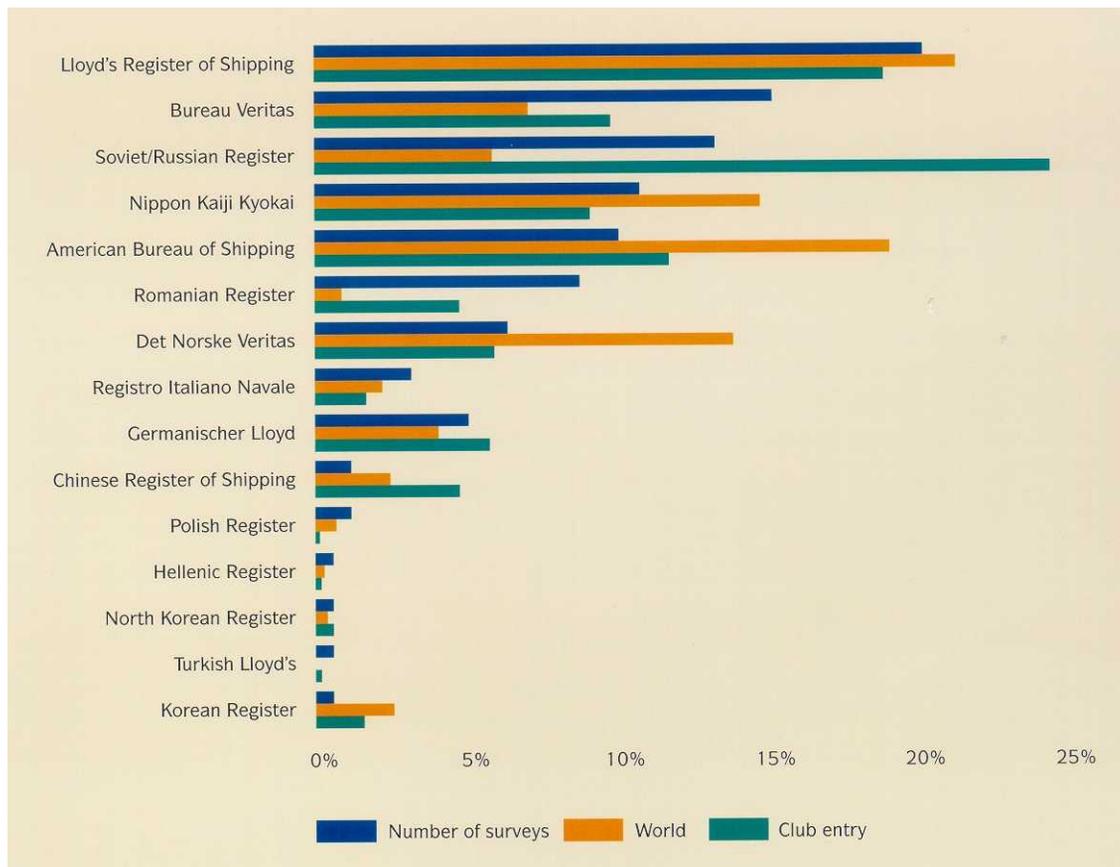
**CLASSIFICATION SOCIETIES**

It is a condition of Club cover that a ship be classed with a Classification Society approved by the Managers. Under the Club Rules members are required to comply with Classification Society rules and recommendations and are obliged to notify their Classification Society of any defects in respect of which the Classification Society might make recommendations as to repairs or other action. Members are also required to notify the Club if the ship changes Classification Society.

In the course of 1991, 326 ships were subjected by the Club to condition surveys. Table 23 on page 27 shows the numbers of surveys carried out as a condition of entry, as well as those carried out on entered ships. These latter were conducted either as a result of adverse reports following a visit by a Club ship inspector or because of adverse claims reports. In the case of 158 ships the Managers made recommendations as to repairs or other action required by the Club. In many instances these recommendations would be likely to have included structural repairs which were Class related. It therefore seems relevant to record details of

the Classification Societies of the ships concerned and these are shown in table 31 below. We have not attempted to relate claims in general to the Classification Societies as it is evident that not all P&I claims are the result of Class related defects.

TABLE 31 — 1991 CONDITION SURVEYS RESULTING IN RECOMMENDATIONS, DISTRIBUTED BY CLASS



OTHER SURVEYS

The Association is aware of the proliferation of surveys now taking place and of the pressures applied to ships' masters and crew. Doubtless the long term aim of the industry should be to eliminate the duplication of surveys and to establish a system whereby agreed standards can be properly enforced. Until that time, and as long as there are ships trading which do not comply with the rules of the Classification Societies or which do not comply with the international conventions, the Association will continue to visit and survey ships.



**Sample analysed: 602 claims totalling \$235 million representing 42 per cent of the total number of major claims and 30 per cent of their total value.**

In last year's report this Appendix opened with a comment on the upward trend in the values of major cargo claims, particularly apparent in the 1987, 1988 and 1989 policy years.

Despite early indications that the 1990 policy year would see a continuing rise, the total value of its major cargo claims, at \$51 million, now compares favourably with a total of \$59 million for the 1989 year at the comparable stage of development.

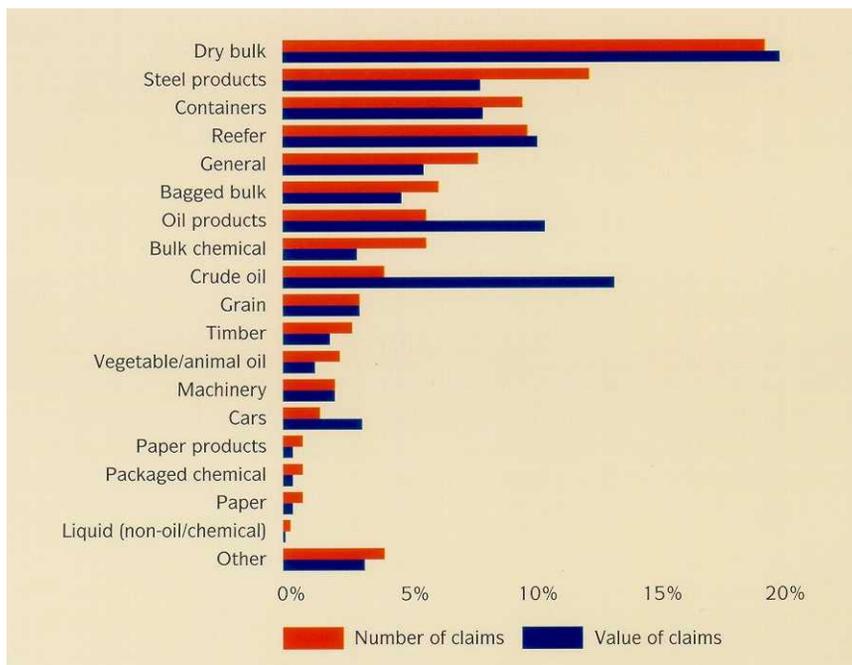
Turning to the 1991 policy year, this has seen a significantly larger number, but smaller value, of serious cargo claims than for the 1990 year at the same stage (74 claims worth \$24.3 million for 1991, against 46 claims worth \$30 million for 1990). By this calculation, the average value of a major cargo claim peaked at more than \$400,000 in 1989 and 1990, but has returned in 1991 to the same level as that for 1988, namely \$325,000.

Last year's report identified the cargoes associated with the greatest frequency of major cargo claims as dry bulk, reefer, containerised, generals, and steel; it found ships aged between ten and fourteen years to be at greater risk, as were ships of 10,000 to 30,000 grt: the USA was the most prominent country of incident; bad stowage, bad handling and leaking hatch covers were the most frequent cause of damage; more claims were caused by human error than by ship failure. None of these findings is contradicted by the enlarged data set which is now available.

This year the report focusses in more detail on the types of ship by which frequently damaged cargoes are carried, and seeks to identify risk factors by comparing the profile of claims with the profile of ship types for the Club's entry; the claims profile is also analysed by age band and by causation; other new features include a regional comparison of the place of incident and place of loading, and a comparison between the countries in which claims occur and the jurisdictions in which claims are pursued.

Table 32 opposite shows, for each type of cargo, the number and value of claims as a percentage of all major cargo claims. The pattern is similar to that seen last year, but with an increase in the prominence of steel and bagged bulk claims and a small decrease in that of dry bulk claims. Bulk claims nevertheless continue to predominate; sugar is most often the cargo involved (in about 10 per cent of bulk claims), followed by rice, fishmeal, cement, fertilizer, coffee, grain, and groundnuts (each about 5 per cent of bulk claims).

TABLE 32 — DISTRIBUTION OF CLAIMS BY CARGO TYPE



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

Table 33 overleaf contains a percentage distribution of claims by type of loss for 9 kinds of cargo that are most frequently damaged and which, between them, account for more than 80 per cent of the major cargo claims.

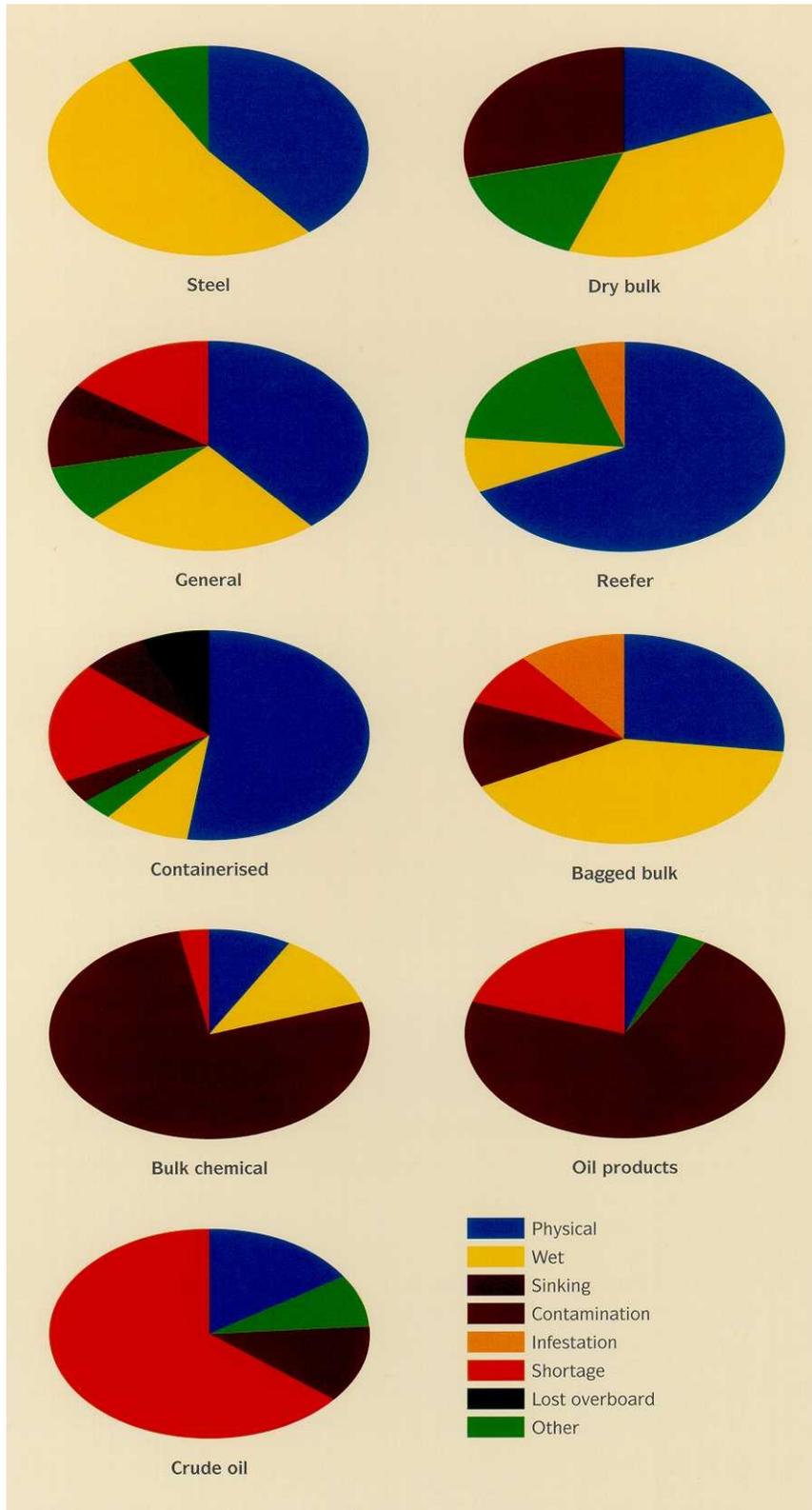
The loss category entitled 'physical' includes damage caused by freezing, heating and burning, in addition to damage more obviously associated with this term, such as that caused by crushing, denting, bending, breakage, etc. It is the type of damage most often suffered by general, reefer and containerised cargoes, generally as a result of bad stowage, but also as a result of machinery failures in the case of reefer ships.

Wet damage claims are prominent among steel, bagged bulk and dry bulk cargoes, commonly being the result of sea water ingress through defective hatch covers or shell plating, or, much less frequently, the result of condensation caused by errors in stowage or inappropriate ventilation.

Cargoes of bulk chemicals, oil products and dry bulk commodities are the most susceptible to contamination; two thirds of such claims arise from bad handling and inappropriate stowage; about one third arise from inadequate tank cleaning.

Shortages are, in this study, particularly associated with general cargoes, containerised cargoes (commonly as a result of theft), and oil products; they also account for about two thirds of the major crude oil cargo claims, with losses from structural failures being twice as common as losses associated with measurement disputes or terminal procedures.

TABLE 33 - DISTRIBUTION BY TYPE OF LOSS, FOR NINE SELECTED CARGOES



Looking more closely at causation, table 34 overleaf shows a percentage distribution, by number and value, of the detailed cause of damage, taking all cargoes into account. Bad stowage, pre-shipment quality disputes, condensation, carriage at the wrong temperature, and the use of an unsuitable ship for the cargo in question, together make up about one third of the claims. These are all factors to which knowledge of cargoes and stowage is relevant, both on the part of those with immediate responsibility for safe carriage — the ship's Master, officers and crew — and on the part of those who fix the ships. Members can exercise loss prevention by ensuring their officers have adequate training and practical guidance in methods of safe stowage for the cargoes to be carried. The Association, for its part, publishes advice on particular cargoes in its series of booklets called "Carefully to Carry" and will be pleased to supply copies to any Member on request.

Bad handling and problems in shore terminals account for about 15 per cent of the claims. In this area where the shipowner has less direct control, it may be helpful to encourage higher standards of stevedoring by ensuring that rights of recourse are preserved and used wherever possible.

Hatch cover and shell plate failures continue to be a major cause of damage to dry bulk, steel, general, oil products and crude oil cargoes.

