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THE COST TO USERS OF SUBSTANDARD SHIPPING

Prepared for the OECD Maritime Transport Committee

by

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This report has been prepared for the MTC and is being made available to a wider audience.

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THE COSTS TO USERS OF SUBSTANDARD SHIPPING

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OBJECTIVES & INFORMATION SOURCES

This study, prepared for the OECD Maritime Transport Committee, seeks to identify and measure the direct costs incurred by the users of ships that are "substandard."

In the absence of direct access to confidential data from companies that own and operate "substandard" ships, the report has been prepared using information within the public domain, plus direct responses from various organisations that represent respective parties in the shipping industry, as detailed in Section 3. This was also supplemented by the specialist expertise of from senior broking personnel at SSY. Publicly-available sources include literature from appropriate representative and legislative bodies, reports from the general news media, regular shipping publications, information obtained from the Internet. These include:

American Bureau of Shipping web site (http://www.eagle.org)
EC: "Communication from the Commission to the European Parliament & the Council on the Safety of the Seaborne Trade," March 2000
IMO web site (www.imo.org)
Intercargo: "Bulk Carrier Casualty Report 1990-97" (September 1998)
IUA "Marine Report & Statistics" (1998)
IUA "Marine & Casualty Statistics" (IUMI Conference, Berlin 1999)
ITOPF web site (http://www.itopf.com)
Lloyd's Register of Shipping web site (http://www.lr.org)
Lloyd's Register of Shipping "World Casualty Statistics" (various issues)
Mare Forum web site (http://www.mareforum.com)
OCIMF "Annual Review" (1998)
OCIMF web site (http://www.ocimf.com)
"Oil Pollution 2000," London, March 2000 conference papers
RINA web site (http://www.rina.it)
UK P&I Club "Analysis of Major Claims: 10-Year Trends in Maritime Risk"

DISCLAIMER

The analysis in this report has been performed in good faith but SSY Consultancy & Research Ltd cannot be responsible for errors or omissions arising from inaccurate reporting by the information sources above.

GLOSSARY

ABS	American Bureau of Shipping
AMSA	Australian Maritime Safety Authority
bbl	barrel
c & f	cost & freight
c.i.f.	cost, insurance & freight
CLC	IMO International Convention on Civil Liability for Oil Pollution Damage
COFR	US Certificate of Financial Responsibility
COLREG 72 Convention	IMO "International Regulations for Preventing Collisions at Sea"
EC	European Commission
EEZ	Exclusive economic zone
EQUASIS	European Quality Shipping Information System
ESP	classification society "enhanced survey programme"
EU	European Union
FOC	flag of convenience
H&M	hull & machinery (insurance)
IACS	International Association of Classification Societies
ILO	International Labour Organisation
IMO	International Maritime Organisation
IOPC	IMO International Oil Pollution Compensation Fund Convention (or "Fund Convention")
ISM	IMO International Safety Management Code
ITOPF	International Tanker Owners Pollution Federation Ltd
IUA	International Underwriters Association
LIBOR	London Inter-Bank Overnight Rate
MARPOL	IMO International Convention for Prevention of Pollution from Ships, 1973 (including 1978 Protocol)
OCIMF	Oil Companies International Maritime Forum
OPA 90	US Oil Pollution Act, 1990
P&I	protection & indemnity (insurance)
RINA	Registro Italiano Navale (Italian classification society)
SBT	segregated ballast tanks
SDR	IMF Special Drawing Rights
SIRE	OCIMF's "Ship Inspection Report Exchange"
SOLAS	IMO "Safety of Life at Sea" Convention, 1974 (including 1978 Protocol)
STCW 95 Seafarers" Convention	IMO "Standards of Training, Certification and Watch-keeping for

EXECUTIVE SUMMARY

1. The problems posed by "substandard" shipping came to mounting prominence in the 1970s as an increased number of casualties arose involving badly-maintained tonnage. This led to a raft of legislative measures aimed at increased vessel safety and the goal of cleaner seas. Yet none of these (nor attempts at self-regulation by such bodies as Classification Societies and Ship Managers) prevented the sinking of the "Erika" and a resulting major oil spill in late 1999.

2. The "Erika" incident brought the problem of substandard vessels sharply into public focus and has given a new impetus to efforts to drive substandard shipping out of European waters. Any new EU measures could lead to similar requirements in other developed countries.

3. Various parties in the maritime industry can derive benefits from disregarding agreed standards concerning vessel quality, both in terms of a ship's physical condition and its operation. Apart from ship-owners and Flag States, these parties can include charterers and classification societies.

4. Conversely, the existence of substandard ships imposes various costs on quality conscious parties, particularly other ship-owners, charterers, cargo interests, P&I clubs and marine underwriters.

5. The responsibility for eliminating defective ships has been placed almost entirely on vessel owners, Flag States and classification societies. This has left other parties in the industry free of any effective liabilities that could encourage them to promote quality shipping at the expense of tonnage that fails to meet legislation.

6. Existing liabilities faced by most parties associated with substandard shipping are not only inadequate, but can largely be covered by insurance. If a party is found to have been wilfully negligent or reckless, this insurance cover is invalidated, creating the scope for far greater penalties to be imposed. However, proving such negligence may be difficult in practice.

7. Tanker owners in particular are protected against many of the consequences of a large oil spill, as for most locations their liability for oil pollution damage are limited to the levels defined in the Civil Liability Convention.

8. There is a strong incentive for charterers and cargo owners to see the continued existence of low-quality ships, as these help to facilitate inexpensive carriage of their cargoes. Conversely, any move towards eliminating such vessels implies an inevitable rise in freight expenses.

9. The failure of some classification societies to enforce regulatory requirements has also perpetuated the problem of substandard ships. Many ship-owners have been able to finance and insure their vessels on the strength of certification from these societies and from the dubious Flag States for which they sometimes operate.

10. Provided that their role is confined to that of a passive lender, banks are not liable if a defective ship on which they have provided a mortgage undergoes a casualty. In the past, some were willing to lend on ships of questionable quality and a legacy exists of many over-aged, low-quality vessels that are still trading.

11. P&I clubs and marine underwriters bear many of the costs of incidents associated with low-quality ships. Depressed insurance markets in recent years have made the insurance industry less selective and this has led to cover being available to owners of manifestly substandard vessels. However, these markets are now hardening again and such cover is less likely to be forthcoming.

12. In response to the loss of the "Erika" and to the severe pollution that resulted, the European Commission has devised various proposals that should make it harder for older, single-hulled tankers to trade to EU ports. An "accelerated" phasing out of these ships from EU trading is therefore now in prospect.

13. The European Commission also proposes sanctions against any classification societies that do not adequately enforce ship safety standards. This would entail suspending its recognition of a society's right to classify ships in EU countries, a measure that would severely reduce its subsequent business.

14. Such controls on classification societies should help to eliminate the lowering of standards that some have been guilty of in the past 30 years and should also reduce the scope for irresponsible societies to collude with "rogue" Flag States at the expense of vessel safety.

15. Wider reliance on Port State controls, greater use of charterers' ship vetting and the extension of the ISM Code to an increased range of vessel types can all help to ensure that low-quality ships are driven out of service. However, this will rely on a greater exchange of information within the industry.

16. Any new measures to eradicate unsafe ships should be accompanied by others to reward good-quality tonnage, for example via lower port dues, classification fees, and less expensive insurance cover.

THE COSTS TO USERS OF SUBSTANDARD SHIPPING

1. INTRODUCTION

The concept of "substandard shipping" is not a modern phenomenon, but has come to increased prominence within the past 30 years, mainly due to a spate of highly publicised vessel casualties. These have variously involved serious loss of life and/or notable environmental damage. In general, a "substandard ship" can be regarded as:

> *"A vessel that, through its physical condition, its operation or the activities of its crew fails to meet basic standards of seaworthiness and thereby poses a threat to life and/or the environment."*

By comparison, a good quality vessel is technically sound, complies with mandatory international conventions,[1] is regularly maintained and is manned by qualified, trained personnel who are properly paid and well treated by their employer.

Thus, "substandard" quality is not solely a function of vessel condition. Even a modern, structurally sound ship can be hazardous if incorrectly operated. This may be due to the deficiencies and/or treatment of its manning, rather than the vessel's equipment or its physical state. The quality of its shore-based management is a further factor to consider.

Serious incidents involving primarily ships of questionable quality have been a prime reason for an array of legislative measures since the 1970s, some of them specific to certain ship types, others more general in their nature. Such sectors as the tanker fleet are now heavily regulated in terms of vessel design requirements. Nonetheless, continued losses of life at sea and serious oil-polluting ship casualties have persisted, and it is clear that internationally agreed standards of vessel condition and operation have not been universally observed.

The persistence of substandard shipping has been widely ascribed to several factors:

- Depressed shipping freight markets for much of the past 30 years. When freight earnings are low, irresponsible owners tend to cut back on vessel maintenance. Conversely, however, when markets subsequently rise, these owners are too concerned about keeping their ships trading, rather than undertaking any backlog of repairs.

- Although new regulations have been devised to improve vessel safety, the adoption and enactment of such standards has been tardy and, in some Flag States, highly ineffectual. However, the IMO does not have the power to enforce compliance with its conventions.

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[1] Principally the IMO Conventions Load Lines 66, SOLAS 74, MARPOL 73/78, STCW 95, COLREG 72 and TONNAGE 69, plus ILO 174.

- There has been widespread expansion of "flag-of-convenience" (FOC) registers in the past 30 years. The administrations of many of these counties have generally been less rigorous in their pursuit of high standards, as this has conflicted with their greater aim of maximising the number of ships under their registries.

- The benefits available to unscrupulous ship registers and to owners from non-conformity with international requirements can be substantial, as demonstrated in a previous study commissioned by the Secretariat.[2]

- The scope exists for other elements within the shipping industry – including Flag States, charterers, classification societies and banks – also to benefit from the continued existence of substandard vessels if they have no regard for international standards. Accordingly, these have no incentive for substandard shipping to be eliminated.

- Following the shipbuilding "boom" of the early 1970s, the world fleets of commercial vessels now contain large numbers of ships that are still trading well beyond their initial design lives. Admittedly, the seaworthiness and quality of a vessel is not related exclusively to its age; several other factors also contribute to major maritime accidents.[3] Nonetheless, there is a proven tendency for the incidence of serious casualties to increase as vessel age rises (as seen in Appendix A).[4] This was underlined in the European Commission's March 2000 report on tanker safety, which showed that vessels of over 20 years' age had accounted for 77% of tanker total losses in the period January 1992 to March 1999 inclusive.

- Even Port State controls can only partly compensate for the laxity of some Flag States in enforcing compliance with maritime legislation. Despite the various regional initiatives that have evolved in recent years, in some parts of the world, application of Port State controls is still very limited.

A major criticism of existing Port State control mechanisms is that, under present arrangements, any penalties imposed apply only to the vessel owner. The Dutch Minister of Transport observed at the Mare Forum 99 conference that:

> *". . . users of substandard ships know that when a vessel is caught by a Port State Control inspection, and detained for serious deficiencies, it is the owner who suffers. Others can escape without penalty. The vessel's cargo will be discharged. No action will be taken against the broker, the shipper, the insurer or any other user of that particular vessel. The same applies to those who licensed the vessel by issuing its certificates and who have failed to supervise its operation."*

Thus, owners and Flag States cannot be held solely responsible for the continued existence of substandard ships, as they do not act in isolation from the rest of the shipping industry. To various

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2 See "Competitive advantages obtained by some ship-owners as a result of non-observance of applicable international rules and standards" [OCDE/GD(96)4].

3 The largest single cause of maritime accidents is human error – whether by crew, deck officers, shore-based personnel or pilots. The UK P&I Club has observed a particular increase during recent years in accidents attributable to mistakes by shore-based personnel.

4 A vessel's ownership, ship type and flag registry are also factors in the incidence of casualty or total loss. Higher rates of casualty tend to occur over the age of 20 years, and are more pronounced for certain Flag States. Venezuela, Belize, Honduras and Ecuador have been identified among the worst offenders, based on casualty data.

degrees, both are answerable to charterers, cargo owners, classification societies, banks, P&I clubs, and marine underwriters. *Only the willingness of these parties, or their failure to discriminate effectively against vessels that do not meet required standards, enables substandard ships to keep trading.*[5]

Similarly, as the European Commission DGVII's Director of Maritime Transport noted:

> *"In shipping, almost all safety regulation is centred on Flag States, ship-owners and, to a lesser degree, on classification societies. That leaves very important areas of the responsibility chain completely out of the regulatory picture."* [6]

Nonetheless, all of the parties named earlier are legally liable for some of the direct costs arising from the problems that substandard ships can cause. However, their willingness to clamp down on such tonnage depends on:

a) The magnitude of these costs;

b) Whether the respective parties realise the extent of these costs;

c) Whether they can pass these costs on to other parties in the shipping industry. If they can do so, this may also explain why substandard shipping has yet to be eliminated. But: all costs have to be borne eventually, so if these parties can evade their responsibilities, this implies that others (e.g. governments, taxpayers and end users of cargo) bear at least some of the resulting expense.