TABLE 34 - DISTRIBUTION BY DETAILED CAUSE OF LOSS, FOR ALL CARGOES

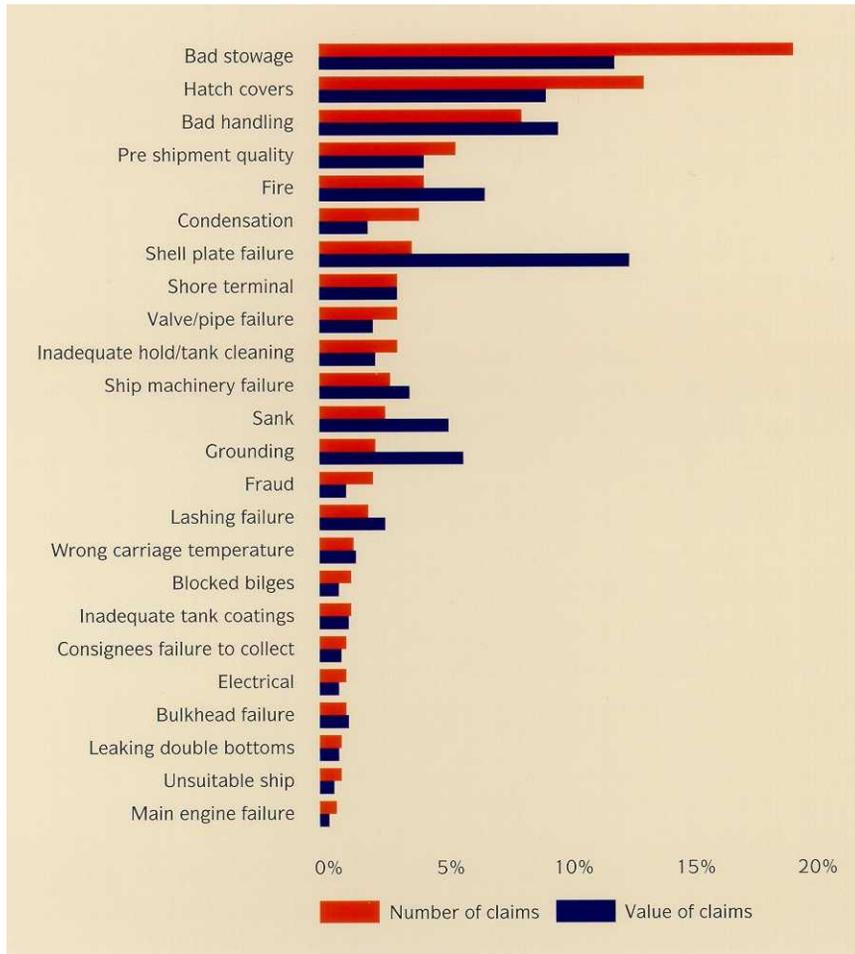
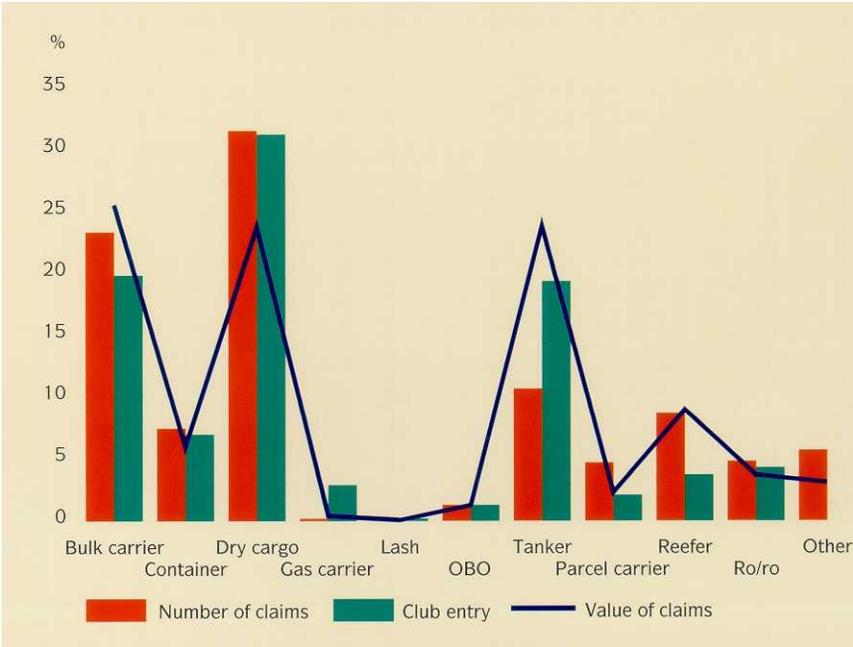


Table 35 below shows the distribution of claims by the type of ship involved, comparing this with the profile for all of the Association's entered ships, distributed by ship type. (In this, as in all other tables, the percentage distribution for the Association's entry is calculated by numbers of ships, not by tonnage.)

Bulk carriers, parcel carriers and reefers are involved in disproportionately many major cargo claims, while tankers and gas carriers are involved in fewer such claims than might reasonably be expected. It is, however, the values of claims on tankers, together with those on bulkers and reefers, which are disproportionately high compared with their numbers of entries in the Association.

TABLE 35 —DISTRIBUTION BY TYPE OF SHIP, COMPARED WITH CLUB ENTRY



For the purpose of this analysis, we have chosen to look in more detail at the frequency distribution of claims involving bulk carriers, container ships, dry cargo ships, tankers, and reefers. More than 80 per cent of the major cargo claims arose on ships of these types.

Table 36 opposite shows the distribution of claims by age band, for each type of ship involved. The table compares this with the distribution, by age band, of entered ships of each type. For each kind of ship the table highlights, as a possible risk indicator, the age bands for which the claims profile shows a higher incidence than the profile of the Club's entry.

It can be seen that 25 per cent of the Association's reefer ships are aged 5-9 years old, but they were involved in 35 per cent of the major reefer claims. For container ships the two profiles match within a reasonable margin of error. For tankers 40 per cent of their major claims arise on ships aged 15-19 years, but these make up only 20 per cent of the tankers entered in the Association. There is a similar pattern for bulk carriers, with 15-19 year old ships comprising only 21 per cent of the entry, but bringing in 35 per cent of the claims. Amongst dry cargo ships, it is the 10-14 year olds which are the culprits, with 26 per cent of the dry cargo ship entry incurring 35 per cent of the claims.

TABLE 36 - DISTRIBUTION BY AGE BAND FOR 5 TYPES OF SHIP, COMPARED WITH CLUB ENTRY

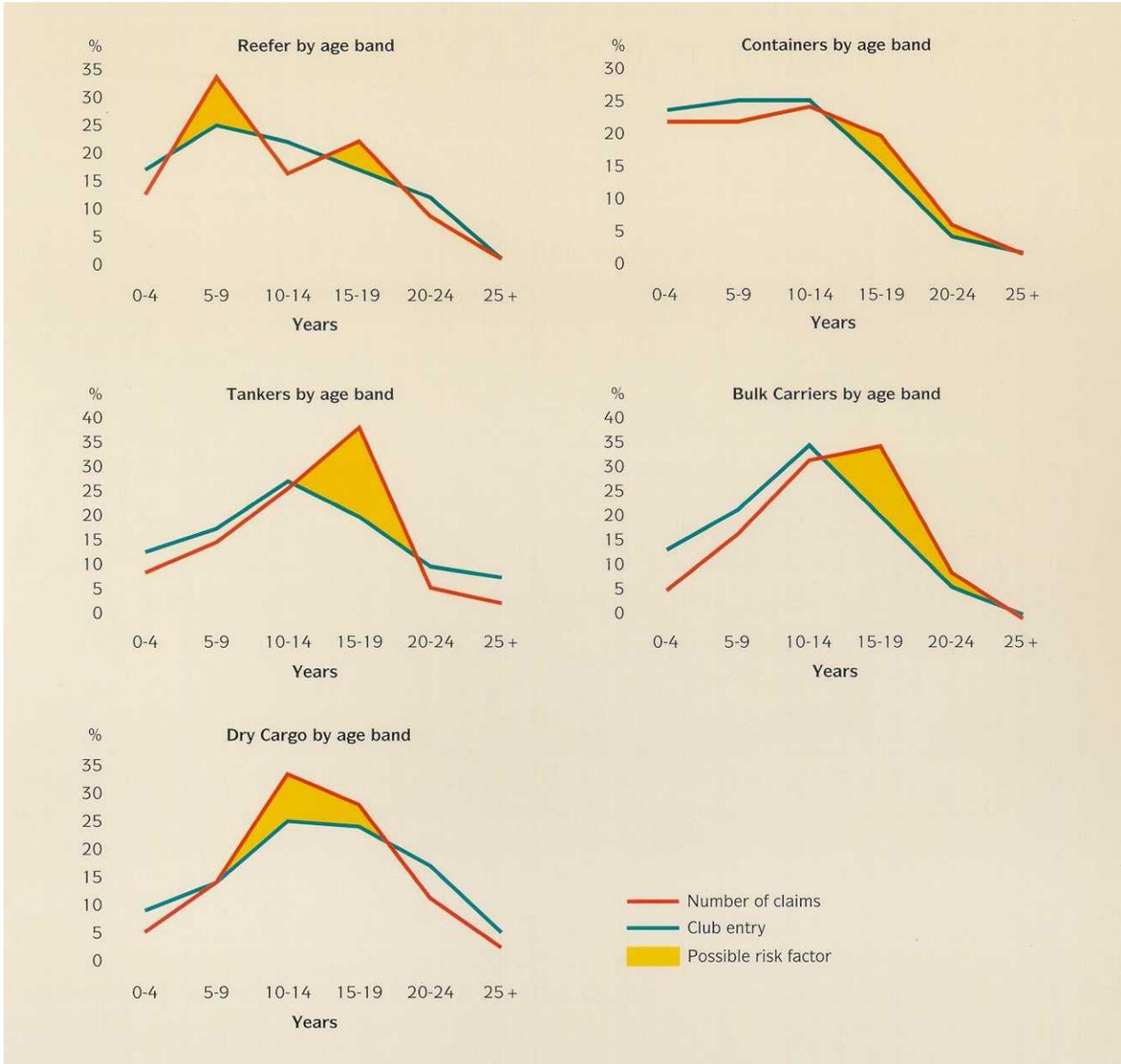


Table 37 opposite compares the number of claims caused by ship failure against the number of claims caused by human errors, distributed by age bands for each ship type. (The table also includes, for easy reference, the highlighted risk indicators noted in table 36 overleaf.)

Reefer ships aged 5-9 years were shown in table 36 overleaf to be involved in more major claims than their numbers would warrant; table 37 opposite shows that this is the result of a high incidence of human error involving such ships.

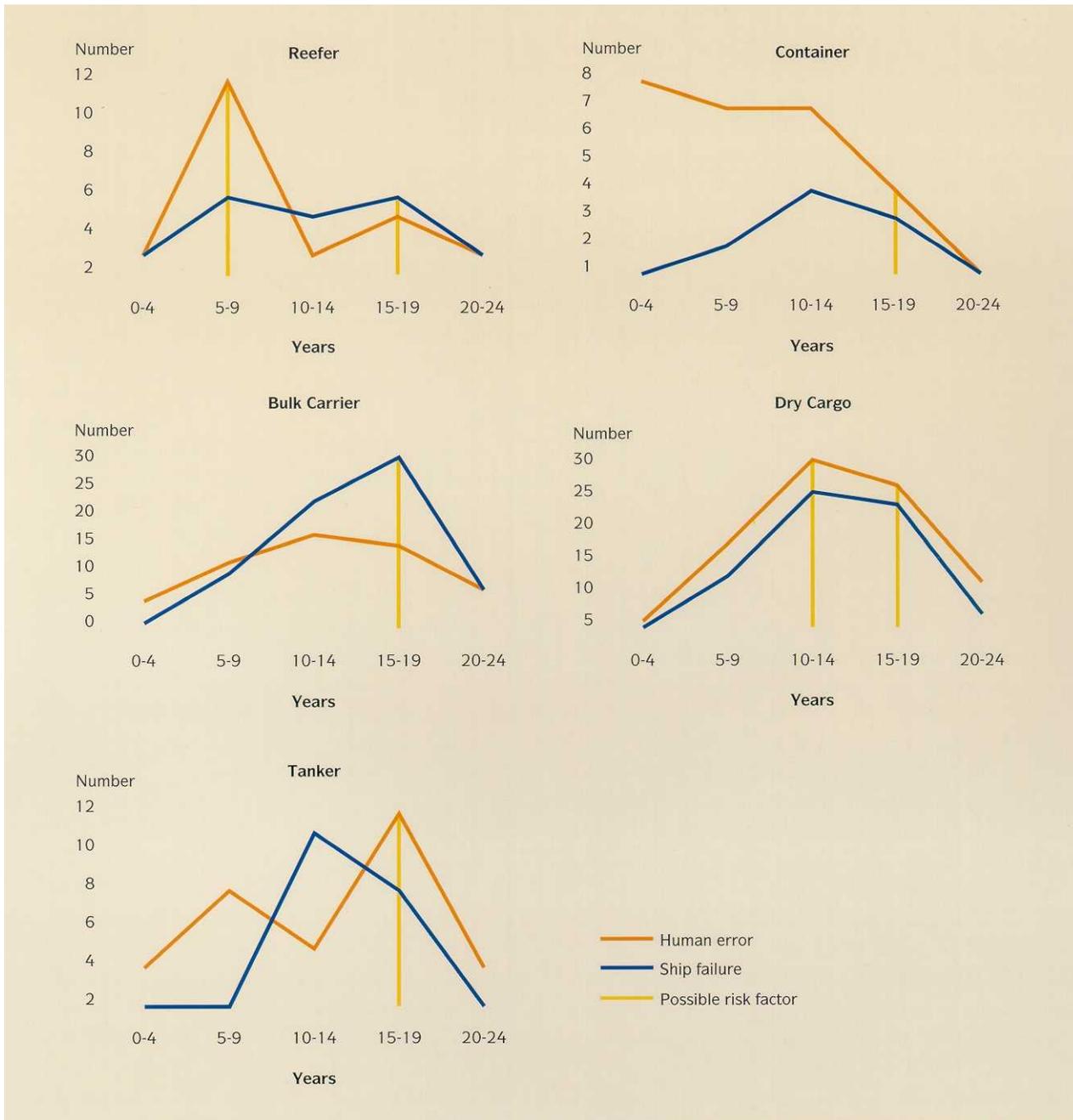
In container ships, the number of major claims remains fairly constant up to 14 years and then diminishes in the older ships (a pattern which matches the entry profile of these ships in the Association, as seen in table 36 overleaf). It is interesting to see, however, that the number of claims caused by human error is highest for the youngest ships, thereafter diminishing steadily, while the incidence of ship failure is low for young ships, peaks with 10-14 year old ships and then diminishes again.

In bulk carriers human error claims peak at 10-14 years (perhaps as a result of ships changing management?) and thereafter decline. Claims arising from ship failures peak at 15-19 years, the age band in which the percentage of major cargo claims on bulkers is higher than their entry in the Association would justify.

Human error is the predominant cause of claims of dry cargo ships at all ages, bad stowage being the most common fault. The table shows that the pattern of error and ship failure claims in these vessels is very similar, in both instances rising to a peak between 10 and 14 years, declining somewhat in the 15-19 year band. About half the ship failures involve defective hatch covers, the others being made up of shell plate failure, valve and pipe failure, main engine failure and machinery failure.

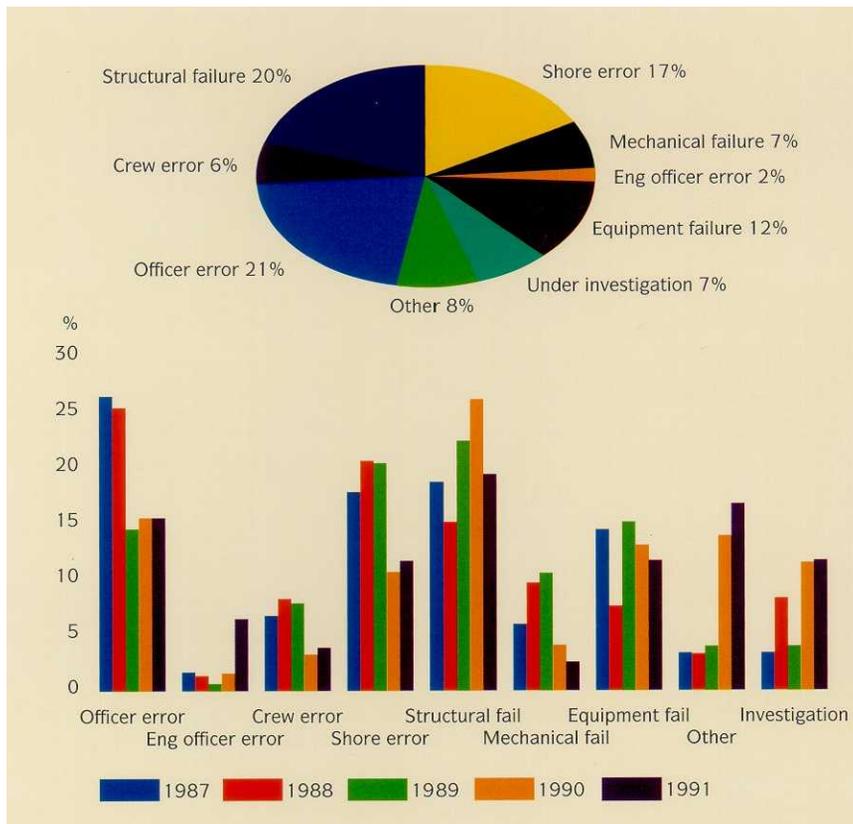
In tankers, human errors in cargo handling are the predominant cause of claims for ships in most age bands, including those aged 15-19 years which incur a greater percentage of claims than their entry would justify. However, specifically in 10-14 year old ships the pattern is reversed and shell plate, bulkhead, valve and machinery failures combine to outnumber the human errors.

TABLE 37 -COMPARISON OF HUMAN ERROR AND SHIP FAILURE, BY AGE BAND, FOR 5 TYPES OF SHIP



The general picture, taking all types of ship into account, is as shown in table 38 below, which is a distribution of all cargo claims by main cause. Despite there being almost 60 per cent more cargo claims in this year's data base, the findings are virtually the same as in last year's Report; almost half the claims are caused by human error; 40 per cent are caused by ship failures; the remainder are still under investigation.

TABLE 38 — MAIN CAUSE OF DAMAGE — ALL CARGOES



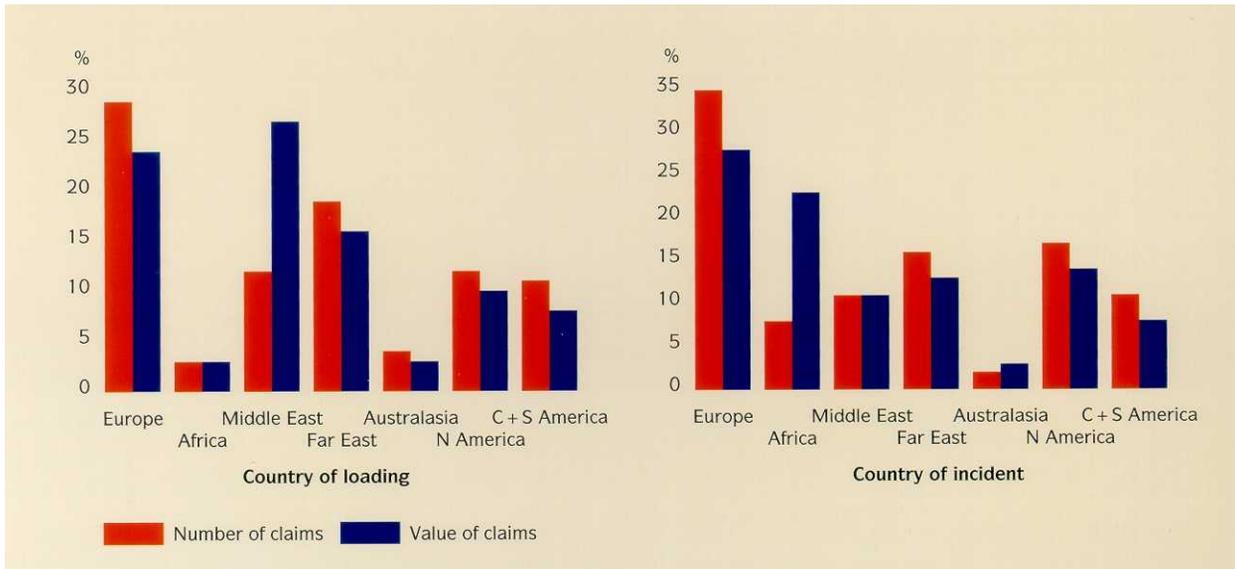
Where did these claims arise? It is difficult to draw conclusions about the significance of jurisdiction without reference figures with which to make a comparison. As was noted in last year's report, about 16 per cent of the major cargo claims arise in the United States. However, in order to draw from this any conclusions about risk it would be necessary to have some idea of what percentage of the loaded voyages of ships entered in the Association over the past five years were voyages to the United States. That information is not available. In its absence, we have included in table 39 on page 46, a regional analysis of jurisdiction, showing the geographical areas in which the cargoes involved in the claims were loaded and discharged.

For the purposes of this table Central America and South America have been treated as one region. The Commonwealth of Independent States (in which very few major cargo claims arise) has been treated as part of Europe. Countries from Turkey eastward to Bangladesh, including the Gulf States, have been included in the Middle East. Countries from Burma eastward to Japan in the north and to Indonesia in the South make up the region referred to as the Far East.

The high percentage value of claims involving cargoes loaded in the Middle East is due in part to the inflationary effect of relatively few very expensive crude oil and oil products claims, caused by structural failures and fires.

Only 8 per cent by number of the major cargo claims arise in Africa but they account for 23 per cent of the value. This too is partly the effect of a very expensive crude oil claim, but even if that claim is left aside the average value of the major African cargo claims in this study is more than 5700,000 or about twice as expensive as the average for all major cargo claims. African countries which stand out for the high average values of their claims include Algeria, Nigeria, Angola, the Sudan, and South Africa.

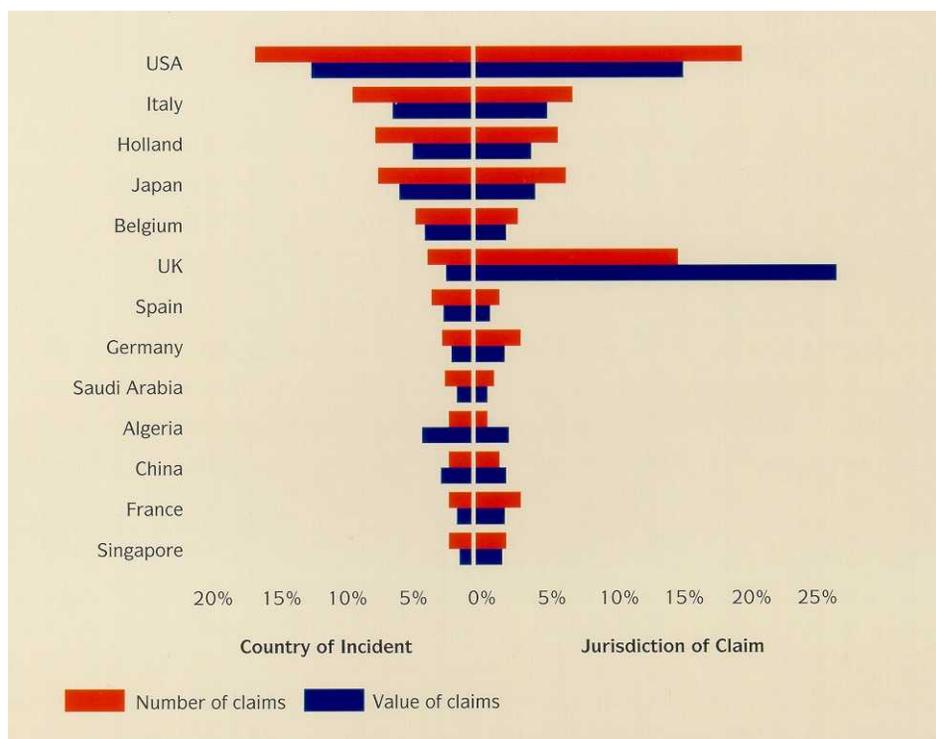
TABLE 39 — CLAIMS DISTRIBUTED BY REGION OF LOADING AND BY REGION OF DISCHARGE



Last year's Analysis drew attention to the incidence of cargo claims in Italy, particularly in Ravenna. A study of these shows the problem to arise from a combination of factors including high volumes of bulk imports, often transhipped in lightening vessels due to draft restrictions at Ravenna. More details will be published in a forthcoming edition of UK Club News.

Table 40 below compares the countries in which the incidents occurred with the jurisdictions in which the claims are pursued. Although the United Kingdom is the country of incident for less than 4 per cent of the claims as measured by number or by value, it is nevertheless the jurisdiction in which 15 per cent, by number, and 27 per cent, by value, of the claims are pursued. It seems likely that this is a reflection not only of the frequency with which carriage contracts provide for UK jurisdiction, but also of the prominence of the London insurance markets. In any event, the very high average value (almost \$700,000) of claims pursued in the UK puts into perspective the idea that forum shoppers generally have the United States at the top of their list.

TABLE 40 — COMPARATIVE DISTRIBUTION BY COUNTRY OF INCIDENT AND BY JURISDICTION OF CLAIM





## CREW, STEVEDORE AND PASSENGER CLAIMS

**Sample analysed: 420 claims totalling \$145 million representing 29% of the total number of major claims and 18% of their value.**

The size of the data set has grown since last year's Analysis by more than 60 per cent in both number and value, but the distribution by type of claim is largely unchanged, with three quarters relating to crew injuries. This is shown in table 41 below.

TABLE 41 — DISTRIBUTION BY TYPE OF CLAIM

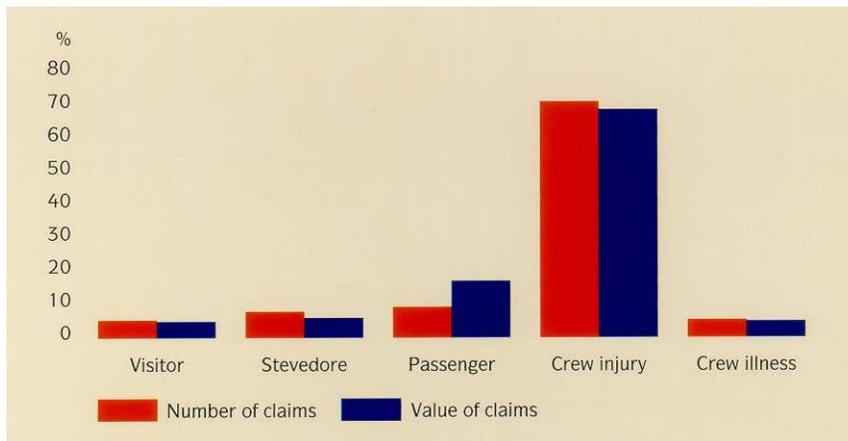
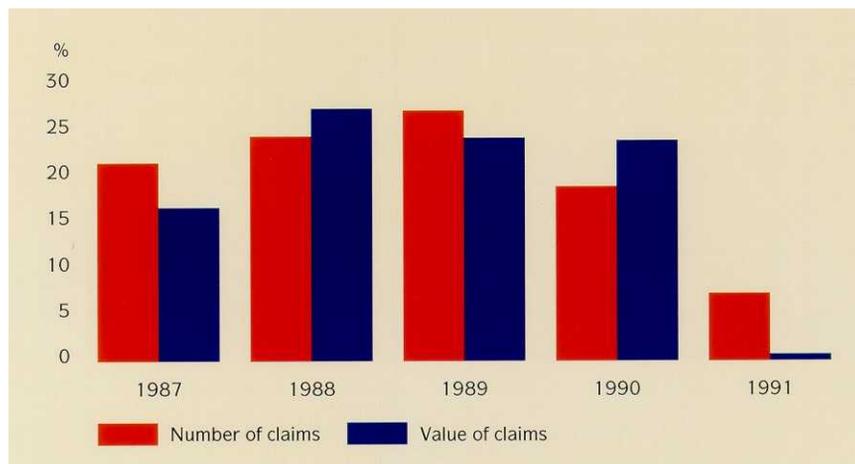


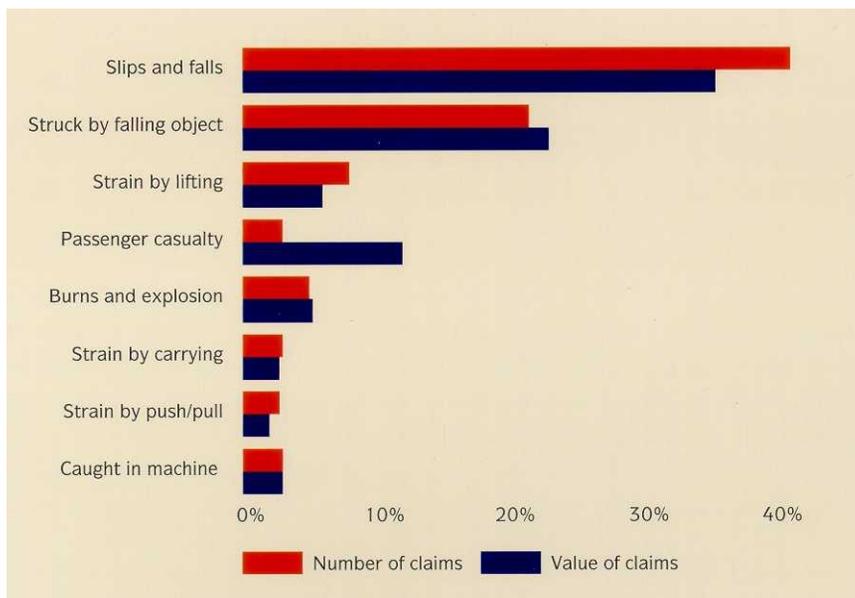
Table 42 below shows the claims distributed by policy year. (Because they are now distributed over five policy years, instead of four, the percentage values associated with any one particular policy year are of course lower than the figures shown in the last Analysis.) As was predicted last year, the number of the 1989 claims has now exceeded the number for 1988. In due course the 1990 policy year is expected to develop in a similar or worse fashion. Injury claims have a long 'tail' and the development of each policy year therefore takes some time to see clearly.

TABLE 42 — DISTRIBUTION BY POLICY YEAR



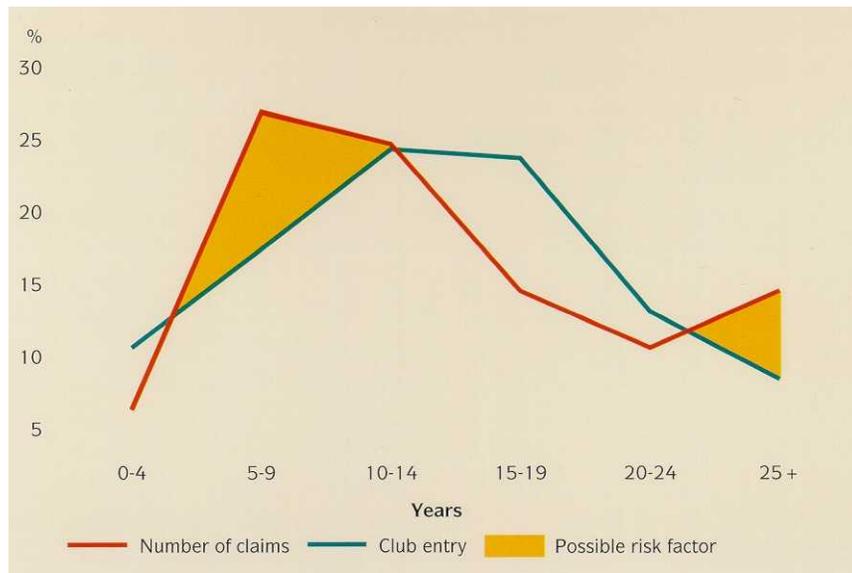
The types of accident from which these claims arose are shown in Table 43 below. Confirming last year's findings, slips and falls are by far the most common, making up 41 per cent of the accidents. Last year 30 per cent of accidents involved the victim being struck by a flying object. With this year's increased data, the figure has now fallen to about 20 per cent.