The main direct costs arising from substandard shipping are:

- Loss of life, personal injury and loss of livelihood, both for seafarers and for passengers. (Data on the loss of seafarers' lives are detailed in Appendix B).

- Vessel losses (both actual and constructive) plus the cost of repairing ships that incur significant damage.

- The physical loss of cargoes, or serious damage thereto. For example, bad stowage, carriage at an incorrect temperature or shipment in an unsuitable vessel can entail crushing, denting, bending or breakage of various cargoes. Likewise, hatch cover failure and resulting wet damage can have serious consequences for numerous commodities.

- Environmental damage, arising from the spillage of oil cargoes from tankers or of bunker fuel from any ship type, plus the cost of its rectification. (Volumes of oil spilt and major tanker casualties are contained in Appendix C).

- The costs of rescue missions and salvage operations.

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[5] Having said this, initiatives are being undertaken by many companies within these fields to offer more favourable treatment to owners of ships that comply with international requirements. Such moves would inevitably be at the expense of owners of substandard vessels.

[6] Source: speech by Ms Georgette Lalis at Mare Forum 99, Amsterdam, June 1999.

Meanwhile, the main reasons for the persistence of substandard shipping are:

- The pursuit by unscrupulous vessel owners of the economic advantages that accrue from the non-observation of international standards.

- A lax application of regulations by Flag States and some classification societies.

- The attraction to charterers and cargo owners of inexpensive freight costs. This has created a mentality that has been slow to reward quality-conscious owners with higher freight rates than those that inferior tonnage can command. The European Commission's March 2000 proposals noted that it has tended to be the older, less expensive, low-quality tankers that have set the market rate and that it has been difficult for good quality ships to be well rewarded. It also commented that:

  > *"Ship-owners of convenience only exist because there are charterers who care little about the quality of ships they charter."*

The need to counterbalance the power of charterers has led to the creation of pools in all sectors of the tanker market, including the 43-vessel VLCC pool "Tankers International," which was formed in December 1999 and commenced operations in February 2000.

2. COSTS TO RESPECTIVE PARTIES OF SUBSTANDARD SHIPPING

The various costs associated with non-compliance with international standards are borne by numerous parties within the shipping industry. In particular, *some may be borne by groups that are neither responsible for the existence of substandard vessels, nor intrinsically involved in shipping at all.* Yet, despite this, accidents involving shipping do not generally result in a switching of cargo traffic to other transport modes. This is because of the lack of suitable, cost-efficient alternatives by which high-volume cargoes can be carried.

In the event of serious maritime casualties, liabilities rest primarily with the vessel owner. In the context of maritime pollution in particular, the European Commission has noted that the IMO's Civil Liability Convention ("CLC"):

> *". . . emphasises the responsibility of the ship-owner, as opposed to that of the other players involved (such as the ship operator, manager, cargo owner, charterer, intermediaries or the classification society). On the other hand, ship-owners have a right to limit their financial liability at a maximum amount, which normally is very low."* [7]

In this respect, the CLC specifically exempts the ship-owners' representatives, agents, ship managers, ship operators and crew members from any liabilities arising from pollution. *However, cargo owners are not accorded such exemption.*

The particular costs and liabilities to which various parties in shipping are prone are explained below.

2.1 Seafarers and Passengers

The prospective costs that these can suffer include:

- Loss of life, personal injury and/or incapacitation that thereby impedes a claimant's livelihood. (Appendix B examines reported fatalities at sea in 1989-99). A joint IMO/ILO Working Group met in November 2000 to devise prospective standards covering vessel owners' obligations to seafarers if death or personal injury occurs. It was proposed that all owners should have to arrange effective insurance cover and to carry proof of this aboard ship. Moreover, such cover would have to state that compensation would be made without admission of liability and without prejudicing the right of the seafarer or his family to pursue separate legal claims.

- Inadequate crew remuneration, quality of living quarters, medical treatment and off-duty time.8 The general terms and conditions of employment governing seafarers are statutory requirements specified under a series of International Labour Office conventions. However, like the IMO, the ILO is unable to ensure that its requirements are fulfilled in practice.

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7 Source: "Communication from the Commission to the European Parliament and the Council on the Safety of the Seaborne Oil Trade," March 2000.

8 The IUA has observed that: "Owners who cannot afford (or do not wish) to spend money maintaining their ships tend not to spend money on their crews either." (IUMI Conference, Berlin, 1999). It cites the following Flag States as being especially prone to crew complaints: Malta, Romania, Cyprus, St Vincent, the Bahamas and Cambodia.

- Negligence by the owner and/or master of a substandard vessel, in terms of ensuring due maintenance of onboard safety equipment. This can jeopardise the wellbeing of crew and passengers in the event of an accident.

- Potential criminal prosecution if the ship is involved in a casualty incident.9

- Possible non-payment of crew at the end of their tour of duty, plus subsequent abandonment and non-repatriation. At the ILO/IMO meeting referred to above, the Working Group also devised guidelines concerning such cases. One solution proposed was that Flag States should require a ship-owner to have effective financial security (e.g. a bank guarantee) to cover his contractual obligations to the seafarers that he employs. These would include payment of outstanding remuneration and the expense of repatriation. The Group will meet again in April 2001 to finalise these proposals.

- Unfair competition from unqualified seafaring personnel who, by possessing false documentation regarding certification and training, can secure employment with those ship-owners who are concerned only with keeping costs to a minimum. Some owners knowingly engage such seafarers as a means of averting agreed international standards of seafarer remuneration.

2.2 Vessel Owners

The direct costs that an owner of a substandard ship can incur are:

- The physical loss of a vessel, if it sinks or is irreparably damaged. This could be compounded by financial loss if a) the ship has secure employment, and hence a guaranteed income stream, or b) the owner is found to have been negligent, thereby forfeiting any right to compensation.10 In general, the insured value of a ship usually exceeds its actual market value. The difference between these two values helps to cover any additional financial responsibilities the owner may have after any outstanding mortgage debt has been settled (e.g. paying off his crew).

- Higher hull and machinery (H&M) insurance premiums, if one of the company's vessels has been involved in an accident.

- Detention of his ship by Port State authorities. Under such measures, the vessel is usually detained until any major defects are rectified. This is a strategy widely favoured by Port States, as it circumvents the need to identify the true owner of a ship. It is also deemed more effective than financial penalties against the chief officer, who is not necessarily responsible for the vessel's underlying deficiencies. This has been a key feature of government policy to eliminate substandard vessels from trades to and from Australia, following a series of dry bulk carrier losses in the early 1990s.

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9 For example, the chief officer of the tanker "Laura d'Amato" was fined A$110,000 for his role in the spill incident from that ship at Sydney in 1999. The ship's owner was fined A$510,000.

10 If a serious casualty takes place, the subsequent value of the ship can be negligible. Therefore, any loan is usually conditional on the owner assigning the ship's hull & machinery insurance to the lender and the client taking out mortgage indemnity insurance. The latter is a second line of defence in that it helps to guarantee repayment even if the ship-owner defaults on his H&M insurance.

- Loss of freight earnings from a voyage during which an accident occurs, assuming that the ship is on charter, rather than being used by its owner for his own purposes. The non-fulfilment of a charter can, depending on market conditions, entail a significant loss of revenues.

- Compensation claims for oil pollution-related damage. If the ship is a tanker, in many cases the ship-owner's liability will be subject to clear limits. This occurs if the pollution a) arises from the spillage of oil cargo (rather than marine bunkers) and b) takes place within the waters of a Port State that is a signatory of IMO's Civil Liability Convention and IOPC Fund Convention. (Over 100 countries are currently covered by these conventions).[11] For owners of *oil tankers*, insurance against compensation claims arising from oil pollution is compulsory for ships carrying 2,000 tonnes or more of persistent oil as cargo.[12] Hence, *unless the owner disregards this requirement, the liability is in effect borne by the P&I club that provides him with such cover.* (See Appendix E). Vessel types other than tankers, however, are not covered by these conventions. Therefore, the liabilities of companies that own such ships are not confined to IOPC-defined limits, but vary according to the laws of individual countries. As a large dry bulk carrier, for example, carries a significant volume of bunker fuels, there is the potential for a non-tanker vessel to cause a considerable oil spill.

- Other third-party claims for compensation if an accident occurs.[13] For example, such claims could come from members of the crew or passengers in response to personal injury sustained aboard an owner's ship.[14] Likewise, if a cargo is lost or damaged, a cargo owner, charterer or shipper may file a claim.[15] Claims can also arise if the ship collides with another vessel or port installation.

- Higher subsequent P&I insurance premiums as a result of such claims as above.

- Adverse public relations, although this depends on how well known the company is. For example, a large multinational oil company such as Exxon incurred significant adverse publicity after the 1989 oil spill from the "Exxon Valdez." By contrast, few independent ship-owners are known to the general public, so these are at little risk of consumer boycotts, or other direct action in protest

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11 However, the United States is not a signatory of these conventions. Owners of vessels that spill oil in US waters can therefore be subject to the greater pollution liability stipulated in the 1990 US Oil Pollution Act. This imposes a penalty of US$1,200 per gross ton of oil, except if the spill is due to negligence, to deliberate intent or to violation of operating/safety standards. In such instances, *unlimited* liability applies.

12 No precise definition of "persistent" oil is defined within the conventions, but can be taken to include crude oil, heavy and medium fuel oil, heavy diesel oil and lubricating oil.

13 According to the UK P&I Club, the owners of around 90% of ocean-going ships take out protection and indemnity (P&I) insurance to safeguard themselves against such claims. For the 10% of ships that lack P&I cover, any compensation claims for damage related to oil pollution are settled from the IOPC Funds, as explained in Appendix E. However, comparable funds do not exist to provide compensation for all other types of claim.

14 This applies in particular for those ship types that are already required to comply with the ISM Code. The introduction of this Code has clarified in such cases the "designated person" responsible for ship safety and has thus made it easier to target such claims.

15 This depends on which cargo liability regime is specified in the bill of lading or charter-party. Under the "Hague-Visby Rules," the *shipper* bears the cost of lost/damaged goods if he cannot prove that the vessel was unseaworthy, improperly manned or unable to safely transport and preserve the cargo. Conversely, the "Hamburg Rules" make the *carrier* responsible for the loss of or damage to goods whilst in their charge, unless he can prove that all reasonable measures of avoidance were taken.

at a casualty incident. The potential harm that adverse publicity can cause a well-known corporation has led many oil companies to distance themselves from direct ownership of tankers in recent years. This has been achieved by providing independent ship-owners with long-term time-charters that have enabled the latter to order new ships with the guarantee of secure employment.[16]

- A possible decline in the share price and capitalised value of the ship-owner if it is a publicly quoted company, as a result of unfavourable publicity. For a company without any external shareholders, however, there would be no such effect.

- Potential loss of confidence from would-be charterers or shippers, if it is felt that the owner's actions have contributed to a casualty incident, or that ships under his control are unreliable.

- Direct financial penalties, if the company is found to have breached national or state legislation. (These penalties are generally more applicable to incidents involving environmental damage than total losses, even though fatalities are more frequently associated with the latter). The size of penalty may vary significantly depending on the magnitude of the offence and which country's regulations have been contravened.[17]

- The costs of litigation, if the company is sued for its actions, plus those of enacting any sentence imposed. These can be particularly large if serious pollution has arisen.[18]

- A lowering of the owner's credit rating, potentially affecting the willingness of some banks to lend to it thereafter.

- Costs arising from inspections by Port State control authorities. Such inspections can cause delays, longer voyage times and, if the ship is on charter, possible loss of earnings, the extent of the latter depending on prevailing market conditions. Vessels of an age, ship type and/or flag registry that are associated with bad casualty records are increasingly targeted by Port State inspectors. As detailed elsewhere in this report, Port State inspections have been a key focal point for the European Commission following the sinking of the "Erika" in December 1999. In its March 2000 report into tanker safety in Europe, the EC recommended that "past offenders" (i.e. ships that have been detained more than twice in the previous two years and that fly the flag of a State on the Paris MOU's "blacklist") should be banned from EU ports. It also proposed that single-hulled tankers aged 15 years or greater (whether they have SBT or not) should be specific targets for expanded inspections by Port States. This compared with a previous age criterion of 20 or 25 years, depending on tanker type.