TABLE 43 — ALL PERSONAL INJURY CLAIMS, DISTRIBUTED BY TYPE OF ACCIDENT



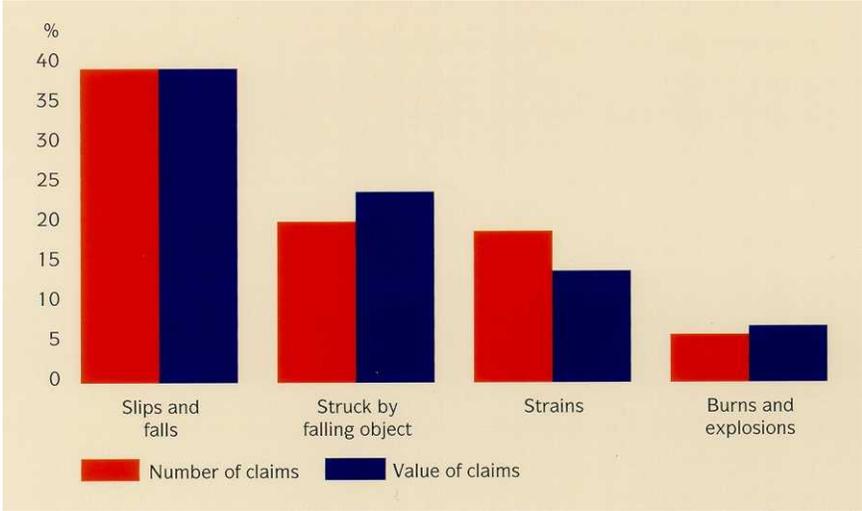
How old were the ships involved? Table 44 below shows that more claims occurred on the younger ships aged 5-9 years, and on the very old ships aged 25 years or more, than their respective entries in the Club would warrant. As measured by the frequency of occurrence of most types of claim in this Analysis, ships aged more than 25 years are relatively safe. The fact that the pattern is reversed for personal injury claims is intriguing, and somewhat disturbing in view of the ageing of the world fleet.

TABLE 44 —DISTRIBUTION OF PERSONAL INJURY CLAIMS BY AGE OF SHIP, COMPARED WITH CLUB ENTRY



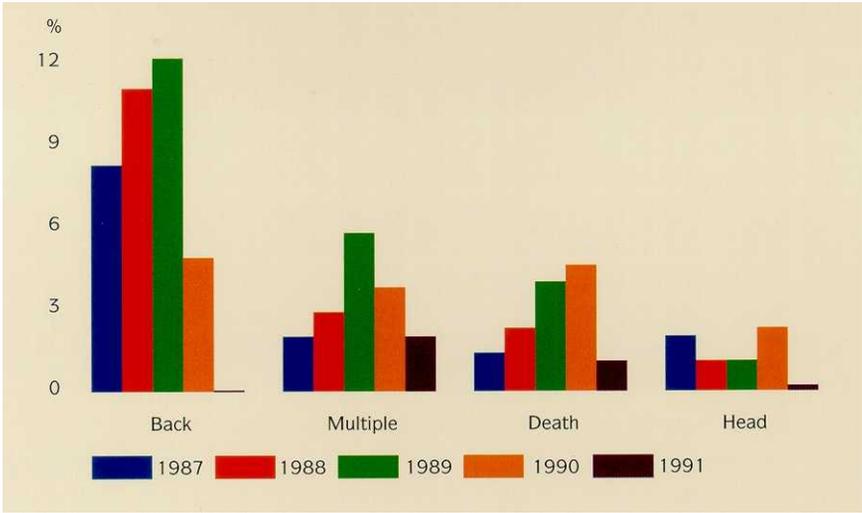
In view of the prominence of crew injury claims, particular attention has been paid to them this year. Table 45 opposite shows the types of accidents to which crew fell victim; the profile of strain injuries is much higher in the context of crew claims than in the context of all injury claims.

TABLE 45 — CREW INJURIES, DISTRIBUTED BY TYPE OF ACCIDENT



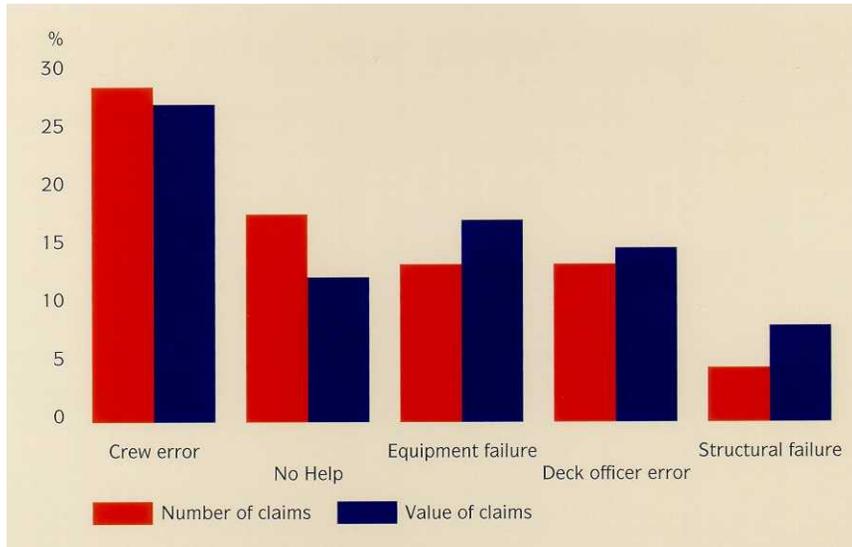
The most common types of crew injury claim — back, head, multiple injuries, and death — are shown distributed by policy years, as a percentage of all injury claims, in table 46 below. The high percentage of back injuries (about a third of all crew injury claims) is the subject of further analysis and comment in the paragraph on nationality, later in this section.

TABLE 46 — MOST COMMON TYPES OF CREW INJURY, AS PERCENTAGES OF TOTAL NUMBERS OF INJURIES, DISTRIBUTED BY POLICY YEAR



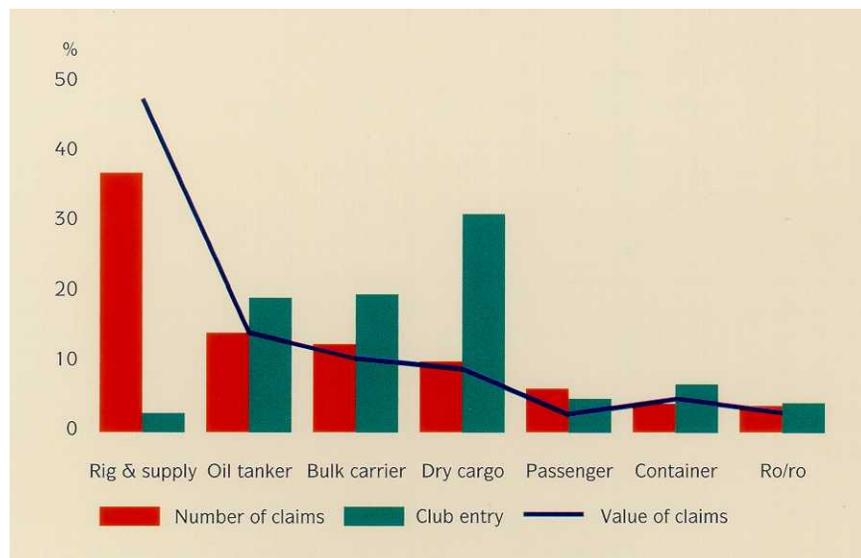
What caused these accidents? Table 47 below shows that about 60 per cent resulted from human error, occasionally on the part of a deck officer, but usually on the part of a crew member. The column marked 'No Help' refers to accidents caused by one person trying alone to do something requiring the help of a second person. Many of the 'No Help' claims involve strain injuries to the back. About 25 per cent of the crew injury claims were caused by equipment failure, structural failure, or (not shown in the table) mechanical failure.

TABLE 47 – CREW INJURIES DISTRIBUTED BY MAIN CAUSE



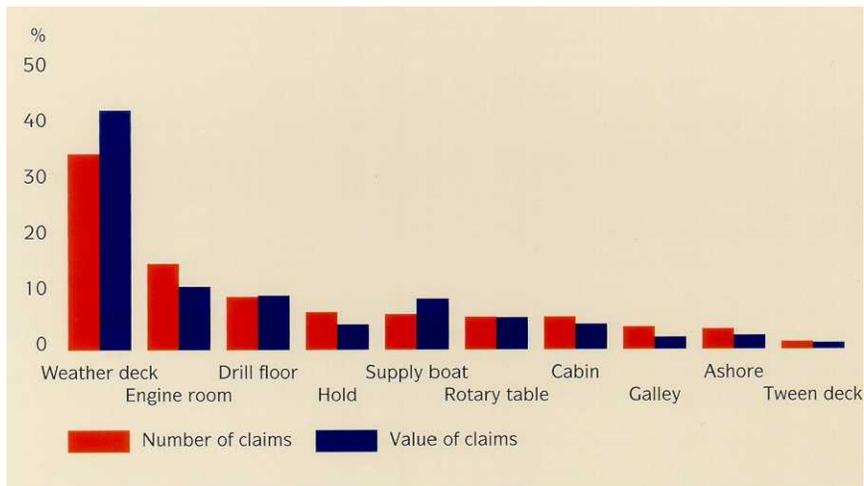
The types of ship on which crew injuries most commonly occur are shown in table 48 below. Rig and supply ships were involved in 37 per cent of the injuries by number and 47 per cent by value, two thirds being in respect of injuries to US seamen. These ships make up only 3 per cent of the Club's entry; however they are the subject of a separate reinsurance programme and they pay commensurately high premiums. By this measure, bulk carriers, tankers, dry cargo and container ships are all relatively safer places to work. (It should be remembered that the entry for passenger ships in this table is only in respect of crew injuries and does not include passenger liabilities.)

TABLE 48 – CREW INJURIES DISTRIBUTED BY SHIP TYPE, COMPARED WITH CLUB ENTRY



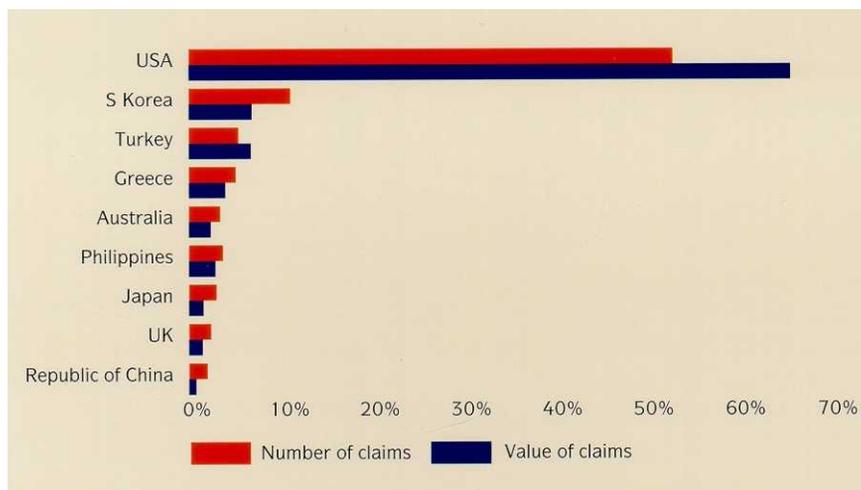
Last year's analysis reported that the most dangerous place, as measured by the frequency of major accidents, is the weather deck on ships and the drill floor on oil rigs, followed by the engine room and holds. Table 49 below shows that this picture is confirmed by the enlarged data set.

TABLE 49 —CREW INJURIES DISTRIBUTED BY INCIDENT LOCATION



More than half by number and two thirds by value of the crew injury claims were in respect of US nationals, as shown in table 50 below.

TABLE 50 —CREW INJURIES, DISTRIBUTED BY NATIONALITY OF CLAIMANT



Many of the death claims involve Turkish and Filipino seamen; the most expensive are those involving US seamen, which cost on average \$966,000; the Turkish claims have the second highest average value at \$563,000. The overall average cost of a crew death claim is \$340,000. See table 51 below.

TABLE 51 — CREW DEATH, DISTRIBUTED BY NATIONALITY

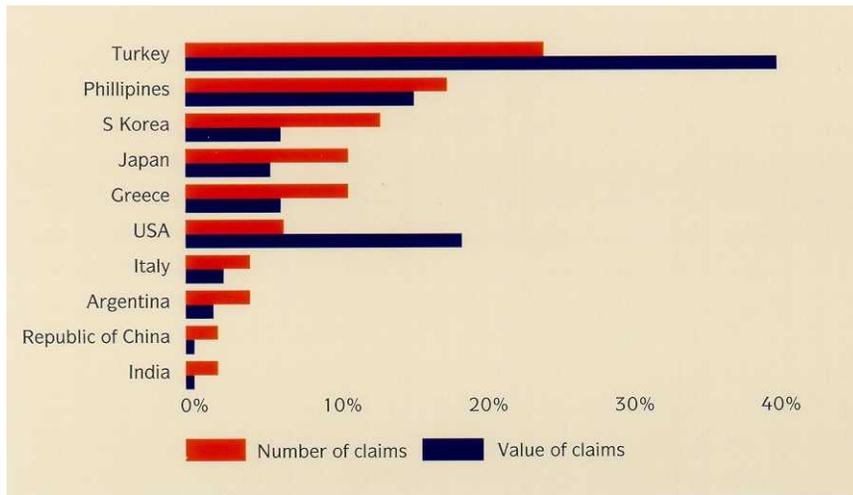
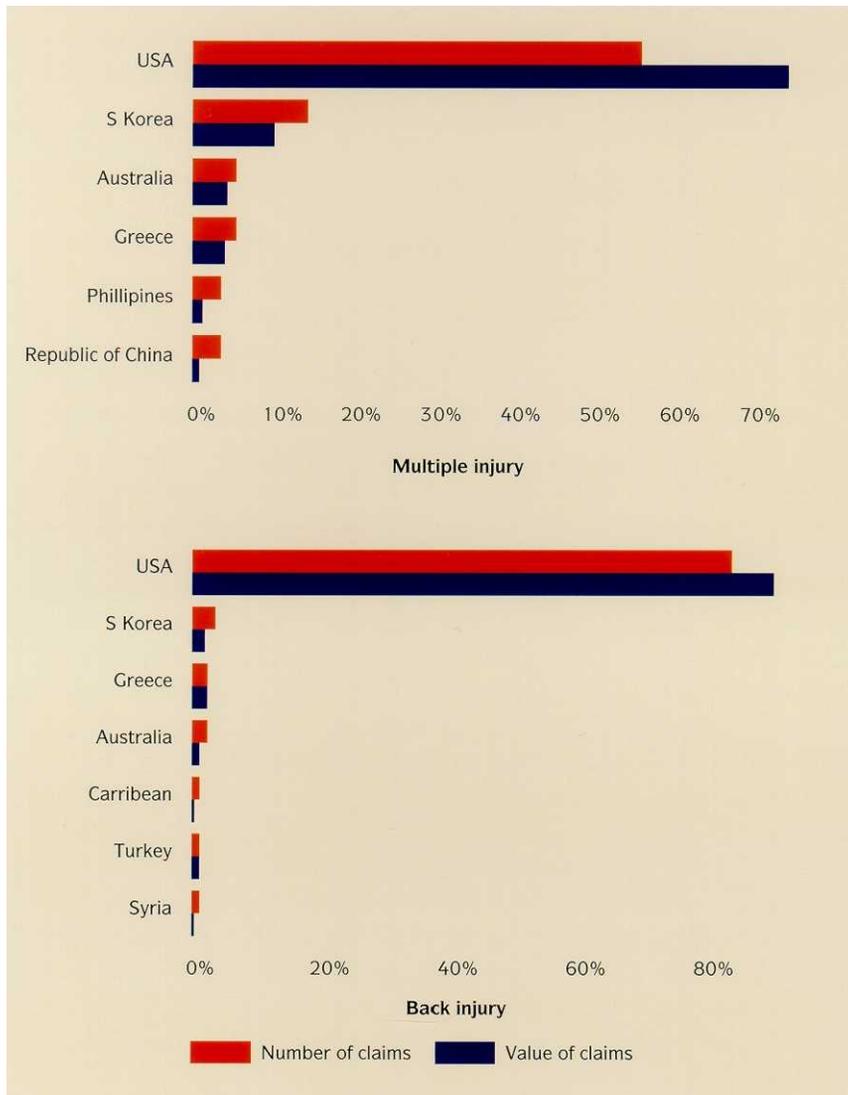


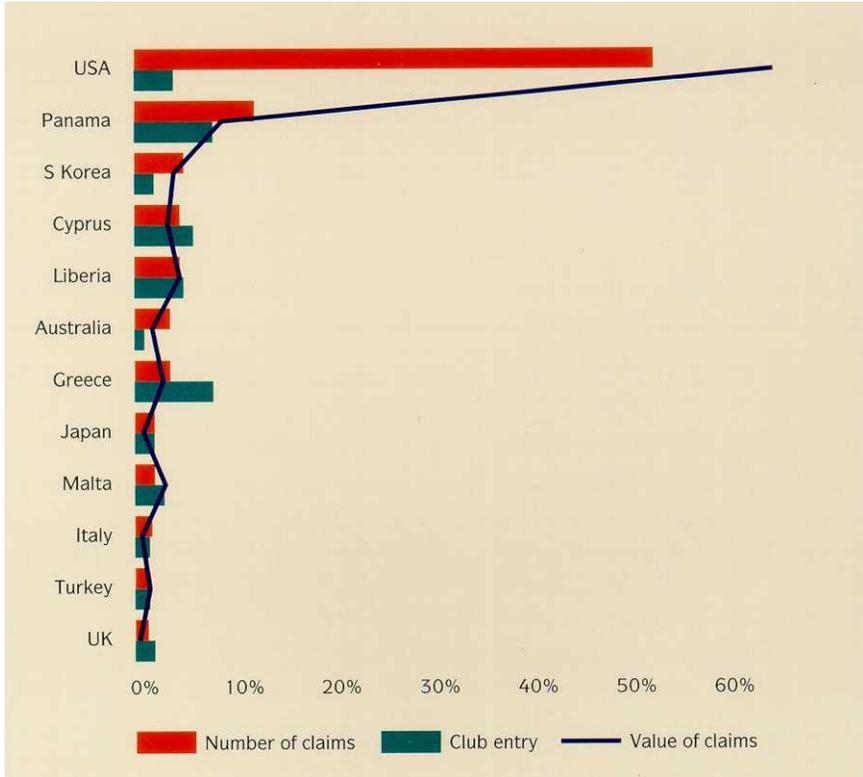
Table 52 below shows the distribution, by nationality of claimant, of crew multiple injury claims (which have an average value of \$580,000) and crew back injury claims (which have an average value of \$306,000). The latter appear to be endemic amongst US seamen, who brought 70 such claims; the next highest incidence was amongst Korean seamen who brought 3 claims. It seems doubtful that US seamen have particularly weak spines; it seems possible that these figures say as much about the US legal system as they do about the US backbone.

TABLE 52 —CREW MULTIPLE INJURIES AND BACK INJURIES, DISTRIBUTED BY NATIONALITY



Crew injuries, distributed by ship flag, are compared in table 53 below with the distribution by flag of all entered ships. The percentage number and value of claims on US flag ships greatly exceeds their entry profile in the Association. Other flags under which ships bring to the Club more crew injury claims than their entry would warrant, include Panama, Korea, and Australia. The flag with the best crew injury record, i.e. the least crew injury claims relative to the numbers of entered ships, is Greece.

TABLE 53 — CREW INJURIES, DISTRIBUTED BY SHIP'S FLAG



APPENDIX

The information contained in this appendix is based on the data available as at December, 1991.



## PROPERTY DAMAGE CLAIMS

**Sample analysed: 156 claims totalling \$160 million representing 11 per cent of the total number of major claims and 20 per cent of the total value.**

Last year's report drew attention to the following features:

- ships in the tonnage range 10,000-30,000 grt appeared more likely to cause this type of damage.
- the majority of the claims (80 per cent) could be attributed either in whole or in part to human error and of these claims the most significant element was pilot error.
- 45 per cent of the claims involved ships under 10 years old.

Those trends identified last year are still evident today and have, if anything, been reinforced by the latest figures, which include a further 92 claims. This year's report into this category also looks in more depth at the pilot error issue.

Table 54 opposite examines the distribution of the major property damage claims over the five years under review. 1987 remains the worst year in terms of the value of claims paid. However, it should be remembered that because gross claims are used — that is the total value of each claim before recoveries from the Pool and reinsurance — one or two large claims can distort the picture. This was the case in 1987. Despite this limitation, the table does give some cause for optimism. The average value of claims appears to be levelling at around \$700,000 per incident from its high of \$2 million in 1987. Furthermore, the claims values for 1991 at \$12.7 million are nearly 50 per cent lower than the claims of 1990 were when measured at this time last year (see figures in brackets against 1990 in table 54 opposite).

TABLE 54 - DISTRIBUTION OF CLAIMS, BY POLICY YEAR

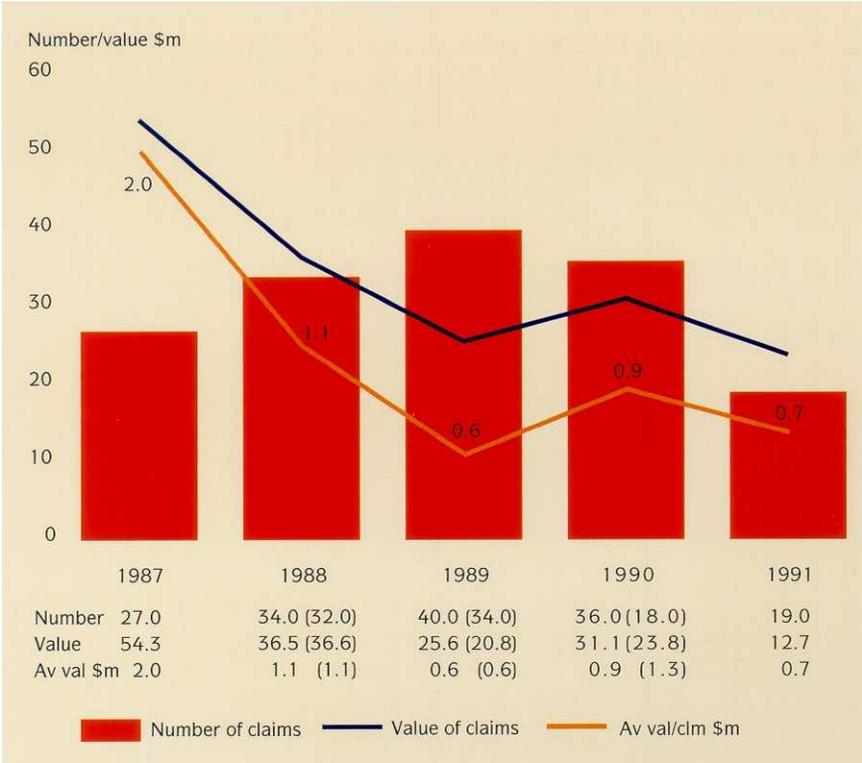


Table 55 below shows the percentage number in value of claims attributable to the size of ship expressed in tonnage ranges. The table also shows the distribution of ships in tonnage ranges for the Association as a whole. The pattern of claims against each tonnage range is almost identical to last year. Ships in the tonnage range 10,000-30,000 grt continue to attract the highest percentage number of claims, 48 per cent of the total compared to 50 per cent last year.

TABLE 55—DISTRIBUTION BY SIZE OF SHIP, COMPARED WITH CLUB ENTRY

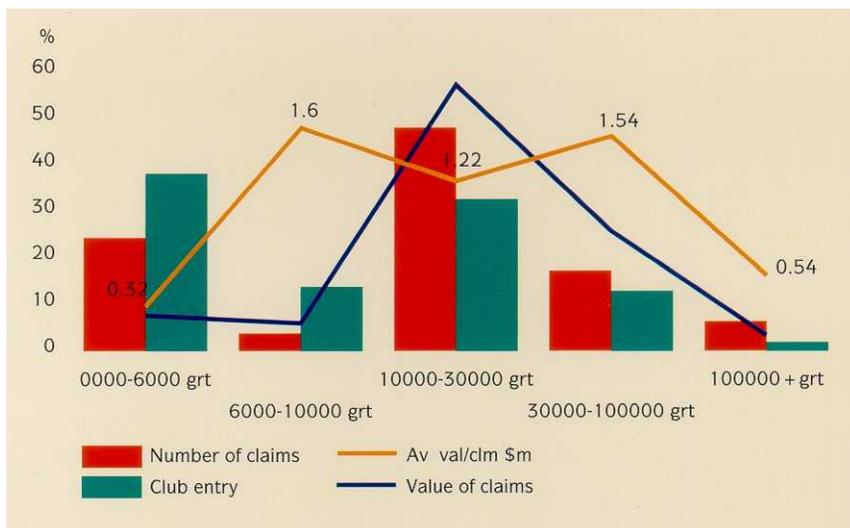


Table 56 below shows the main causes expressed as a percentage of the total number of incidents. Once again, there is a high degree of consistency with last year's findings. Human error, whether by the crew, shore or pilot, accounts for over 80 per cent of the incidents. The year on year development at the bottom of the table is included to show that, far from diminishing, the dominance of human error as a cause appears to be increasing.

Pilot error, which continues to be the major factor, is addressed in more detail below.

TABLE 56 — MAIN CAUSE, ALL YEARS

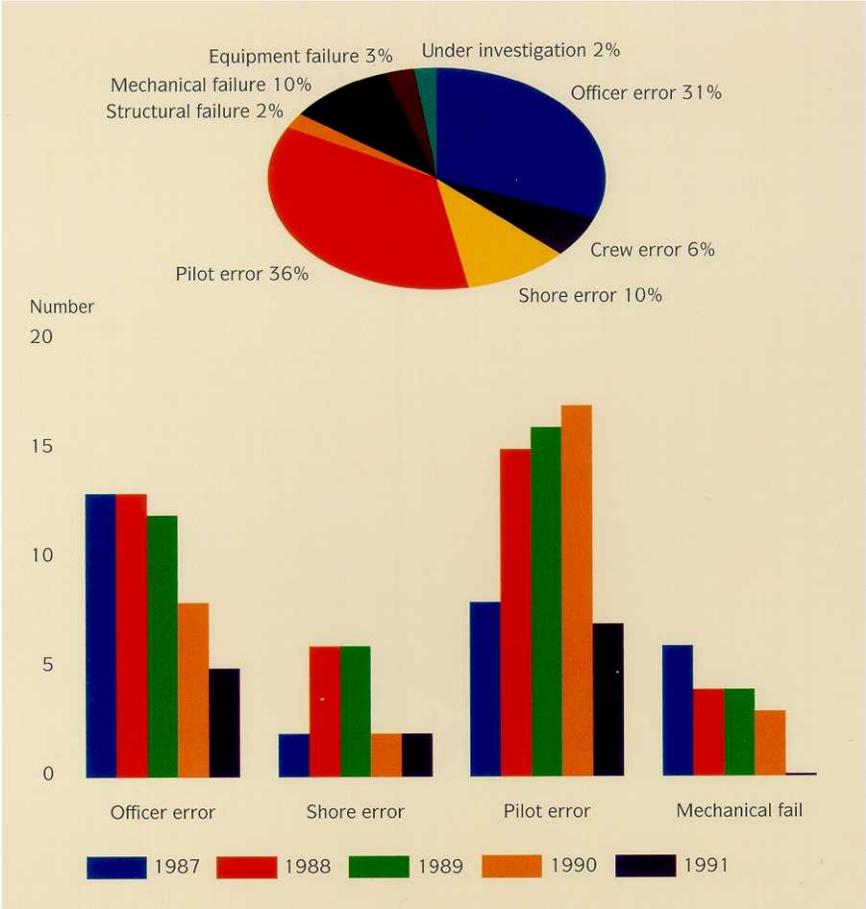
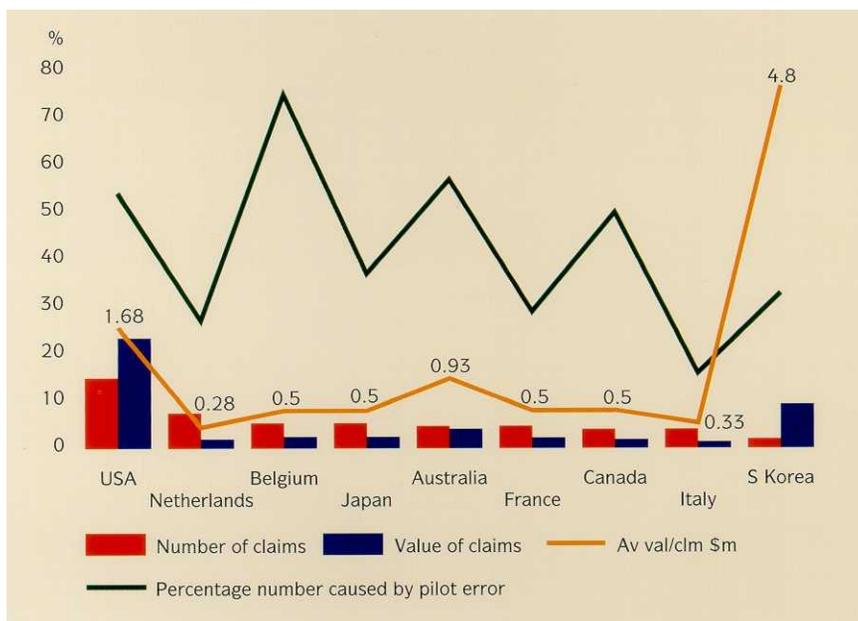


Table 57 below shows the country of incident where there were more than five major claims in the five years under review. The table also shows the percentage number of claims in each of those countries caused by pilot error. In some instances the sample analysed will be relatively small. For example, Belgium is shown as having 5 per cent of the number of claims and 2.5 per cent of the value. This represents 8 claims with a total value of \$4 million. Of these, 75 per cent or 6 claims were caused by pilot error. The value figures for USA and South Korea are distorted to varying degrees by a single large claim.

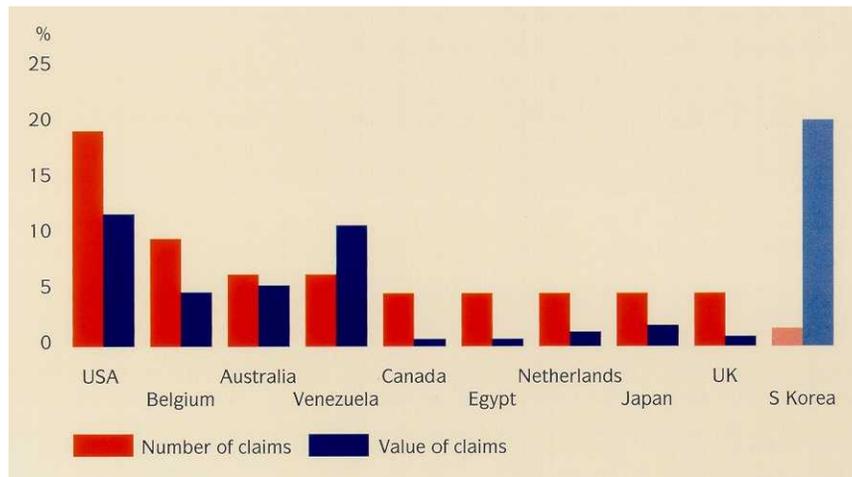
TABLE 57 -COUNTRY OF INCIDENT



PILOT ERROR

Table 56 overleaf 'main cause' shows that 36 per cent of the property damage claims involve pilot error. This represents 56 claims with a value of \$60 million. Table 58 opposite shows the distribution of the pilot error claims by country of incident. Only those countries with more than three incidents or more have been included. The one exception to this rule being South Korea which is shown because of its high percentage value of claims.