One problem facing legislative bodies in their bid to impose greater accountability for substandard ships is the potential difficulty of establishing the identity of the ultimate owner of a given vessel. In practice, many owners separate their fleets into single-ship companies based in flag-of-convenience

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16 Even oil companies that have retained any direct ownership of tankers have renamed their vessels and/or changed the name of their ships' registered owner. In both cases, this has helped to make their ownership of these vessels less obvious, so limiting the potential for bad publicity if an accident arises.

17 After the 1989 "Exxon Valdez" oil spill, the ship-owner – Exxon – was eventually required to pay punitive damages of US$5 billion, this equating to a penalty of some US$135,000 per tonne of oil spilt.

18 Apart from the punitive damages awarded against it, Exxon spent a reported US3.5 billion on measures to counteract the pollution caused by the "Exxon Valdez" incident.

countries. This makes it far harder for legislative authorities to pursue liability claims, as it serves to disguise the identity of the actual owner and the interests responsible for running a given vessel. By such means, an irresponsible owner may be able to evade at least some of the penalties that might result from casualty incidents involving any tonnage that he owns.

The existence of substandard ships also affects owners of good-quality vessels as:

- The presence in the market of cheap, low-quality vessels that can trade profitably at lower charter rates exercises a downward drag on freight earnings. Prior to the "Erika" incident in December 1999, this had contributed to inadequate returns on investment in tanker tonnage for much of the previous 25 years.

- If a series of incidents take place involving poorly-maintained ships, this tends to result in a general rise in hull and machinery insurance for owners of all vessels.

- Similarly, claims arising from substandard shipping tend to result in a general increase in P&I insurance premiums for all owners. P&I clubs operate on the principle of mutuality, so enabling members to economise on costs of cover. Therefore, owners of good-quality vessels with low rates of casualty effectively subsidise others whose ships do not meet required standards. Such substandard vessels account for a high proportion of claims that are made.

- Even ships that comply with international standards are subject to increased numbers of inspections (e.g. by charterers and insurers), as concern intensifies about vessel quality and the reliability of inspections undertaken by some Flag State authorities. This inevitably leads to delays and adds to costs.[19] Attempts are currently being made to co-ordinate such inspections and to increase the exchange of information between such parties, to reduce the replication of effort that takes place, but progress has been limited to date.

2.3 Ship Managers/ Operators

These are now more accountable as a result of the introduction of the ISM Code and the responsibility that this places on a ship-manager or operator to keep written records that could potentially reveal defects in a vessel. Any failure to submit such documentation could count against the party concerned if a casualty incident led to legal action.[20]

2.4 Charterers / Shippers / Cargo Owners

As OCIMF points out, one reason that charterers and shippers have not been made legally liable for pollution damage is that such parties are unable to inspect as fully as others (i.e. Flag States, Port States, ship-owners or classification societies) the internal condition of a vessel. Moreover, cargo interests have no control over a ship's operation or maintenance while it is in transit. However, the existence of substandard shipping means that these cargo interests can incur other costs, including:

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[19] Accidents involving unsatisfactory ships in port, and the possible detention of such vessels by Port State authorities can also lead to delays affecting owners of quality-conscious tonnage.

[20] A representative of the legal firm Norton Rose has remarked that: "The manager has an extra worry that records may create a liability on the vessel and vis a vis the ship-owner."

- The potential loss of a cargo. This can have serious consequences if:

  a) The commodity being carried possesses a high intrinsic value (a particular consideration in the tanker and containerised trades).

  b) This seriously threatens the marine environment (e.g. persistent oils).

  c) Its loss disrupts the operation of an industrial facility to which it is to be delivered. (This can apply even if the commodity has a relatively low unit value, e.g. iron ore).[21]

  d) The charterer or shipper does not insure his cargo.

- Higher insurance costs. These may arise if the P&I club regards the cargo owner as a bad risk, based on the general quality of tonnage it charters.

- Adverse publicity if the charterer is well known.[22] However, many charterers are not necessarily widely known outside the shipping industry; furthermore, to minimise the risk of bad publicity, some large organisations charter under names that differ from their prime corporate identity. Within shipping itself, there is little likelihood of the owner of a good-quality vessel refusing to do business with a charterer that had previously fixed a ship that been involved in a casualty incident – unless this had apparently compromised that charterer's ability to pay the charter hire.

- Greater risk of delays to cargo arrivals due to potentially substandard ships being detained by Port State inspectors. If the price of the vessel's cargo is inherently volatile, this could also mean that it declines in value while the ship is detained.

The liabilities described above must be offset against the financial benefits that cargo owners can derive from using lower-cost, substandard ships. Depending on market conditions, large differentials can exist between rates for "high-quality" and "low-quality" ships respectively. Since the "Erika" incident, this differential has widened substantially between oil company-approved tonnage (which tends to be modern and, to a large extent, double-hulled) and older single-hulled units. (See Appendix D).

Cargo owners specifically can also be subject to the following liabilities or costs:

- Partial liability for oil pollution damage if a spill takes place in certain locations. In the USA, ten States impose strict liability on cargo owners for damage caused by oil pollution in the event of a tanker spill. This is despite the principle of ship-owner liability that is enshrined in federal law, in the form of OPA.

- Claims for compensation from the ship-owner. In cases involving oil spills, these are very rare, as the cargo owner has no control over his oil when it is onboard ship. However, for a casualty incident involving a tanker fixed with unspecified discharge options, if the accident took place at

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21 In some industries, the adoption in recent years of "just-in-time" inventory management policies – whereby operating stocks of raw materials are kept to a minimum – has greatly increased the potential for disruption if a cargo is lost or seriously delayed.

22 For example, TotalFina regarding the company's chartering of the "Erika."

its final destination, the ship's owner might seek to claim that this was not a safe port of discharge.[23]

The existence of substandard ships also impacts on quality-conscious charterers and cargo interests, as these are faced with:

- Higher expenditure on P&I insurance, as a result of the general rise in premiums necessitated by cargo claims arising from incidents involving substandard ships.

- The additional expense of ship vetting and inspection. This has increased considerably as awareness has grown of the extent of the deficiencies of many vessels in the commercial fleets. In particular, the tanker and dry bulk sectors have become far more quality conscious, even since the mid-1990s.

Delays arising from the increased number of ship inspections and detentions noted above. Despite greater targeting of "high-risk" ships, some good-quality tonnage fixed by responsible charterers invariably undergoes port state inspections. Moreover, the current absence of a harmonised approach to such inspections has led to a vast duplication of effort by respective authorities. Greater exchange of information between Port State authorities and increased standardisation of inspection methods are thus being advocated to reduce the burden that this represents.

Serious accidents involving substandard ships sometimes have a major impact on freight markets, either by precipitating new legislation or by altering perceptions of established practices. Such a situation followed the "Erika" oil spill, which led to a marked change in charterers' perceptions of what is "acceptable" tonnage to transport their cargoes in European waters. The upsurge in demand that this created for modern (and especially double-hulled) oil carriers has been a significant factor in the higher charter rates since seen in the tanker sector. Likewise, this has also affected sale and purchase activity involving second-hand tonnage, entailing a marked upturn in vessel values in 2000 to date. (See Appendix D for details).

2.5 Cargo Recipients

In the oil trades in particular, the recipient of a cargo, when it is discharged, may differ from the charterer, shipper and/or original cargo owner. For example, this is the case when a cargo is sold in the course of the vessel being in transit.[24]

These cargo consignees can incur the costs of:

- Delays to cargo arrivals if an accident occurs at a loading or discharge port.

- Mandatory contributions towards oil pollution compensation resources. These apply to companies receiving 150,000 tonnes p.a. or more of crude oil, heavy fuel oil or lubricating oils based in countries which are members of the two IOPC Funds that administer pollution compensation

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[23] The owner of the "Aegean Sea," which was wrecked off La Corunna in Spain in December 1992, lodged such a claim.

[24] In the "Erika" incident, the ultimate recipient of the cargo was destined to be ENEL, which was not the owner, operator or manager of the vessel, nor its charterer, nor the company to which the oil had belonged when it was loaded aboard.

payments.[25] These Funds were originally created to help spread the burden of paying compensation for pollution damage, sharing it between tanker owners and oil importers. (The requirement to make these contributions applies to the first company that receives the oil cargo when it is discharged, even if it is only storing the oil on behalf of another party). The actual payments that cargo recipients are required to make vary each year, according to the level of compensation paid out.

In the US, comparable arrangements exist under federal law. A US$1 billion Oil Spill Liability Trust Fund was created under OPA 90, financed by a five cents per barrel tax on imported oil. However, individual US states can also make their own provisions for the funding of compensation claims arising from oil pollution damage.

2.6 Classification Societies

The classification societies have been the focus of much criticism for their alleged "complicity" in some of the worst shipping casualty incidents of recent years. In particular, concern has been expressed at the potential conflict of interest that exists as a result of the societies' reliance on commercial income from shipowning clients, some of which might operate substandard tonnage. This, it is claimed, means that the societies have little incentive to ensure the uniform application of vessel safety standards, as to do so might jeopardise their relationship with the owner of such ships. Inevitably, the societies reject such allegations.

Criticisms of classification societies are compounded by the tendency for some to operate on behalf of smaller nations in performing Flag State inspections. This work is undertaken on the grounds that these countries do not have sufficient resources available to operate a national maritime inspection service of their own. However, certain of these countries possess very large flag-of-convenience registers. The combination of an accommodating Flag State and a classification society that may be lax in enforcing rules implies ample scope for the owner of a substandard ship to contravene international conventions.

Classification societies that condone non-compliance with international regulations encounter the following costs as a consequence:

- Adverse publicity if a vessel is in an accident arising from a serious defect that should have led to the society withholding class until it had been rectified. However, a) this publicity is unlikely to stretch far beyond the shipping industry, and b) it need not automatically lead to a large exodus of ships to a rival society. This is because quality-conscious owners are unlikely to have classified their ships with a society unless they have reasonable confidence in its enforcement of standards.[26]

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[25] These funds were created under two IMO "International Conventions on the Establishment of an International Fund for Compensation for Oil Pollution Damage," formed in 1971 and 1992 respectively. The 1992 Fund, established to provide higher compensation limits than existed under the original 1971 Fund, has 63 member states, these representing over 85% of world merchant tonnage. Plans to wind up the smaller 1971 Fund were announced in September 2000.

[26] The ten members of the International Association of Classification Societies (IACS) claim to work in close conjunction to ensure that standards of vessel quality are upheld. However, the EC notes that variations apparently exist in the way standards are applied, both among IACS members and even within a single society. Furthermore, there are 46 other organisations outside IACS that offer classification services, and these will accept ships that have had their class suspended by an IACS member. Lloyd's Register observes that: "These societies account for 51% of the world fleet by

At most, it may be necessary to purge a limited number of ships of questionable quality from its ranks as a gesture of its commitment to ship safety.

- Third-party compensation claims, if the society has been negligent or has wilfully failed to enforce class requirements, and this has led to an accident. The magnitude of such penalties varies, depending on the nature of the incident and the legal jurisdiction under which the claim is being pursued. However, societies generally include in any contract with their clients (ship-owners or Flag States) a clause that limits their liability for simple negligence.

- The costs of defending itself against any legal action arising from such claims.

- Intervention by Flag State governments. When undertaking statutory certification work for flag administrations, a society is acting on behalf of the relevant government. Any failure to perform this work to a competent standard could lead to the Flag State withdrawing the society's right to perform such activities, with a corresponding loss of income.27 However, given the dereliction of duty that typifies some Flag States, it is questionable whether these particular nations would exercise such sanctions against a society active within their country. In addition, such a withdrawal or suspension of the classification society's powers might prove impractical to implement. This is because owners of good ships, as well as bad, may have their ships classed with the society in question, and would indirectly be penalised by any such sanction against the society.

By comparison, those societies that vigorously enforce agreed standards can suffer:

- The loss of revenues that arises when an owner transfers his ships to a less stringent society ("class hopping"). Efforts have been made recently within IACS to harmonise standards and to increase the exchange of information on ships undergoing transfer of class. However, these measures to ensure greater uniformity within IACS could, perversely, encourage more owners of low-quality tonnage to class their vessels with non-IACS members, i.e. the very societies least likely to enforce standards effectively. Under the IACS "Transfer of Class" agreement, a ship can only be classed by one of its members if any outstanding class requirements from its previous society have been met and surveyed. No such requirement exists if the vessel instead transfers to a non-IACS member.

- The increased costs that are incurred in striving for the effective enforcement of regulations. It also follows that the societies most dedicated to the objective of eradicating unsafe shipping are those that have undertaken the greatest research into the causes of maritime accidents and possible remedies thereto.

There are no specific financial or legal penalties that might automatically be levied against classification societies for their alleged dereliction of duty. The only penalties to which a society might be liable are those that would result from an individual court case. *Even then, however, societies*

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number of ships and 7% by gross tonnage." By classing their ships with such societies, owners can achieve large savings on vessel repair and maintenance expenditures.

27 The European Commission has proposed that the right of any EU-based organisation to classify ships should be dependent on proof that it is applying standards effectively. Any failure to do so would result in the withdrawal or suspension of that organisation's power to perform this function. If these proposals were adopted, the societies would be subject to regular three-yearly audits by the EC to verify that they are effectively enforcing requirements for pollution prevention and ship safety.

protect themselves against such an eventuality by insisting on the inclusion of a limited liability clause within any contract that they sign with a client.

However, the European Commission is currently investigating proposals for an amendment to existing legislation (as embodied in Council Directive 94/57/EC), under which the EU's present provisions would be harmonised and new limits set for classification societies' financial liability. These new proposals, if adopted, would set the following limits on the liability of classification societies in the event of maritime accidents:

1. For wilful omission or gross negligence: **no limit**

2. For personal injury or death arising from negligence or reckless omission by a society: **Euro 5 million**

3. For loss or damage to property arising from negligence or reckless omission by a society: **Euro 2.5 million**[28]

These measures would be accompanied by tighter EC controls on "class hopping" and, as already noted, greater Commission power to withdraw recognition of a society's right to operate in the EU. Such measures, if enacted, could lead to a very great decline in income from classification activities.[29]

2.7 Shipbroking Companies

Obviously, whether a broker is even involved in a voyage that results in a casualty incident depends on the type of ship and whether its owner is not otherwise able to deal directly with a charterer or shipper to secure employment for his vessel.

A shipbroker can incur costs relating to damage caused by a substandard ship if:

- He fails to advise the buyer or the charterer of a ship that he is merely acting on behalf of the vessel owner, rather than acting as a principal himself, when relaying information and opinions about the ship.

- He does not notify the charterer of any apparent defects that the vessel may have which are subsequently found to have been responsible for any loss or damage. In such situations, the broker is deemed to have acted negligently.

Thus, it is the broker's responsibility to exercise due diligence when advising a prospective buyer or charterer of the vessel's features and its trading capabilities. In practice, a broker is not normally placed in a situation where he can incur liability, regardless of the actual condition of a ship, as he acts only under his principal's authority. This means that, unless the broker is negligent or is guilty of deliberate misrepresentation, he cannot be held responsible for any subsequent problems that may arise. In sale and purchase transactions it is the responsibility of the prospective buyer to have the vessel inspected to verify its design, equipment and condition – irrespective of any information imparted by the broker.

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[28] However, critics have already argued that the adoption of higher limits on liability would merely lead to greater spending by the societies on insurance against third-party compensation claims. This could be to the detriment of direct expenditure on the means required to help eradicate substandard ships.

[29] These, too, are part of the EC's March 2000 report on "The Safety of Seaborne Oil Trade".

The only other prospective cost that a shipbroking house may face is adverse publicity if it is identified as the company that fixed a ship that was then involved in a serious incident. Naturally, the larger and better known that a broking company is, the greater the likely damage that this would do to its reputation.

2.8 P&I Clubs

These tend to suffer a higher incidence of compensation claims if a club has provided P&I cover to the owner of a substandard ship. Such vessels are associated with a greater likelihood of accident than well-maintained, well-operated tonnage.[30] Some clubs exercise strict risk assessment procedures, including the inspection of ships for which their clients seek P&I cover. However, others rely merely on proof being available that the ship complies with class requirements.

Specified limits exist concerning the reinsurance protection that clubs will extend to members in connection with certain types of claim. According to ITOPF, P&I Clubs currently stipulate a ceiling of US$0.5 billion in terms of pollution-related claims against vessel owners. (For these purposes, this means the *registered* owner, rather than the bare-boat charterer, operator, ship manager, etc). The US$0.5 billion limit only comes into force if the IOPC provisions that are explained below do not apply, or if the vessel owner forfeits his right to limited liability. This only happens in instances where the ship-owner a) has been wilfully reckless, b) has polluted deliberately or c) has failed to notify the authorities when a spill has taken place. Such occurrences are rare in practice.

2.9 Marine Underwriters

Companies that provide hull & maintenance insurance bear various costs in the event of an accident arising from a ship's substandard condition. These include:

- Reimbursing the owner for the insured value of a ship that has been an actual total loss or constructive total loss, unless it has been proven that he has been directly responsible for the accident befalling the vessel.

- Financing the cost of repairing a vessel that it has insured.

If an underwriter has reason to suspect a claim arising from, say, the loss of a ship, he can withhold settlement while further investigations are undertaken. However, in some trading regions, the limited application that exists of Port State controls can mean that the only prospective gauge of ship condition is a ship's class records. Yet, given the disparities that exist between respective societies, class can be an imperfect indicator of a vessel's true seaworthiness. This demonstrates the need for underwriters to discriminate against ships classed by less reputable societies.

2.10 Banks and Financial Institutions

The lending policies of respective banks towards ship-owners are by no means uniform. Past experience demonstrates that some high profile banks have let themselves become excessively exposed to bad credit risks by lending to owners of questionable merit. However, many other banks

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[30] The International P&I Club has already implemented tighter controls on membership to restrict its exposure to claims that may arise from the activities of substandard operators.

take a more responsible stance and exercise stringent controls on the tonnage on which they will lend and the owners to whom they will advance funds.[31] Depending on how circumspect they are, banks can in theory face the following costs as a result of substandard shipping practices:

- Financial loss if a vessel on which it has given a mortgage sinks and the owner is found to have been negligent, so forfeiting any right to compensation. However, in practice, the bank would have required some collateral as a condition of the loan, so should recover the balance of the mortgage regardless of the loss of the ship.

- Financial loss if a vessel owner becomes insolvent. Even in casualty incidents where a ship is merely damaged and can be repaired, the ensuing compensation claims and maritime liens could bankrupt its owner. The bank would be forced to repossess the asset. Almost inevitably, the distressed nature of any subsequent sale would be at a price below market levels. Any difference between the final sale price and the outstanding mortgage debt would then represent the extent of the bank's loss.[32]

- Direct financial penalties, but only if the bank is actively involved in the operation of a ship, rather than being a purely passive lender. However, this situation could change if the bank had reason to foreclose a mortgage and thereby became a lender in possession. Furthermore, under leasing arrangements, a bank is effectively the owner of the ship. As such, it could therefore be liable to any penalties imposed. (To date, no lessors have suffered such a fate, but this is probably because the ships in question are modern and well maintained).

Encouragingly, one of the insurance companies contacted in connection with this study commented on the more stringent standards now being applied by banks, and their newly found reluctance to lend on "ships that are not credible." However, it was also observed that loans had, nonetheless, previously been made on "very many ships" on the strength of classification by societies of questionable merit. Hence, there is an historical legacy of earlier bad practice that has contributed to the ongoing problem of substandard shipping.

In addition, although many banks have latterly provided loans only on newer vessels, these have taken as cross collateral the mortgages of any other ships within the client's fleet, regardless of their age. Even these banks are, therefore, indirectly exposed to the risks presented by over-aged, potentially substandard, tonnage.

2.11 Shipbuilders

The failure to eradicate substandard shipping imposes the following costs on responsible builders of good-quality ships:

- Reduced newbuilding contracting, as a result of lower replacement demand. The continued trading of low-cost, badly maintained ships – by depressing average freight rates – has discouraged responsible owners from ordering new tonnage. Yet if greater scrapping were to take place of

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[31] Even so, ships financed by prudent and attentive banks can still be substandard. The 1999 collision between the "Norwegian Dream" and the "Ever Decent" shows how insufficient watch-keeping and bridge organisation can lead to an accident.

[32] In view of the higher incidence of substandard tonnage among older vessels, banks are becoming increasingly reluctant to lend on ships that are over 14 years' age.

substandard vessels, this would lead to tighter trading conditions and higher freight rates that would, in turn, help to justify the placing of newbuilding orders. (To illustrate the poor historical returns on newbuilding investments, SSY has calculated that for a five-year-old Capesize bulk carrier, average earnings in 1991-99 inclusive of US$13,900/day fell short of estimated break-even levels for the period of US$14,650 per day).

- The loss by good-quality yards of some newbuilding orders to lower-quality rivals that, by use of questionable production methods, reduce their construction costs at the possible expense of vessel safety.[33]

2.12 Flag States

Responsible Flag States incur the costs of:

- Loss of ships, and hence revenues, to other flags that offer lower registration fees and a less effective enforcement of regulatory requirements. Over time, this has meant that quality-conscious Flag States have exercised control over a declining volume of tonnage and a much-reduced proportion of the global fleet.

2.13 Port States

The costs borne by port states due to international standards not being met are:

- The expense of search and rescue operations when accidents arise at sea.

- Expenditure on oil spill prevention equipment and at least some of the costs of treating the coastlines affected if significant pollution does take place.34 However, if the country belongs to the IOPC Funds, it would be eligible for compensation. Likewise, if sufficient punitive damages are awarded against the vessel owner, these might cover the costs of clearing the spill.

- The costs of providing financial support to the dependant relatives of persons seriously injured or killed at sea, if these are unable to fend for themselves.

- Providing shelter to seafarers abandoned by substandard operators and paying for their repatriation.

- The resources invested in Port State controls, as these would not be necessary if all Flag States and vessel owners adhered rigorously to required standards of ship quality, safety and pollution prevention. For those countries that are genuinely committed to these objectives, substantial expenditure has been undertaken on Port State control measures. Furthermore, plans to tighten controls – by increased inspections, particularly of tankers over 15 years old – will necessitate still greater expenditure, including the training and employment of increased numbers of inspectors.

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[33] In this regard, ABS has cited the fractures and cracking experienced by numerous relatively modern light scantling ships. Source: "Encouraging Self Regulation in an Over Regulated Industry" by Mr Robert Somerville, ABS President (paper presented at Mare Forum 99, Amsterdam, June 1999).

[34] The clean-up costs after oil spillage occurs can be vast: treatment of the "Exxon Valdez" incident at one stage engaged a reported 11,000 personnel, 1,400 vessels and 85 aircraft.

- Any costs arising from the disruptions to normal operations at port facilities as the result of a substandard vessel having an accident or being detained.

2.14 End-Users of Cargoes

End-users of commodities carried by sea can be affected in that:

- If marine underwriters and P&I clubs react to compensation claims by raising insurance rates, the vessel owner is likely - freight market conditions permitting - to pass these on to end-users by requiring a higher charter rate. This in turn will be reflected in the delivered price of the cargo concerned. (The proportion of the landed price that is accounted for by this freight element varies significantly, depending on the commodity and freight market conditions).

- Despite the provisions for compensation for oil pollution damage that are contained in the IOPC conventions, these only provide for "reasonable" measures being taken to restore an environment affected by an oil spill. Thus, by implication, full recompense may not be made. However, the announcement that the upper ceiling on compensation for damage caused by oil pollution is set to be raised in 2003 may help to ensure more generous settlement of claims, thereby eliminating this possibility.

2.15 Private Individuals and Companies

- Current limits on compensation arising from oil pollution damage are insufficient to enable full settlement of all claims in cases such as the "Erika," meaning that only partial payment takes place. This lack of full redress means that, to some degree, *private individuals whose property or livelihood is affected by oil pollution bear some of the costs that arise from shipping casualties. This also applies for the damage inflicted on the production facilities of private companies that operate in the vicinity of an oil spill*. (In this regard, the fisheries and tourist industries are at particular risk when oil spills take place).