TABLE 58 —COUNTRY OF INCIDENT WHERE THE MAIN CAUSE IS PILOT ERROR



In the year since the UK Club's first Analysis of Major Claims was published, there has been considerable debate in the shipping industry and the trade press about the standards of pilotage service worldwide. This section addresses the problems facing pilots and the steps being taken by the UK Club together with the other Clubs in the International Group to gain a greater understanding of the underlying causes. Whilst in some cases there is clearly a straightforward error of judgement by a pilot, in the majority a more subtle analysis is necessary. The Managers continue to analyse the statistical data using the experience of their own master mariners who handle most of these claims on behalf of the Club. They also wish to acknowledge the valuable assistance of Captain Tony Robinson FNI, himself an experienced pilot.

#### THE HISTORICAL PERSPECTIVE

Historically, the pilot was employed by the ship's master to advise him on the dangers to navigation in unfamiliar waters. The master continued to handle his own ship and retained full responsibility for the safety of the ship. The pilot, being a seaman with local knowledge, was there to assist. As ships increased in size and sophistication, tugs were introduced to help with berthing manoeuvres and the pilot's role evolved to include control of tugs and direct ship-handling as well as navigation. This wider role for the pilot, in which he carries out tasks traditionally reserved to the master and his team is where many of the problems can be seen to have their roots. The incidents analysed confirm there is a need to improve communication between the master and pilot and for there to be a clear understanding between them as to who is responsible for what task at each stage in the manoeuvring of the ship. A number of shipping companies are already looking into this area and have required the master formally to discuss each stage with the pilot and to think through areas of potential difficulty. Statistically, and relevant to this need for time spent in

planning complex manoeuvres, the Association's own investigations reveal that the shorter the time the pilot is on board the more likely the risk of an-expensive accident.

#### BERTH DESIGN AND INFORMATION

When a berth is built it is generally designed to cater for a particular type of ship and trade. However, ship design and trading patterns change at a faster pace than berths can be altered. Ports are rarely able to keep their berths up to date and the masters and pilots are expected to make allowance for this.

For instance, some berths are not suited to bulbous bows and ships with large flares. This can and does pose considerable problems. The current analysis includes two claims involving the same wharf in Jeddah, the design of which causes collapse of the underwater structure when struck by a bulbous bow. This same wharf has been struck three times in the past five years, twice by ships entered in the UK Club. The average cost of these incidents was \$1.5 million.

New berths are often designed with quay equipment, such as container cranes, elevators and chocks-arms placed close to the jetty edge. Invariably, this is connected with the working pattern of the quay, and governed by commercial considerations, but the effect of the design is to restrict the pilot's ultimate line of approach and reduce the manoeuvring option. The design of these quays also adds to the cost of an incident as it is likely that both the equipment and the quay will be damaged. This is demonstrated by table 60 on page 67, which shows the high cost of terminal equipment claims. Further support can be found in table 61 on page 67, which shows the distribution of claims by type of ship and, in particular, the high cost of tanker claims.

#### USE OF TUGS

Tugs are often an essential aid to manoeuvring in restricted waters. They are also expensive. The decision on whether to use tugs, the number of tugs and where they should be placed is one of the areas where the knowledge and experience of the pilot are most valuable. The commercial reality, however, is that tugs are often ordered by the ship's agent without consultation with either the master or the pilot. In most berthing operations, of course, adequate tugs will have been ordered by the agent, who will merely be repeating the process which has become standard practice for ships of a particular type in the generally prevailing conditions. In some cases, however, wrong assumptions may be made about the power and strength of the ship's bow thrusters. Equally, a shift in the wind direction or increase in strength can materially affect the tug requirements. In most situations, the decision whether to order an additional tug will be obvious. However, in borderline cases the pressure on the master and pilot to take a calculated risk is considerable. If the decision is wrong then the likelihood is a claim will follow. The latest analysis suggests that the failure to employ a sufficient number of tugs was a contributory factor in a high proportion of the claims.

#### SHIP HANDLING EQUIPMENT

Ship handling has changed dramatically in the last 30 years. Automatic helms, remote steering positions, bridge control of the engines are now commonplace. More recent innovations such as bow thrusters, stern thrusters and high-lift rudders have added to the controls available to the masters and pilots. These improvements in ship control have brought new problems. Introduction of the automatic helm has reduced the steering expertise of seamen. The consequent inexperience, coupled with reduced manning, can lead to the master or pilot steering the ship themselves. As long as the operation proceeds routinely, this does not cause problems, but it can mean the master or pilot being tied to the steering console, where freedom of movement would have been an advantage. The advent of the controllable pitch propeller, while introducing greater control, has also brought problems of its own. In particular, it is often now the case that the master will handle the controllable pitch control and super-impose his own input onto the pilot's advice. This is a good example of an area where a clear understanding between pilot and master prior to the berthing manoeuvre is essential if problems are to be avoided. There is also evidence that bridge personnel are not aware of the fail-safe positions of the controllable pitch propellers. There is a good case to be made for all controllable pitch propeller ships to have the fail-safe position clearly displayed and have the main engine emergency stop control located on the bridge.

#### COMMUNICATIONS

The language problems identified in the general context in last year's analysis are particularly significant during pilotage operations. Not only may the pilot and master have difficulty communicating with each other, but the consequences of misunderstandings between the master and his crew are inevitably more serious where there is less margin for error, as in berthing operations.

#### PILOT TRAINING

There is no standard method of training a pilot. Pilots' backgrounds can vary enormously. Some have never been out of sight of land but have a good local knowledge and superb seamanship, whereas some highly qualified deep-sea mariners have little relevant ship-handling experience. These aspects of training experience will be investigated in the on-going study into pilot error, which is referred to later.

#### **Summary**

In terms of the enormous number of pilotage acts carried out worldwide, the number of pilot error related cases is low. However, the Analysis of Claims has shown that when errors do occur they often involve substantial sums of money. Rarely does the blame lay entirely with the pilot and the preceding paragraphs show that there are a number of factors which can contribute to the likelihood of an incident.

The UK P&I Club, is now working together with the other Clubs in the International Group, on a 'live' study into major property damage cases to identify precisely the relevant factors in each case. If a pilot is involved then more detail will be required, by reference to the problem areas above. It is hoped that this will ultimately produce objective information on the varying standards of port operations worldwide, and also provide the Association's Members with the best possible practical advice to minimise the chances of expensive, disruptive and embarrassing incidents.

Table 59 below shows the age of the ship involved expressed as a percentage of the total number of incidents and compares this to the Club entry. The table confirms last year's findings of the disproportionate number of claims on the younger ships and the surprisingly low level of claims involving ships over 20 years old. Although not shown on the table, the claims on the ships in the age band 5-9 years involved almost exclusively bulk carriers in the tonnage range 10,000-30,000 grt.

TABLE 59 — DISTRIBUTION BY AGE OF SHIP, COMPARED WITH CLUB ENTRY

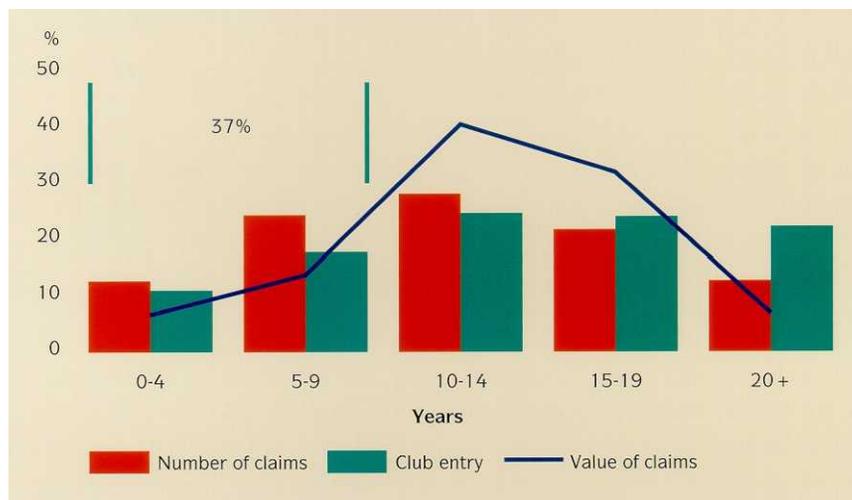


Table 60 opposite shows the type of property damage expressed as a percentage of the total number and value of incidents. The main change to this table since last year is the increase in the percentage of the value of claims attributable to damage to terminal equipment, which was referred to in the passage on pilot error above.

TABLE 60 — TYPE OF PROPERTY DAMAGE

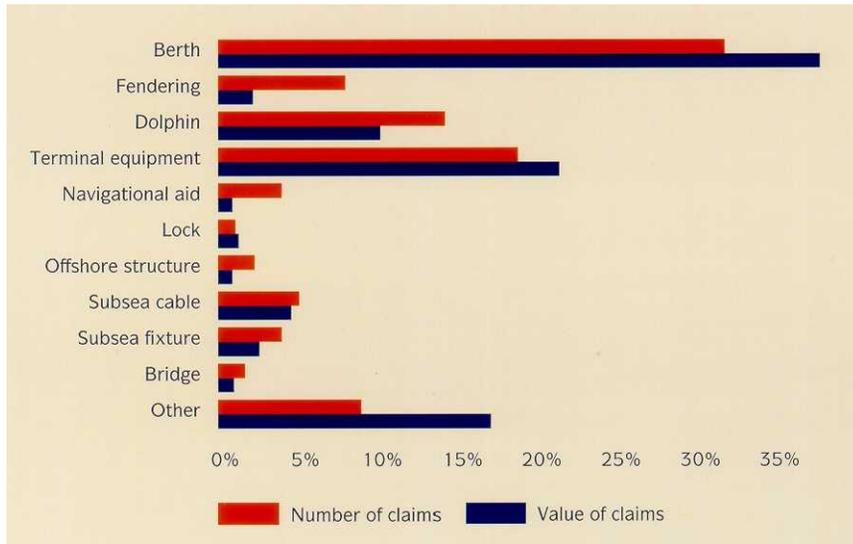
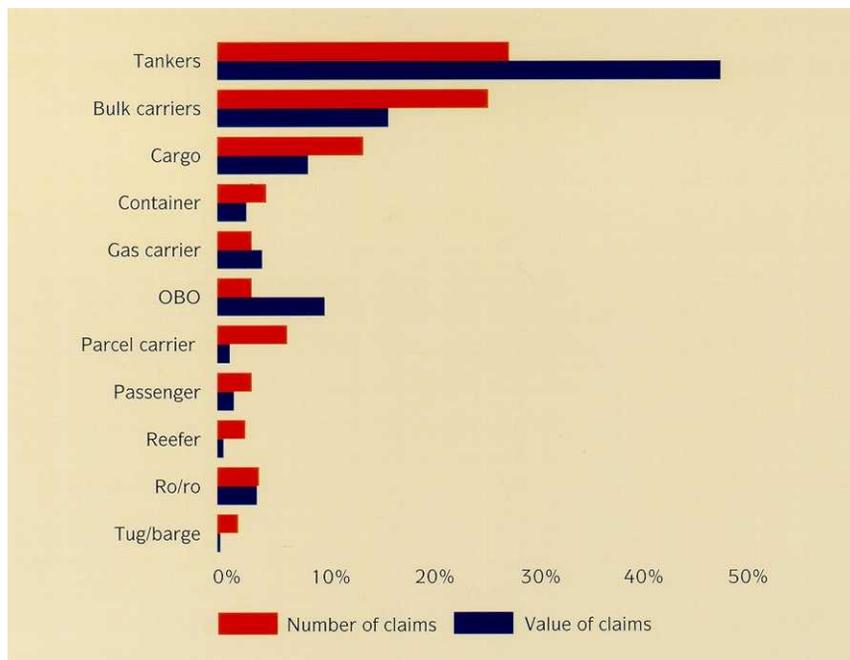


Table 61 below shows the percentage number and value of claims attributable to a particular type of ship. The picture is very similar to last year's and it provides the illustration to the point made above concerning the high cost of tanker claims, which average \$1.8 million per incident compared to bulk carrier incidents, which average \$0.7 million per incident.

TABLE 61 — DISTRIBUTION BY TYPE OF SHIP





## POLLUTION CLAIMS

**Sample analysed: 79 claims totalling \$105 million representing 6 per cent of the total number of major claims and 13 per cent of their value.**

In the year since the last report the sample of cases analysed has increased by 30, from 49 to 79 claims. Of greater significance is the increase in the total value of the claims which has moved from \$46 million to \$105 million. This increase can be explained partly by one substantial claim arising out of the sinking of a VLCC off the port of Genoa. It should be remembered that, as in certain other categories of claim, eg. property damage, the value figures can be distorted by a single large claim, particularly if the sample analysed is relatively small, as is the case in this category.

In last year's report the following features were identified:

- human error, whether during bunkering operations or as a result of a collision or grounding, accounted for 50 per cent of the total number of claims and over 75 per cent of their value.
- tankers accounted for 50 per cent of the total number of claims and 69 per cent of their value.
- bunker spills accounted for 37 per cent of the total number of claims and 42 per cent of their value.
- ships of all types in the age band 10-14 years presented a disproportionately higher risk.
- shell plate failure accounted for 20 per cent of the total number of claims (10 incidents) and 18 per cent of their value.

The latest statistics tend to confirm last year's findings with one or two minor variations. One such variation concerns the incidence of shell plate failure which increased by only one such claim over the period, thereby reducing the proportion of claims attributable to this cause to 13 per cent. A new feature this year is the inclusion of a new table showing the number and value of major pollution claims distributed by jurisdiction.

Table 62 below shows the percentage number of claims attributable to the type of ship and compares this to the Club entry. Tankers accounted for 48 per cent of the total number of claims and 61 per cent of their value, which is almost identical to last year's finding. The only change of note is the increase in the value of claims attributed to bulk carriers. This is a distortion created by one very expensive bunker spill in the USA (see below under 'Main Product Spilled'). This year the number of categories has been increased to include reefer, ro-ro and passenger ships.

TABLE 62—DISTRIBUTION BY TYPE OF SHIP

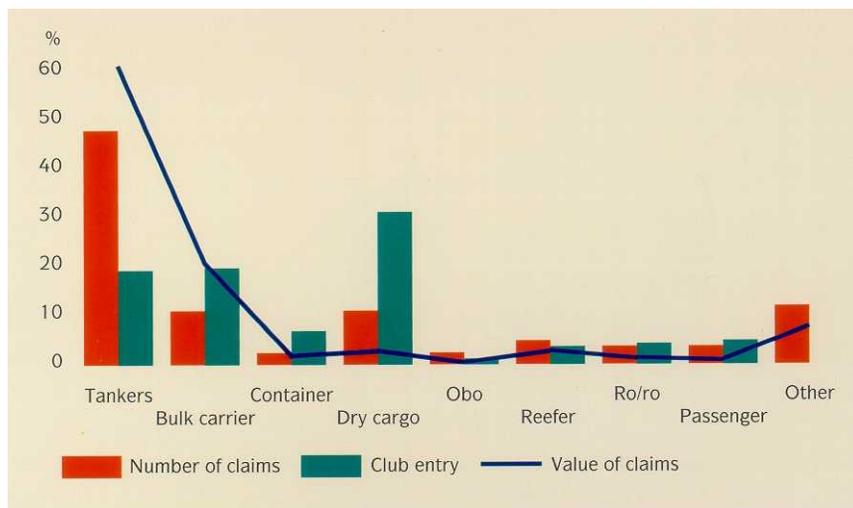


Table 63 below shows the percentage number and value of claims attributable to the size of ship expressed in tonnage ranges. The table also shows the distribution of ships in the tonnage ranges for the Association as a whole and the average value of claims by range.

Pollution from ships in the tonnage ranges 6,000-10,000 and 10,000-30,000 accounted for 42 per cent of the total number of claims and 55 per cent of their value. The high percentage value of claims on ships greater than 100,000 grt is due in part to the very expensive Italian claim referred to in the introduction to this section.

TABLE 63 — DISTRIBUTION BY SIZE OF SHIP

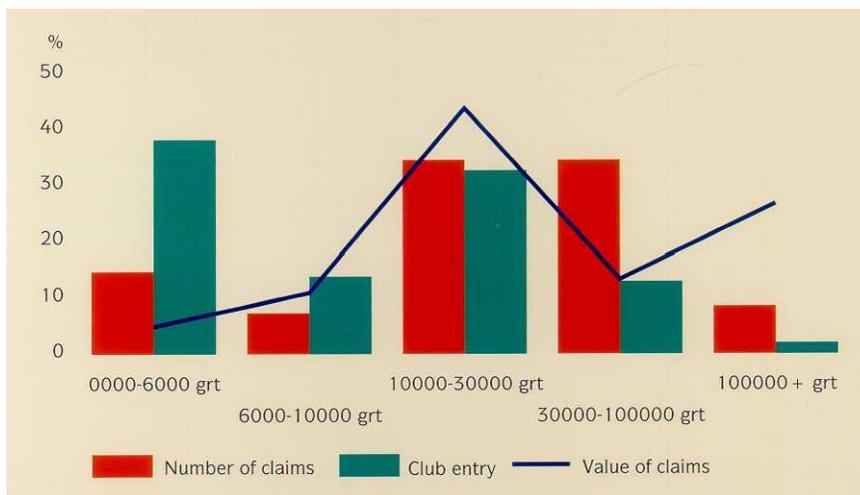
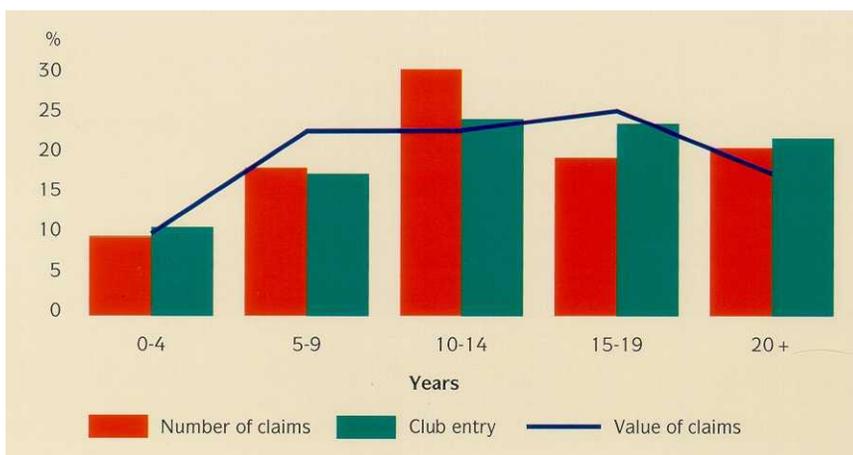


Table 64 opposite shows the age of all types of ship, including tankers, as a percentage of the total number of pollution claims and compares this to the Club entry.

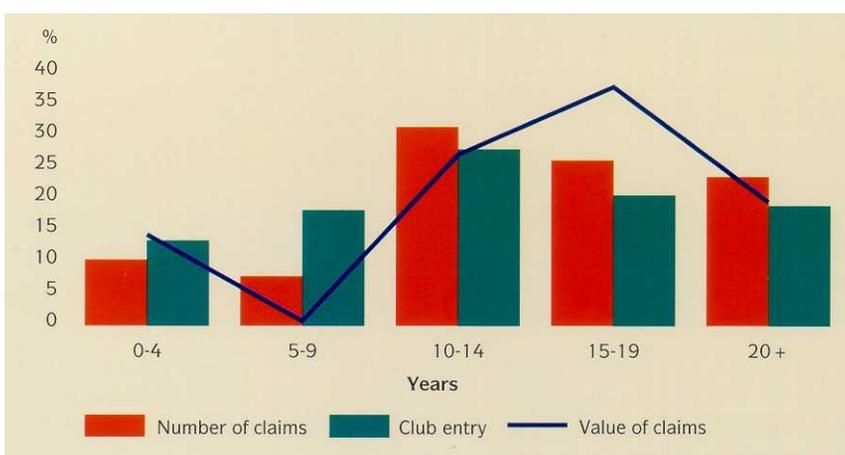
Although 59 per cent of the claims occurred on ships under fifteen years old, the incidence of claims on ships in the age band 10-14 years is still disproportionately high when compared to their Club entry. Of equal concern is the increase in the percentage number of claims on ships aged 20 years and over.

TABLE 64 – DISTRIBUTION BY AGE OF SHIP COMPARED WITH CLUB ENTRY



By way of comparison with table 64 above, which took the age profile of all ships including tankers, table 65 below shows the age of only the tankers involved as a percentage of the total number of claims and compares this to the Club entry. Because the sample is limited to the tanker claims, the number of claims analysed in this table is reduced to 38 claims with a total value of \$64 million. Although the overall profile is similar to table 64, there are certain important distinctions. Tankers aged between five and nine years old seem less likely to produce a pollution claim than all other ships in the same age range, when compared to their Club entry. Conversely, the risk of pollution seems to increase on the older tankers, particularly in the age band 15-19 years. Out of the 9 claims in this age band, 4 involved shell plate failure.

TABLE 65 — DISTRIBUTION BY AGE OF TANKERS COMPARED WITH CLUB ENTRY



The disproportionately high number of pollution claims involving the younger ships of all types other than tankers may be explained partly in table 66 below, which shows the main products spilled as a percentage of the total number and value of the pollution claims. As can be seen from the table, bunker spills continue to be a major source of pollution claims accounting for 40 per cent of the total number and 20 per cent of their value.

Bunker spills illustrate particularly well the impact of human errors which, in themselves, may be of a trivial nature. A recent claim following one such spill in Los Angeles, involving a bulk carrier entered in the Association, serves as an example. The cause of the spill was an overflow from one of the forward fuel oil tanks as a result of a misunderstanding between the ship and the bunker barge. Approximately 308 barrels were lost overboard. The total cost of this incident, including clean-up, third party claims and penalties is likely to be in the region of \$20 million.

TABLE 66 — MAIN PRODUCT SPILLED

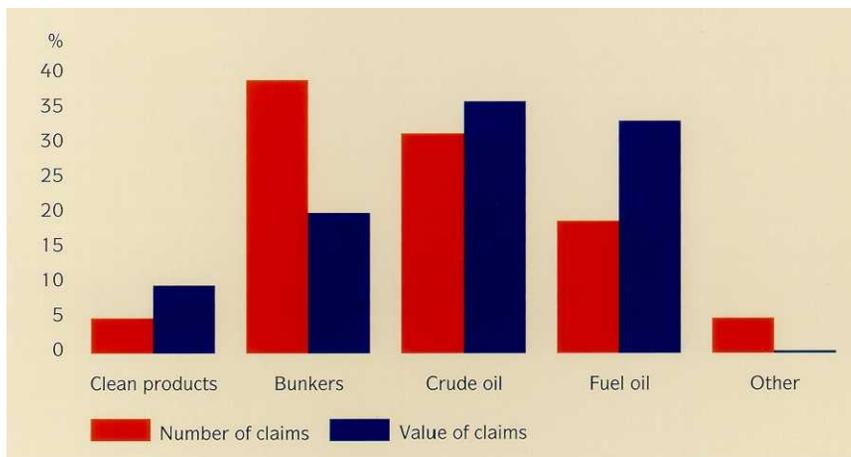
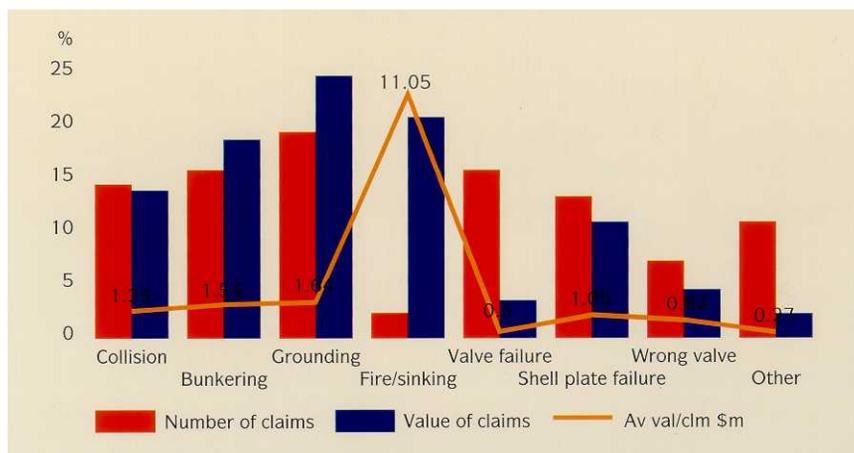


Table 67 below shows the main cause as a percentage of the total number and value of the claims. As can be seen from the table, human error continues to be a major factor accounting for over 50 per cent of the incidents. This year a new category of fire/sinking has been included, although the number of incidents in this category is small (2), the percentage value of the claims is enormous.

TABLE 67 — MAIN CAUSE



As can be seen from table 67 overleaf, shell plate failure accounted for 13 per cent of the claims (equivalent to 11 incidents — an increase of 1 over last year) and 11 per cent of their total value. Table 68 below examines the ships involved in the shell plate failure incidents by size (in tonnage ranges) and age (in age bands). 9 out of 11 claims involved tankers.

TABLE 68 - SHELL PLATE FAILURE BY SIZE AND AGE

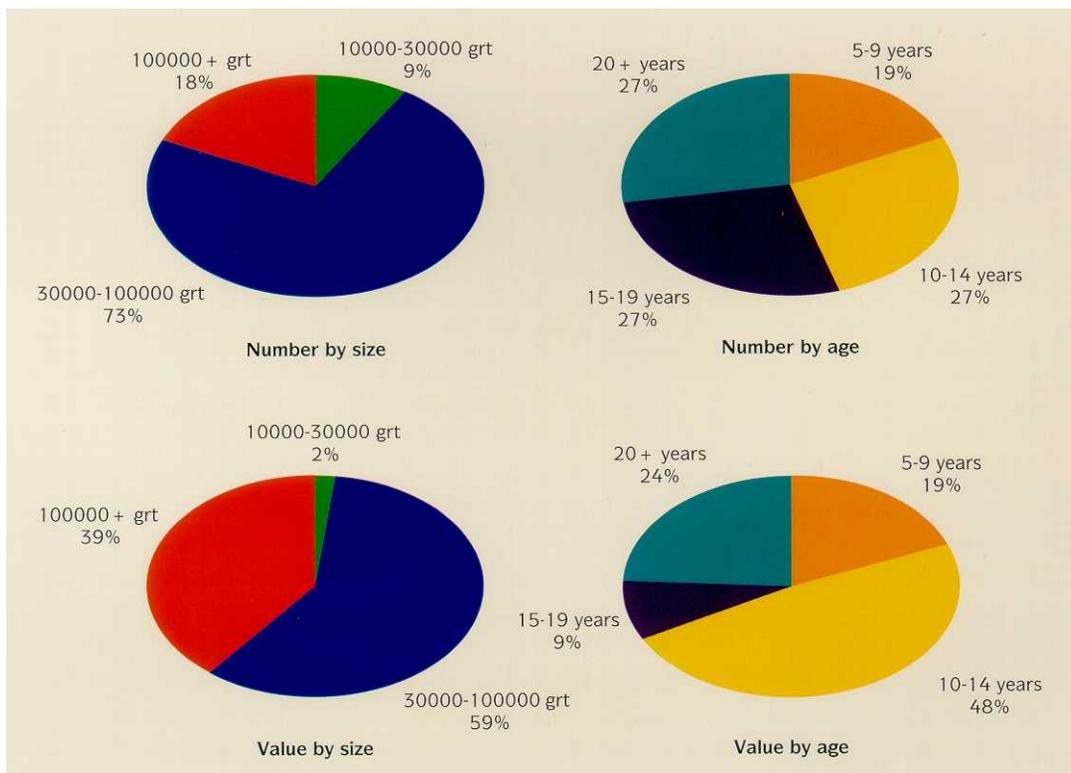
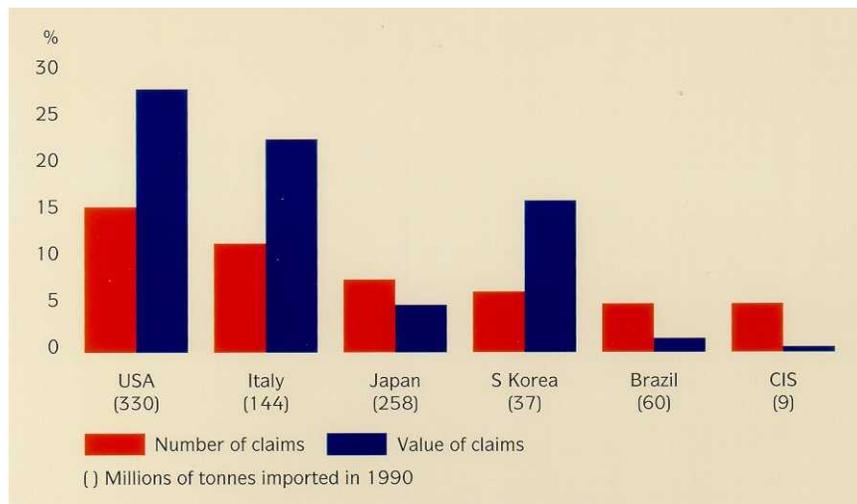


Table 69 below shows the country of incident where there were more than four major pollution claims over the five years under review. The table also gives the figures for oil imported into that country, based upon the International Oil Pollution Compensation Fund statistics for 1990. In terms of both the number and the total value of claims the United States of America leads the field, although the high cost per incident in South Korea is cause for concern. The percentage value of claims figure for Italy is distorted by the one very expensive claim referred to in the introduction to this section.

TABLE 69—COUNTRY OF INCIDENT





## COLLISION CLAIMS

**Sample analysed 123 claims totalling \$79 million, representing 9 per cent of the total number of claims and 10 per cent of their total value.**

In the year since the last report the sample of cases analysed has nearly doubled in number and the total value has increased from \$42 million to \$79 million. Despite this increase in the size of the database the results of the latest analysis are, with one or two exceptions, broadly consistent with those in last year's report.

The distribution of the major collision claims over the five years under review is set out in table 70 below. The distribution shows clearly the sharp increase in both the numbers and values of collision claims in the 1990 policy year. Ten out of the 45 claims shown against 1990 occurred in the USA and account for \$178 million of the value. Although the 1991 policy year is seen at a relatively early stage of development, it is already apparent it will not be as bad as 1990.