3. DATA SOURCES / ASSESSMENT OF COSTS

The collection of data on the costs borne by some parties in the shipping industry is inherently difficult, as such information is shrouded in commercial secrecy. When it comes to the differences in costs between companies that stringently meet agreed international standards and those that do not, the prospects of obtaining reliable data are even smaller. This is because *substandard shipping takes so many forms that it is impossible to generalise and yet derive meaningful cost comparisons.* For example, many ships that are in reality substandard may appear superficially to satisfy statutory legal requirements. The "Erika" is a prime case in point: the ship was still in class and had recently been inspected by oil company and Port State interests prior to its loss. Conversely, even a modern, well-built and well-maintained ship can be guilty of substandard practices. The "Exxon Valdez" was merely three years old and owned by a large, well known corporation with a long history of tanker ownership when it grounded in Prince William Sound. Yet nobody would pretend that there should be inherently close parallels between the cost structures of these two ships. When it comes to comparing different vessel *types*, there is even less reason to expect similarities.

Based on the above, there can be no simple comparisons between ships that comply with requirements and those that are "substandard." The sheer number of different parameters that can govern whether a ship is substandard prevents any convenient stereotypes being developed that could be deemed representative of such a wide-ranging concept. For example, a ship could be substandard on the basis of the quality of its maintenance, its crew or even the standards of class with which it is required to comply. Thus, much of the information relating to this sub-section is based on market intelligence, rather than being based on easily substantiated figures published within the shipping media.

Apart from information from published sources, many organisations representing respective aspects of the shipping industry were contacted in the preparation of this report. This consisted of representatives from ship-owners, charterers, cargo owners, banks, P&I clubs, marine underwriters, classification societies and Port State authorities. In addition, the opinions were sought of various other international representative bodies within the maritime sector. The views of these various parties were canvassed and, as far as possible, impressions were obtained from them of any noteworthy costs associated with substandard shipping. Direct responses were received from the following organisations, plus others that insisted on remaining anonymous:

American Bureau of Shipping, Houston
Australian Maritime Safety Authority (AMSA), Canberra
BHP Transport & Logistics (Europe) Ltd, London
Central Union of Marine Underwriters (CEFOR), Oslo
Citibank, London
Danske Skibskredit Fond, Copenhagen
Det Norske Veritas, Oslo
European Shippers' Council, Brussels
Intercargo, London
International Transport Intermediaries Club (ITIC), London
International Underwriting Association, London
Intertanko, Oslo
Lloyd's Register of Shipping, London
NIB Capital Bank, The Hague
Schiffshypothekenbank zu Lübeck AG, Hamburg

In addition to those surveyed above, information was obtained through extensive interviews with senior broking personnel within the SSY head office. This consisted of brokers working both in the chartering departments (dry cargo and oil tankers), plus the ship sale and purchase sector.

Based on the information that was obtained, it emerges that the majority of parties that are directly involved in the use of substandard shipping do not apparently incur significant costs that they need bear themselves. Rather, as noted in Section 2, the insurance industry provides cover for most prospective liabilities. Even so, there is no reason to believe that marine underwriters and P&I clubs then shoulder the total cost of any claims that arise. As previously noted, the outlays that these parties incur can be at least partly recouped by adjusting subsequent premiums.

Bearing in mind the inherent problems associated with any assessment of the costs that substandard shipping imposes on respective parties, two examples have been devised. These are purely illustrative and both involve the total loss of a ship with all hands aboard. The representative vessels in these examples are a Panamax dry bulk carrier and a VLCC, each of 25 years' age. (Further details of the costs and liabilities that a shipping casualty may bestow on individual parties are presented in Appendix F.)

Case 1: Total loss of 1975-built Panamax bulk carrier, including 25 crew

Party:	**Remarks:**
Crew	"Costs" are principally non-financial, i.e. loss of lives plus human cost to their dependants. See also ship-owner liabilities, below.
Ship-Owner:	Financial liabilities depend on: whether the owner is convicted of negligence; where loss of ship took place (legal jurisdiction); plus the size/nationality of crew. Lives of "Third World" seafarers tend to be valued less highly than of those from developed nations. If an owner is <u>not</u> negligent, his losses are limited to the ship. The marine underwriter would pay out its insured value.[35] If the owner <u>has</u> been negligent, families of the lost crew could sue for compensation, exposing him to unlimited liability and payment of punitive damages. (There are no limits on an owner's liabilities for seafarer fatalities). Suggested potential liabilities: US$5 million,[36] payable by the owner, subject to his solvency.

[35] If there was any outstanding mortgage debt on the ship, the bank would receive the balance due on the loan, leaving the owner with only part of the insurance settlement. NB: ships are typically insured in excess of their actual market value, so any difference between this and the market price could contribute towards an owner's liabilities. For example, if a ship had been acquired for US$8.5 million but was insured for US$9.0 million, up to US$0.5 million might be available towards settlement of any damages awarded against the owner.

[36] This figure is comparable with the damages claimed in the lawsuit filed in November 2000 against the owner of the 26-year-old bulk carrier "Flare," which sank off Newfoundland in January 1998.

Charterer/ Cargo Owner: [37]	Losses depend on the cargo being shipped. Assume 65,000 tonnes of wheat (approximate value US$7.5 million) or steam coal (approximate value US$2.0 million). Provided the cargo is fully insured, its owner's P&I club pays for the loss incurred.
Classification Society:	No specific financial liabilities apply. Litigation by a vessel owner is possible, but societies stipulate in any contract with a client a clause that limits their liability for simple negligence and take out insurance cover against the risk of being sued. Therefore, the P&I club bears the cost of any damages, unless the society has been reckless or wilfully negligent. Thus, costs to a society are limited to a) higher P&I premiums, plus b) the effects of bad publicity and any resulting loss of business, although this cannot be specifically quantified.
Shipbroker:	No direct liabilities exist (as the broker acts only on the authority of his principal), unless found to have acted negligently, which is rarely proven. The effects of adverse publicity depend on a company's size and its established reputation, so vary and cannot be quantified.
Marine Underwriter:	Liability amounts to the insured value of the vessel, which is paid in full unless its ship-owner is found guilty of negligence, thereby invalidating any cover.
Ship-Owner's P&I Club:	The club is liable for damages awarded against the owner, up to the limits and inclusions specified in the contract with that client.
Charterer/ Cargo-Owner's P&I Club:	Liability amounts to the damages incurred by a charterer or cargo owner, up to the limits and inclusions specified in the contract with the club.
Bank:	No liabilities exist if the bank is a passive lender. If the ship-owner has not been negligent, the balance of any mortgage is paid from the funds received from the ship's underwriter. Even if the owner is found to have been negligent and no settlement is made, any outstanding mortgage balance would be recovered on the basis of whatever collateral had been used to secure the loan. But: if the ship-owner is insolvent, the bank incurs a financial loss.

[37] For simplicity, these are assumed to be the same company.

Flag State:	No pre-defined penalties exist, but a very bad casualty record makes a given Flag the likely object of increased Port State inspections. This could lead to fewer ships joining the registry, if other low-cost rivals are less likely to be targeted.
Port State:	Costs are only incurred if the ship is lost in a country's territorial waters. But: most bulk carrier accidents occur on the high seas, rather than near coasts. Even if a ship founders close to land, costs may effectively be zero, provided that any lost cargo is not harmful to the environment, and that no pollution occurs from the spillage of bunker fuels. (No standard international liabilities yet exist for this form of pollution).
Cargo Users:	These may incur greater costs via higher freight rates, subject to market conditions. But: for most commodities, the freight element of the delivered price is relatively small and any resulting rise may be indiscernible.

Case 2: Total loss of 1975-built 260,000 dwt VLCC, including 25 crew

Party:	**Remarks:**
Crew	See Case1.[38]
Ship-Owner:	See Case 1. If the owner has been negligent, liabilities could be limitless, but otherwise the ship's loss is likely to be fully covered, with the underwriter paying. The loss that the vessel represents partly depends on the cost of its replacement. If the ruling market price has changed, even full payment of the lost ship's insured value may not allow purchase of a similar unit. It may also be impossible to replace "like with like," if similar tonnage is unavailable. Liability for the loss of seafarers' lives depends if the owner has been negligent. Costs may range from nil to, say, US$5 million. Costs related to oil pollution: no liability exists if the ship is in ballast condition and no bunker fuels escape or if, while laden, it sinks on the high seas outside any country's territorial waters. Otherwise, for a laden ship, the owner is liable for an oil spill up to limits defined in the Civil Liability Convention. For a fully laden 260,000 tonner, this implies a total cost of some US$42.7 million. In practice, a tanker owner insures against this risk, so this liability is borne by his P&I club. Remaining costs of clear up are paid from the IOPC Fund (up to some US$62 million in this case) and, if these limits are exceeded, by a Port State's authorities.

[38] In practice, however, many total losses of tankers in the 1990s entailed little or no loss of life, in contrast to ship casualties involving bulk carriers.

Charterer/ Cargo Owner: [39]	Costs amount to the insured value of the cargo. For 250,000 tonnes of light crude oil, at a current market price of US$32/bbl this would be some US$57.55 million, payable by the cargo owner's P&I insurers. (For both cases if the vessel's loss is suspect and the P&I club will not pay out, the cargo owner can sue the ship-owner for the cargo's loss).
Classification Society:	See Case 1.[40]
Shipbroker:	See Case 1. (For both Cases, there may not even be a broker engaged if the vessel owner and the charterer/cargo owner have reached a deal directly).
Marine Underwriter:	See Case 1.
Ship-Owner's P&I Club:	See Case 1.
Charterer/ Cargo-Owner's P&I Club:	See Case 1.
Bank:	See Case 1.
Flag State:	See Case 1.
Port State:	See Case 1. But, unlike dry bulk carriers, tanker total losses in mid-ocean are rare. Assuming an accident close to land, the port state incurs the cost of any attempted search and rescue mission. Loss of a full VLCC cargo could also entail oil pollution damage far above CLC and IOPC provisions.
Cargo Users:	See Case 1.

[39] These are again assumed to be synonymous.

[40] In both Case 1 and Case 2, the society might be able to offset some of the implicit costs of its bad publicity by suing the ship-owner and being exonerated in court. However, this would depend on such action being successful and on how legal costs were awarded.

4. EXAMPLE: "ERIKA" CASE HISTORY

4.1 Background

On 12 December 1999, the 1975-built, 37,283 dwt, Maltese-flag dirty product tanker "Erika" broke up in heavy seas in the Bay of Biscay, around 40 nautical miles off the coast of Brittany. In doing so, it precipitated one of the worst cases of maritime pollution in European waters seen in recent years. Although the volume of oil spilt was modest by the standards of previous high-profile tanker accidents (around 15,000 tonnes), the highly persistent nature of its heavy fuel oil cargo led to extremely severe pollution, covering around 400 km of coastline. Six months later, recovery of the remaining cargo still aboard the ship and treatment of the resulting pollution were both still in progress.

After the oil spill, TotalFina - the charterer of the "Erika" – was subject to particularly severe criticism. This was because, apart from being a single-hulled tanker, the ship was a flag-of-convenience vessel that had changed ownership several times, was controlled by a Malta-based "brass plate" ship-owner and had undergone several changes of classification society. In addition, it has emerged that the ship had been built to a very light scantling design and had a lightweight that was some 1,000 tonnes below that of similar tonnage. The advanced age of the "Erika" was a particular source of ensuing criticism both from the French and EC authorities.[41]

The fate of the "Erika" demonstrated the shortcomings of the shipping industry's existing regulatory mechanisms in that, although old by the standards of the tanker fleet, the ship was still in class, had ISM certification and had only undergone annual survey by RINA shortly before its final voyage.[42] Nonetheless, this did not prevent it from undergoing "progressive structural failure" while at sea and ultimately breaking in two. Even allowing for heavy weather conditions, such a casualty - rather than one where the ship, say, goes aground on rocks - is exceptionally rare for this ship type. Furthermore, it has since been revealed that four of the seven sister vessels to the "Erika" had also experienced serious structural failures during the early 1990s.

The casualty occurred during a laden voyage from Dunkirk to Italy, while the "Erika" was carrying 30,000 tonnes of no. 6 fuel oil. This cargo, owned by Total Bermuda, was bound for the ENEL oil-fired power station at Leghorn. At the time, the ship was on a single voyage charter arranged via Petrian Shipbrokers on behalf of TotalFina's London office. The "Erika" had been relet for this voyage by Amarship of Lugano, acting as agent only for Nassau-based Selmont International, to which the vessel was on time-charter. Technical management and crewing of the "Erika" was entrusted to Panship Management of Ravenna.

The legal owner of the "Erika," since its acquisition in 1996, was the single-ship Maltese company Tevere Shipping Company Ltd, although the ultimate beneficial ownership of the vessel can be traced back to London-based ship-owner Giuseppe Savarese.[43] The purchase of the ship was reportedly secured via a loan obtained from the Bank of Scotland.

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41 However, very few modern vessels engage in heavy fuel oil trades compared with the carriage of crude oil or clean products. Thus, even at 24 years old, the "Erika" was relatively representative of tonnage operating in the dirty product trades.

42 Since the disaster, it has been emerged that the inspections undertaken by RINA, oil companies and Port States took place without all cargo and ballast tanks having been fully gas-freed. The limited extent of these inspections helps to explain how the loss of the vessel could then occur.

43 This individual has openly acknowledged in the shipping media that he was the sole legal representative of Tevere Shipping.

Following the loss of the "Erika," new initiatives have been undertaken to safeguard against a similar incident arising in future. These were embodied in a voluntary code of conduct, devised in February 2000, covering the future policy of shippers, ship-owners and classification societies in France. In broad terms, this is to be ensured by a progressive reduction in use of older, single-hulled ships by French shippers, more selective chartering policies, plus more rigorous quality control in terms of the tonnage that companies use for carriage of oil cargoes. These are due to be embodied in new EU legislation that is at present still under review, as explained below.

2. The Post-"Erika" Situation

A. Regulatory Proposals: "EurOPA 2000" & Amendments to MARPOL 13G:

As indicated earlier in this report, the sinking of the "Erika," and the resulting public outcry over tanker-related oil pollution, prompted tough new proposals from the European Commission for the accelerated phase out of single-hulled tankers from European waters.

In essence, "EurOPA 2000" proposed the phasing out of pre-MARPOL tankers at 23 years (or by 2005) and single-hulled MARPOL tankers at 28 years (or 2013).

This unilateral action met with opposition from non-European countries, which were concerned that elderly tonnage displaced from European trades would be "dumped" in their waters, and the IMO, which favoured a more "inclusive," international approach. By the time of the IMO's Marine Environment Protection Committee (MEPC) meeting in October, impetus for a consensus agreement was growing.

At the MEPC session a compromise proposal was, indeed, agreed to amend existing IMO Regulation 13G. This superseded the EurOPA proposals and represents a significant dilution of the Commissions original plans (The draft text of the latest IMO proposal can be found at the end of this report.)

The proposed amendments divide the existing tanker fleet into three categories: Pre-MARPOL (Category 1), MARPOL (Category 2) and small tankers (Category 3). Category 1 tankers are to be phased out by 1 January 2007, while there are two alternative suggestions for Category 2 tankers, with phase out dates of 2015/2017. There are also two alternatives for Category 3 tankers with phase out dates of 2015/2017. However, several details need to be worked out, including the Condition Assessment Scheme that was suggested.

Furthermore, there are a number of discrepancies in the phase out dates, for example a 1978-built pre-MARPOL tanker has to be scrapped by 1 January 2006, whereas MARPOL ships built in 1978 has to be phased out by 1 January 2004. In terms of impact on the freight market, we do not expect any short-term effects in 2001/2002. Also in terms of fleet replacement, the phase out schedule gives enough time to rebuild the tanker fleet. The main impact will be on Handysize product tankers (especially in the 20-29,999 dwt range), as these were not covered by current MARPOL requirements for double-hulled tankers.

Further technical meetings are scheduled in January/February 2001. The proposals are to be finalised and amendments to the MARPOL Convention made at the next MEPC meeting in April 2001. It is envisaged that the amendments will be passed then with an implementation date of 1 January 2003.

B. European Commission Proposals

Although the Commission's proposals on the phasing-out of single-hulled tankers have been superseded by the IMO's plans to amend MARPOL Regulation 13G, the EC's March 2000 report on "The Safety of Seaborne Oil Trade" also included proposed changes to port state control and the responsibility of classification societies. These proposals have yet to be approved by EU member states but remain on the table. Furthermore, impetus for their adoption is sure to increase following the loss of the chemical tanker *"Iveoli Sun"* off the French coast in late October 2000.

The proposed amendments to existing EU directives include:

Tougher Measures against Manifestly Sub-standard Ships

Banning of ships over 15 years old that have been detained more than twice in the preceding two years and figure on the "black list" of flags with an above-average number of detentions. The Commission to publish the list of banned ships every six months.

Increased Inspection of Oil Tankers and Other Vessels Posing a Risk

Optional provisions in the existing Directive concerning potentially hazardous cargoes to become mandatory. These ships subject to mandatory expanded inspection every year on entering a Community port.

Oil tankers subject to the expanded inspection regime from the age of 15 onwards, rather than 20 or 25 years as in the current Directive.

Classification Societies:

European Commission to inspect the organisation prior to granting of recognition with emphasis on the assessment of the organisation's safety record and pollution prevention performance. The Commission will have the right to decide on the withdrawal of recognition. It also proposes to harmonise the limitation of the financial liability of the classification societies, as previously noted in Section 2.7 of this report.

4.3 The "Erika" Incident: Consequences for Respective Parties

Examining the implications for respective parties involved in the "Erika" incident:

- The French government has charged Giuseppe Savarese (the beneficial owner of the "Erika"), Panship (the vessel's ship-manager) and RINA (the vessel's classification society) with putting lives in danger and causing marine pollution. The Master of the ship was similarly charged but later released.

- Eleven organisations have been sued by RINA in connection with their roles in the sinking of the "Erika." These include the registered owner (Tevere Shipping), Panship, the charterer (TotalFina), the ship-owner's P&I club (Steamship Mutual), the IOPC and the French government. This action was served in Augusta, Sicily on 12 April 2000.

- Tevere Shipping has been sued for a reported US$4 million by TotalFina for the loss of its heavy fuel oil cargo, this action being filed in Dunkirk.

- The liabilities of the ship-owner in terms of oil pollution damage - despite the evident failings of the vessel – are confined to the limits specified in the Civil Liability Convention. This would amount to around US$12.3 million. Moreover, even this is prospectively recoverable from the owner's P&I club, Steamship Mutual.[44]

- Beneficial owner Giuseppe Savarese reportedly owes the vessel's crew for three months' unpaid wages, and is likely to be sued for the recovery of these monies.

- The vessel operator and ship-manager – Amarship and Panship respectively – have no liability for oil pollution damage under IMO conventions. Nonetheless, the French government is pursuing legal action against the latter, as well as against the beneficial owner, Giuseppe Savarese.

- Panship also stands to lose its ISM certification, based on recommendations by RINA to the Maltese and Italian authorities.

- Selmont International, as time-charterer of the "Erika," has similarly not incurred any known liabilities arising from the loss of the vessel. As it is not the registered owner of the ship, it is exempt from any claims arising from oil pollution damage.

- As the spot charterer of the "Erika," TotalFina has incurred substantial adverse publicity that it has sought to counteract. It has therefore undertaken not to pursue any claims for compensation against the ship-owner or the IOPC Fund unless all other claims are settled in full. It has also pledged to pay up to a reported FFr40 million towards the cost of cleaning up beaches and FFr30 million towards publicity to boost tourism in the region affected by the spill. However, in practice, most of these outlays will ultimately be recovered from TotalFina's P&I club.

- The commercial impact on the intended recipient of the cargo, ENEL, depends on the degree to which the company had sufficient operating stocks on which it could call to avoid any disruption to its plant's operations.

- RINA, in its capacity as the society that classified the "Erika," has also attracted much adverse publicity. The society will inevitably be affected by any new measures that the European Commission imposes to ensure more effective enforcement of class requirements by societies acting within EU states.

- The identity of the company that had provided the hull and machinery insurance on the "Erika" has not been confirmed. However, it is reported that the ship had an insured value of US$6 million. Whether this will be paid out would hinge on the outcome of the various legal proceedings arising from the loss of the vessel.

- In its capacity as Port State, the French government has agreed, like TotalFina, not to file any claims for oil pollution damage compensation unless all other claims are fully settled from the monies available under IOPC Fund provisions.[45] This gesture by the French government and TotalFina is reportedly likely to cost these parties a collective US$220 million.

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44 This compares with the FFr1,195 million that will be paid from the IOPC Fund to meet compensation claims for oil pollution damage arising from the "Erika."

45 The IOPC Fund authorities met on 23 October 2000 to consider compensation claims and will meet again in April 2001 to determine the extent of prospective settlements. Some interim payments have already been made.

5. CONCLUSIONS AND OUTLOOK

Based on the analysis undertaken, some of the main points that emerge include the following:

1. The current exemption of charterers and shippers from any liability for oil pollution damage – on the grounds that these cannot be responsible for the running of the ship – means that these parties have no incentive to utilise high-quality vessels if less expensive, but inferior, tonnage is available.

2. By contrast, the registered ship-owner is deemed *strictly* liable (i.e. regardless of whether he is at fault) for oil pollution damage under the existing liability regime, even though parties such as a vessel operator or ship manager are not. Accordingly, this implies that an owner could still be liable for damage resulting from, say, actions arising while his vessel is under the control of a company that has taken it on long-term time-charter.

3. This concentration of liability for maritime accidents on the registered owner of a vessel, the Flag State and classification societies has absolved other parties in the maritime industry of any meaningful responsibility for substandard shipping. In fact, some observers have asked why, if ship-owners can be strictly liable for oil pollution damage, the same principle is not applied to the cargo owner.

4. Even the liability of the ship-owner is limited to relatively low levels, with most compensation for oil pollution damage instead coming from the IOPC Funds, which are financed by a levy on oil importers.[46] Yet, depending on the terms on which their oil imports have been purchased (i.e. whether f.o.b. or c.i.f.), some of these importers have not been party to the shipping process whatsoever, and have had no influence in the choice of vessel used.

5. Owing to the inadequacy of current compensation limits for oil pollution damage, parties *outside* the shipping industry may incur notable material losses that cannot later be fully recovered. These do not have insurance cover so are not automatically protected against possible risks. The current outmoded limits on oil spill compensation are not due to be revised until at least November 2003, when a 50% increase is intended to take effect – the first rise in these limits since 1984.

6. The EC proposes that definitions of oil spill liability might be expanded to cover not only the damage sustained by persons and property but also the environment. It also suggests that greater emphasis should be placed on apportioning penalties according to which parties are to blame. However, the P&I clubs have warned that such moves could create a legal quagmire, due to the problems of proving that damage had been inflicted with any deliberate intent.

7. Ship-owners, charterers and cargo owners can insure against most potential losses and liabilities that arise from casualty incidents. By doing so, a P&I club or, if a ship is lost or damaged, a marine underwriter therefore bears any prospective loss. Again, the ability to do this means that those parties directly involved in the shipping of cargoes have no effective incentive to see substandard tonnage driven from the market.

8. Banks are able to safeguard against the financial losses that could accrue from dealing with substandard owners, by making mortgage protection insurance a precondition of any loan advanced to a ship-owning client.

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[46] In the settlement of claims that arise from large spills, this contributes a far greater proportion of total compensation paid than the contribution of the ship-owner. The only exception is if the vessel owner is guilty of negligence or wilful pollution, in which case he is subject to unlimited liability.

9. One of the companies contacted in the preparation of this report advised that an adverse history of ship casualties would not prevent owner from obtaining further finance from some banks. This was provided they were confident that the insurer of his vessel would settle any claim related to its loss. In fact, the company concerned (which has requested anonymity) advises that:

> *"A bad casualty record where underwriters have paid Total or Constructive Total Loss claims will enhance a borrower's financial records. He will have a record of paying off his loans early. Insurers, particularly P&I clubs, will be the only people to penalise an owner with a bad casualty record."*

10. Many major banks now refuse to lend on older tonnage, yet bank finance is still available from some quarters, albeit that any loan is likely to be for a shorter period, with accompanying greater fees and spreads over LIBOR. However, this should still be relatively easy to service, as the loan would tend to be smaller, reflecting the generally lower value of an older ship.

11. Classification societies, by failing to operate uniform standards, and by pursuing commercial interests at the expense of rigorously enforcing requirements, share in the responsibility for unsafe ships. The ability of societies to undertake statutory surveys and certification work (including ISM) on behalf of "rogue" Flag States represents a clear conflict of interest, allowing substandard shipping to secure the official documentation that it requires to carry on trading.47

12. In view of the above, Port State control is one of the few means of policing ship safety, although this remains variable in its degree of application in respective regions. ISM certification, another option, currently applies only to some vessel types and, moreover, even Panship - the ship-manager of the "Erika" - held ISM status. In the tanker sector, charterers' inspection reports can also be used to indicate ship quality, but several oil companies had vetted the "Erika" in the two years before the ship was lost without adequately identifying major deficiencies.