TABLE 70 —DISTRIBUTION OF CLAIMS BY POLICY YEAR

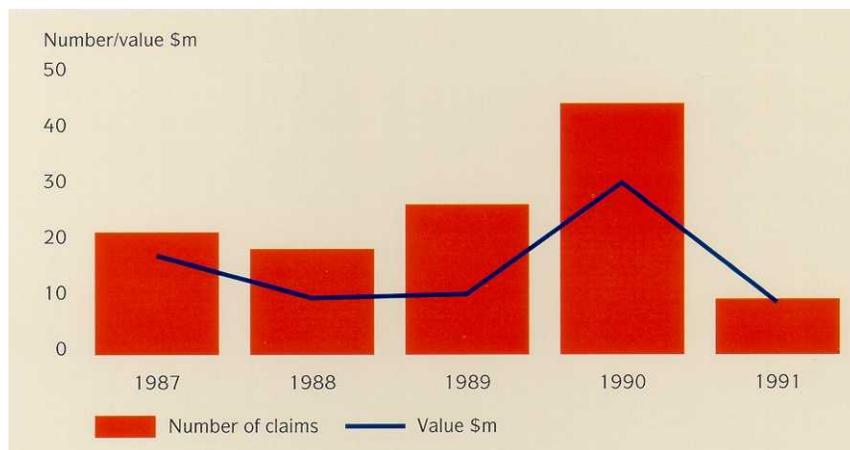


Table 71 below shows the status of the entered ship at the moment of collision. 82 per cent of the cases involved the entered ship in a status described as 'underway'; a finding which is very close to the equivalent statistic of 84 per cent in last year's report. This year the 'underway' category has been divided between 'underway (at proper speed)' and 'underway at excessive speed'. From this it will be noted that 20 per cent of the claims fall into the latter category. 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 71 — STATUS OF THE ENTERED SHIP

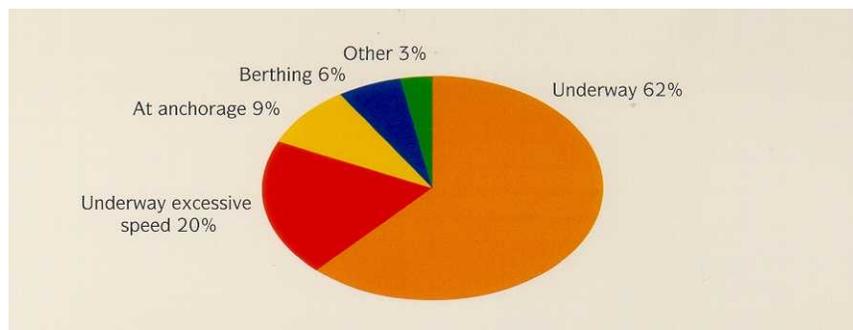


Table 72 below shows where the major collision claims occurred. The results with minor variations are very close to those obtained last year. Once again the table demonstrates that collisions are more likely to occur in coastal waters and areas of restricted navigation. Although not shown, the latest figures also confirm last year's findings that open water collisions account for a larger proportion of the value of claims, at 30 per cent, than coastal collisions at 16 per cent. It is also worth noting the high number of major collisions which occurred at anchorage (7 per cent).

TABLE 72 — PLACE OF OCCURRENCE

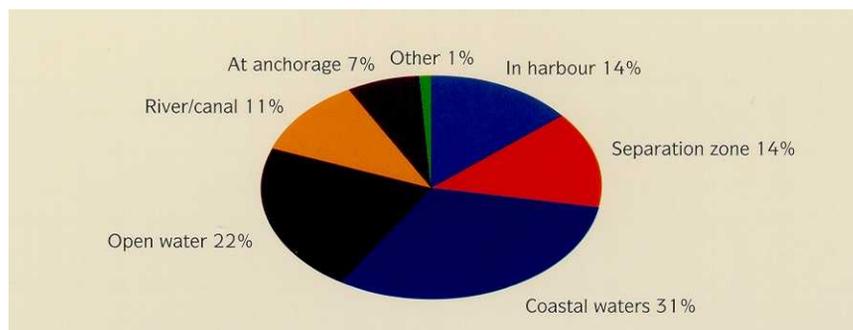


Table 73 below shows the status of the other (not entered) ship. Once again the results confirm last year's findings. The number of collisions involving fishing ships is still relatively high at 14 per cent (15 per cent last year) and the 'other' ship was underway in 55 per cent of the cases. The only change from last year is a small rise in the number of collisions where the 'other' ship was at anchor or manoeuvring within the anchorage.

TABLE 73 — STATUS OF THE "OTHER " SHIP

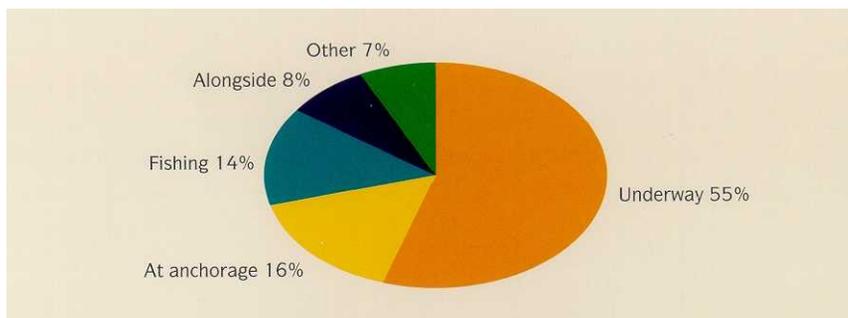
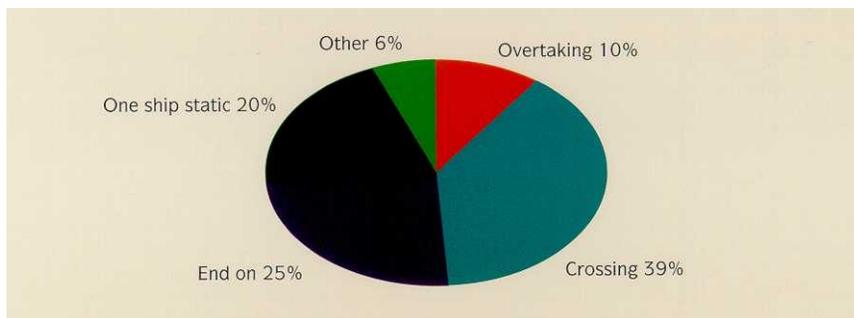


Table 74 below shows the type of collision ('moving', 'overtaking', etc) as a percentage of the total number. The table confirms last year's findings that the greatest number of collisions occur in crossing situations (39 per cent).

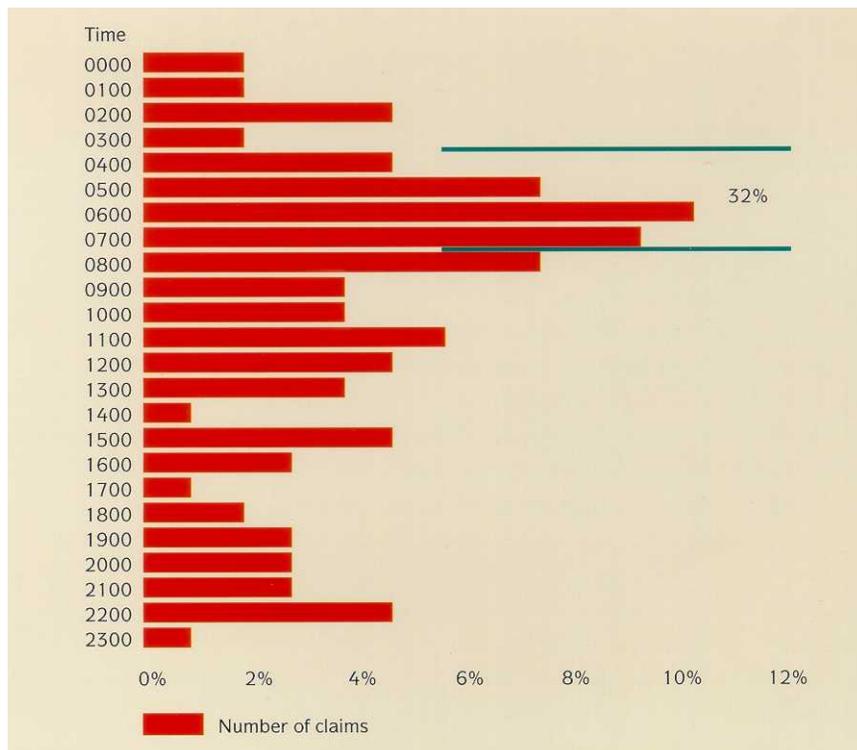
TABLE 74 —TYPE OF COLLISION



Although not shown in the table, pilot error was identified as a factor in 18 per cent of the cases, a figure very similar to last year's findings. Pilot error and its effect on the claims is discussed in more detail in the property damage section on pages 58 to 67.

In last year's report it was stated that "second officers were involved in three times as many collision cases as other watch keeping officers". After further analysis based upon the increased database and improved information, it is now clear that there is a greater likelihood of a collision occurring during the morning watch, traditionally kept by the First Officer. This is demonstrated by table 75 below, which shows the number of collisions, as a percentage of the total, against each hour local time.

TABLE 75 — TIME OF COLLISION



As can be seen from the table, 32 per cent of the collisions occurred between 0400 and 0800 with most occurring around dawn. These collisions tend to occur in areas of high shipping activity. The Master was on the bridge in 16 out of the 21 collisions and in most cases there was a full bridge complement, including, on seven occasions, a pilot. The frequency of collisions does not yet appear to be affected by the increasing tendency for this watch to be kept by junior officers, a trend noted by the club's ship visit programme. However, it may be significant that ships frequently arrange their schedules to ensure that they arrive off port limits at dawn.

Table 76 below shows the visibility and sea state at the time of collisions. It might have been assumed that the poor weather was a material factor in collision cases. However, as can be seen from the table, this is not the case. 62 per cent of the collisions occurred in good or fair visibility and the sea state was described as either 'calm' or 'slight' in 76 per cent of the cases.

TABLE 76 - VISIBILITY AND SEA STATE AT TIME OF COLLISION

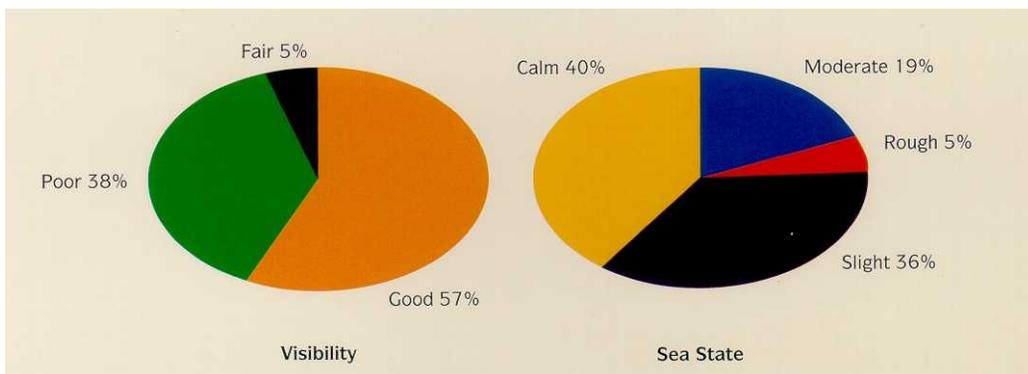


Table 77 below shows the age of the ships involved as a percentage of the total number and value of claims and compares this to the Club entry. Last year's report indicated that ships in the age band 0-4 years were involved in twice the number of collisions as their Club entry would suggest. As can be seen from table 77 this marked differential is no longer apparent, although ships between one and nine years old still account for 30 per cent of the collisions. The other change to note this year is the increase in the number of collisions involving ships in the age band 15-19 years, which have increased from 15 to 24 per cent of the total number of collisions.

TABLE 77 —DISTRIBUTION BY AGE OF SHIP, COMPARED WITH CLUB ENTRY

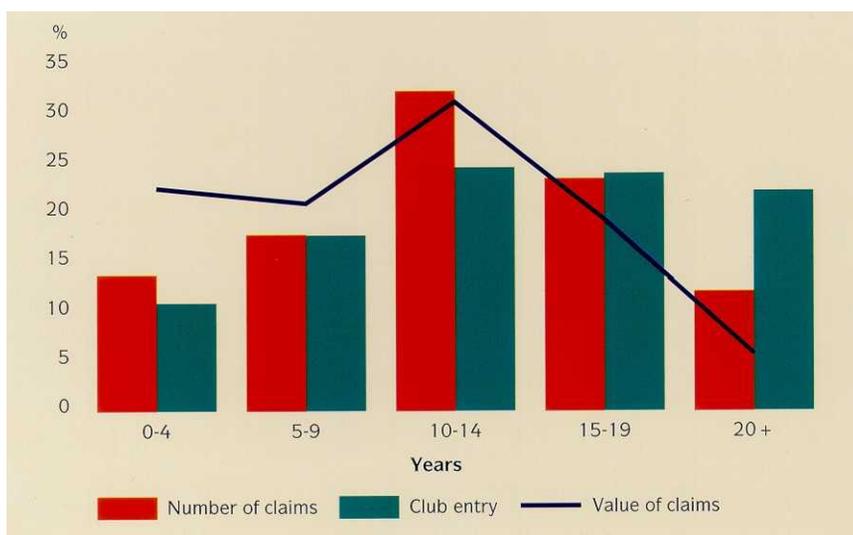
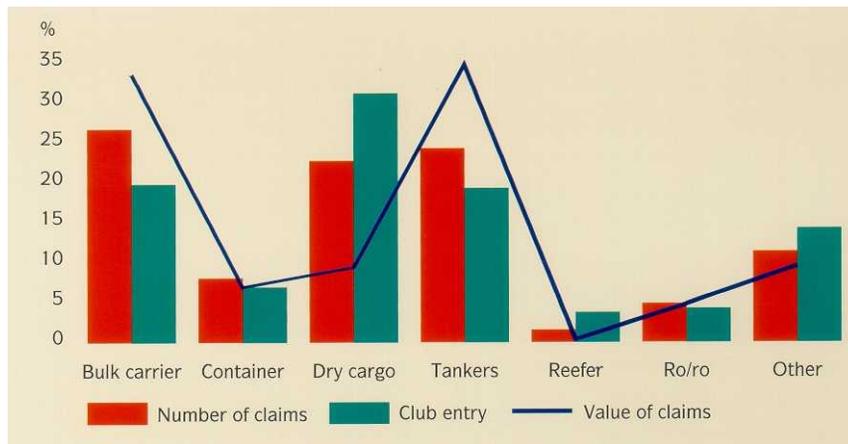


Table 78 below shows the type of ship involved as a percentage of the total number and value of claims and compares this to the Club entry.

The only change in this table from last year is a small drop in the percentage number of incidents involving tankers and an equivalent increase in the number involving bulk carriers. The table confirms what might be guessed, namely that it is the larger ships, such as tankers and bulk carriers, which cause the greatest amount of damage.

TABLE 78 — DISTRIBUTION BY TYPE OF SHIP AND VALUE OF THE CLAIMS





THE UNITED KINGDOM MUTUAL  
STEAM SHIP ASSURANCE ASSOCIATION  
(BERMUDA) LIMITED

THE MANAGERS

Thos R. Miller & Son (Bermuda)  
Windsor Place, 18 Queen Street  
PO Box HM665  
Hamilton HMCX, Bermuda  
Telephone: 809 29-24724  
Telex: 3317 MUTAL BA  
Cables: MUTUALITY BERMUDA  
Facsimile: 809 29-23694

THE MANAGERS' LONDON AGENTS

Thomas Miller P&I  
International House  
26 Creechurch Lane  
London EC3A 5BA  
Telephone: 020 7283 4646  
Telex: 885271 MUTUAL G  
Cables: MUTUALITY LONDON EC3  
Facsimile: 020 7283 5614