13. Societies that disregard their responsibilities to shipping safety are not currently subject to liabilities that could act as an effective deterrent to such behaviour. These liabilities are determined by Flag States, some of which have a questionable attitude to maritime safety. Thus, it is hardly surprising that the European Commission has specifically noted how, even within IACS, consistent standards are not observed and hopes to remedy the situation.

14. Some Flag States disregard their responsibilities to the principle of safe shipping because these, too, are not sufficiently exposed to real liabilities. To some degree, they are able to offload the notional responsibility of enforcing standards by engaging classification societies to perform their ship certification duties. However, there is no guarantee that the societies to which these duties are entrusted are those with the greatest commitment to rigorous enforcement of international requirements.

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47 A spokesman for one cargo owner remarks that: *"Even a substandard vessel may 'fully comply' at least on paper; the reality is that a substandard ship can trade at a discount especially if certificates are 'bought' – a much cheaper option than perhaps doing required remedial work."*

15. Unless underwriters exercise careful risk assessment, owners of substandard ships will continue to find insurance cover for their vessels. By providing such insurance, underwriters effectively eliminate any financial risk that would otherwise be associated with these vessels.[48] In fact, compliance with some of the shipping industry's fundamental safety requirements, including the ISM Code itself, is not a precondition of cover being granted by some underwriters. Even if the ship is required to meet class requirements before insurance will be given, some insurers do not adequately differentiate between respective classification societies. This is despite the glaring differences that can exist between them.

16. The same lack of effective risk assessment applies, too, for P&I clubs. However, if effective "quality control" can be exercised over the clients with whom these insurance interests do business, market forces come into play: companies that avoid insuring bad risks would reap the reward of lower claims and be able to pass these benefits back in terms of lower premiums. Conversely, ship-owners and other parties that are identified as bad risks would have to insure with underwriters and P&I clubs that, due to their inferior casualty records, are obliged to charge higher rates.

17. To a degree, underwriters and P&I clubs can recover any losses that they incur as a result of claims lodged in response to accidents involving substandard ships. This can be achieved via a general increase in future premiums, even though in doing so the quality-conscious owner, charterer or cargo interest suffers as a consequence.

18. Based on the above, parties that shun the responsibility of ensuring compliance with international standards must be exposed to more meaningful liabilities than exist at present. This could be partly achieved by greater exchange of information about substandard ships.49 If this becomes more widely available, it will be harder for other parties to claim that any dealings they have with substandard ships are entirely inadvertent. For example, if it were shown that a charterer had knowingly fixed such a vessel, this could invalidate any claim he made for compensation if it were then involved in a casualty incident.

19. Attempts to confer greater liabilities on all relevant parties involved in the shipping industry need to be accompanied by inducements to reward good-quality vessels. This is largely at the discretion of port authorities, classification societies, marine underwriters and P&I clubs.

20. A further factor to consider is whether scope exists to impose effective financial penalties on organisations that continue to contravene the standards that have been devised to ensure ship safety and good practice. For such penalties to have any practical effect, however, the parties that incur them should not be permitted simply to add these to the list of risks against which they can already insure.

21. Although a bank can have a ship inspected and can check its class records prior to advancing mortgage funds, it is almost impossible for it subsequently to audit the vessel to see how it is being operated or crewed.

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48 At the Mare Forum meeting in Athens in September 2000, Dr Henk ten Hoopen of the Netherlands' Ministry of Transport observed that: "By accepting substandard vessels, insurance companies may in a way invite ship-owners to operate low quality vessels. The cargo owner is interested in obtaining the lowest freight rates. So, why not take a substandard ship, if there is no risk involved?"

49 Such as via the European Quality Shipping Information System ("EQUASIS"), an on-line database launched in Europe in May 2000, or OCIMF's Ship Inspection Report Exchange ("SIRE").

APPENDIX A

PRINCIPAL SHIPPING CASUALTIES 1990-99

Merchant Vessel Total Losses (All Ship Types) 1989-98

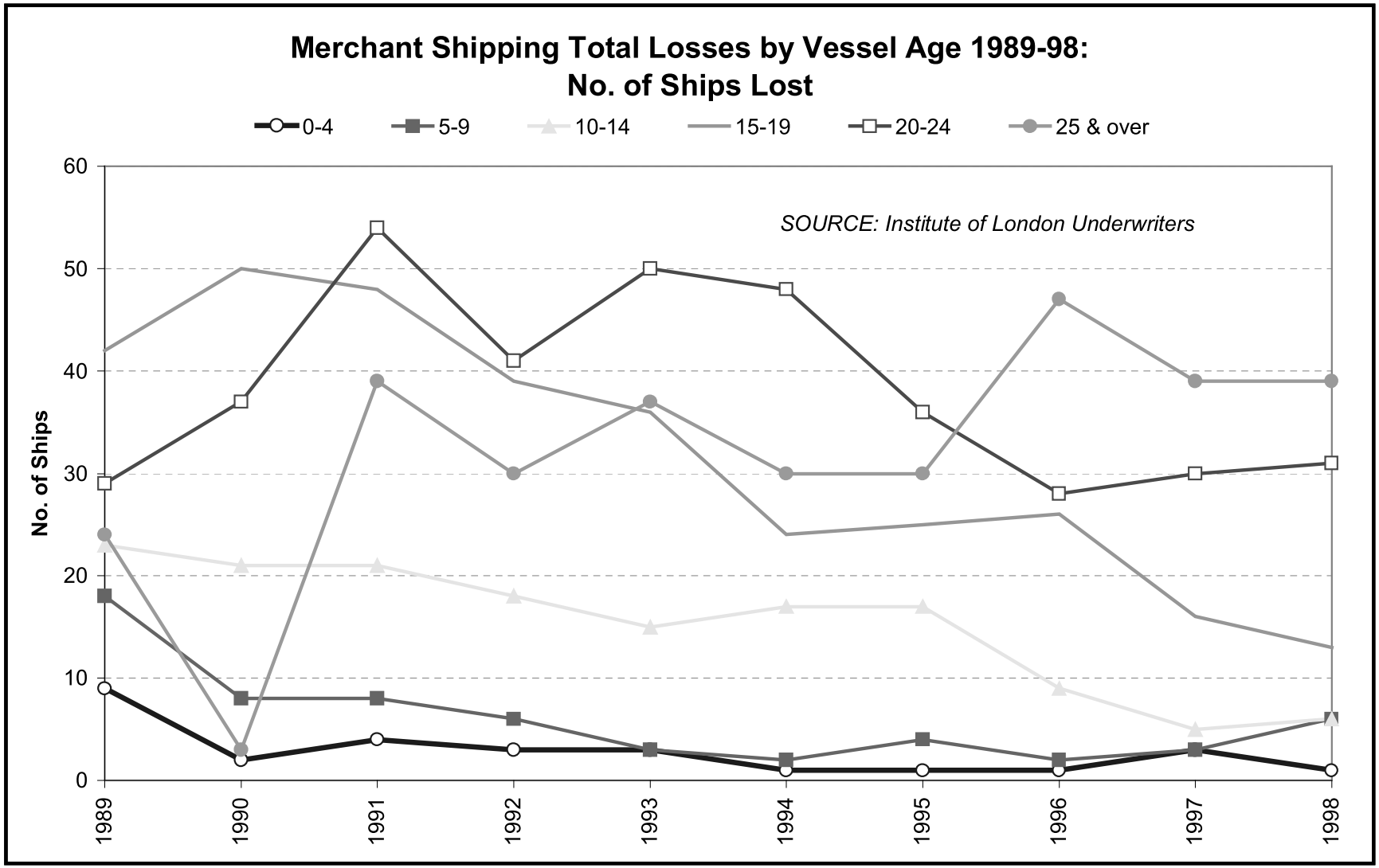
Vessel age (years):

	0-4		*5-9*		*10-14*		*15-19*		*20-24*		*25 & over*		GRAND TOTAL	
	No.	**000 GT**	**No.**	**000 GT**	**No.**	**000 GT**	**No.**	**000 GT**	**No.**	**000 GT**	**No.**	**000 GT**	**No.**	**000 GT**
1989	9	14	18	165	23	140	42	224	29	200	24	71	145	814
1990	2	21	8	72	21	237	50	706	37	260	3	100	121	1,396
1991	4	8	8	121	21	176	48	617	54	597	39	182	174	1,700
1992	3	56	6	14	18	105	39	477	41	371	30	112	137	1,136
1993	3	4	3	7	15	67	36	336	50	396	37	107	144	916
1994	1	1	2	2	17	106	24	466	48	651	30	195	122	1,421
1995	1	16	4	154	17	156	25	121	36	251	30	65	113	762
1996	1	17	2	3	9	30	26	238	28	212	47	201	113	701
1997	3	13	3	10	5	24	16	125	30	440	39	209	96	819
1998	1	19	6	34	6	64	13	33	31	225	39	173	96	547

Preliminary data for latest years.

Includes absolute total losses and constructive total losses.

Source: Institute of London Underwriters.


Merchant Shipping Total Losses by Vessel Age 1989-98:
No. of Ships Lost
0-4
5-9
10-14
15-19
20-24
25 & over
SOURCE: Institute of London Underwriters
No. of Ships
60
50
40
30
20
10
0
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998


Merchant Shipping Total Losses by Vessel Age 1989-98:
Gross Tonnage
0-4
5-9
10-14
15-19
20-24
25 & over
SOURCE: Institute of London Underwriters
Gross Tons
800
700
600
500
400
300
200
100
0
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998

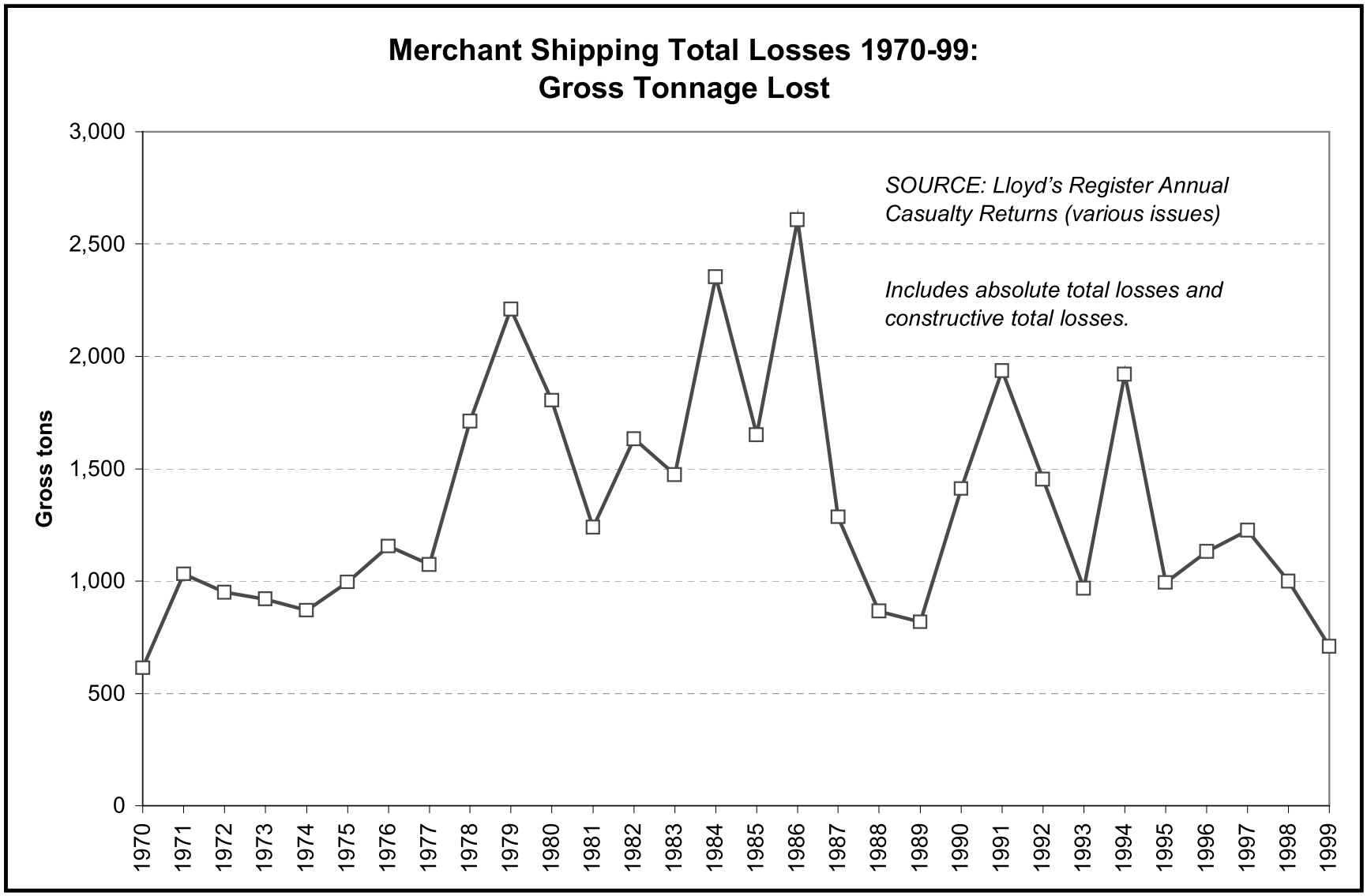
Merchant Vessel Total Losses by Ship Type 1970-99

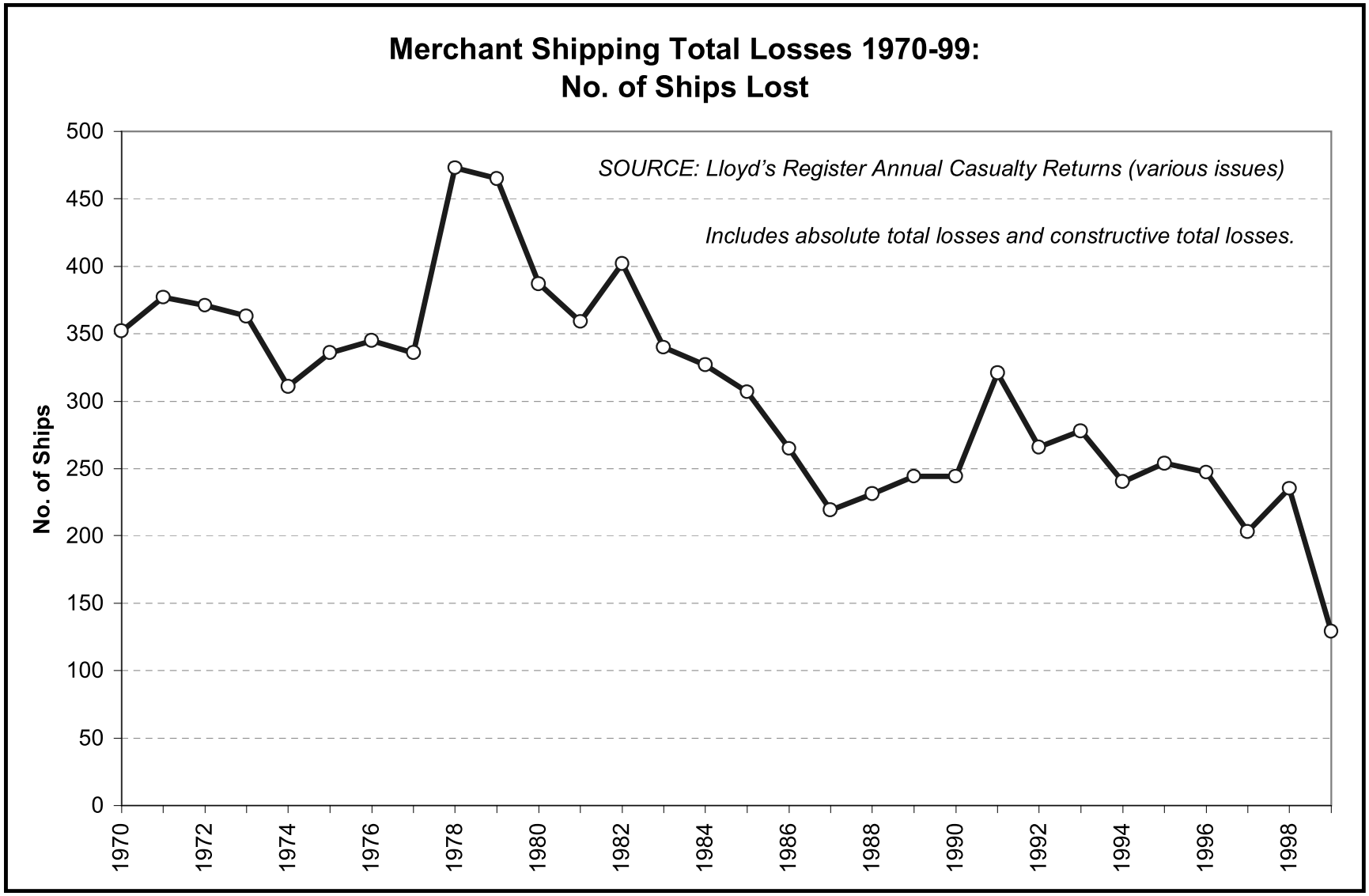
Ship/Cargo type:

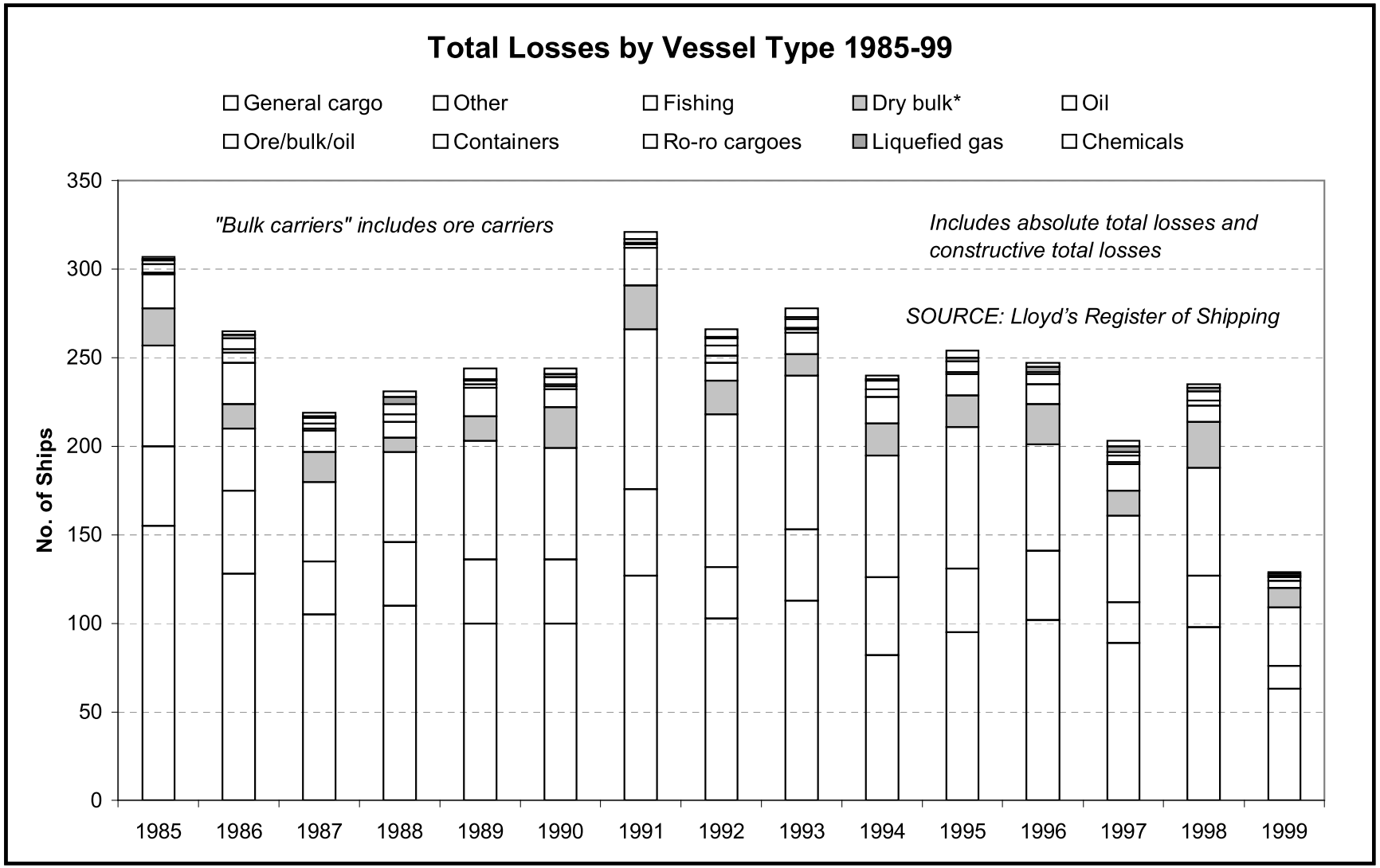
	Oil		Dry bulk*		Ore/bulk/oil		General cargo		Containers		Ro-ro cargoes		Liquefied gas		Chemicals		Fishing		Other		TOTALS	
	No.	**000 GT**	**No.**	**000 GT**	**No.**	**000 GT**	**No.**	**000 GT**	**No.**	**000 GT**	**No.**	**000 GT**	**No.**	**000 GT**	**No.**	**000 GT**	**No.**	**000 GT**	**No.**	**000 GT**	**No.**	**000 GT**
1970	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	352	613
1971	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	377	1,031
1972	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	371	949
1973	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	363	920
1974	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	311	870
1975	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	336	995
1976	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	345	1,156
1977	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	336	1,073
1978	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	473	1,711
1979	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	465	2,210
1980	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	387	1,804
1981	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	359	1,238
1982	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	402	1,632
1983	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	340	1,473
1984	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	327	2,354
1985	19	776	21	338	1	67	155	363	5	41	2	2	1	1	1	1	57	12	45	50	307	1,651
1986	23	1,385	14	249	6	509	128	341	2	15	6	15	2	4	2	1	35	9	47	81	265	2,609
1987	12	358	17	480	1	42	105	332	3	22	3	9	1	1	2	2	45	10	30	28	219	1,284
1988	9	328	8	133	0	0	110	227	4	26	6	84	4	3	3	1	51	12	36	51	231	865
1989	16	184	14	208	0	0	100	244	2	3	2	3	1	5	6	51	67	32	36	88	244	818
1990	10	158	23	172	2	165	100	253	1	1	4	26	2	5	3	35	63	26	36	571	244	1,412
1991	21	708	25	583	2	137	127	332	1	2	2	18	0	0	4	18	90	42	49	97	321	1,937
1992	10	364	19	341	4	284	103	299	6	44	4	14	1	1	4	23	86	37	29	46	266	1,453
1993	12	200	12	132	2	113	113	332	1	5	5	7	1	1	5	26	87	58	40	94	278	968
1994	15	628	18	409	4	307	82	256	0	0	5	47	1	6	2	7	69	82	44	178	240	1,920
1995	12	172	18	351	1	96	95	237	0	0	6	27	2	1	4	7	80	45	36	57	254	993
1996	11	164	23	399	0	0	102	315	6	94	1	1	3	14	2	6	60	42	39	96	247	1,131
1997	15	257	14	355	1	86	89	284	4	111	2	30	3	4	3	3	49	18	23	77	203	1,225
1998	9	60	26	366	0	0	98	393	3	34	5	57	2	8	2	8	61	23	29	50	235	999
1999	4	67	11	273	0	0	63	271	2	7	1	11	1	1	1	1	33	9	13	69	129	709
Totals, 1985-99 inclusive:																						
	198	5,809	263	4,789	24	1,806	1,570	4,479	40	405	54	351	25	55	44	190	933	457	532	1,633	3,683	19,974
% of total	5.4		7.1		0.7		42.6		1.1		1.5		0.7		1.2		25.3		14.4		100.0	

Includes absolute total losses and constructive total losses. ** "Dry bulk" includes ore carriers.* *NB: "Others" includes passenger vessels.*

Source: Lloyd's Register of Shipping "Casualty Returns"/"World Casualty Statistics"


Merchant Shipping Total Losses 1970-99:
Gross Tonnage Lost
Gross tons
3,000
2,500
2,000
1,500
1,000
500
0
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
SOURCE: Lloyd's Register Annual Casualty Returns (various issues)
Includes absolute total losses and constructive total losses.


Merchant Shipping Total Losses 1970-99:
No. of Ships Lost
SOURCE: Lloyd's Register Annual Casualty Returns (various issues)
Includes absolute total losses and constructive total losses.
No. of Ships
500
450
400
350
300
250
200
150
100
50
0
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998

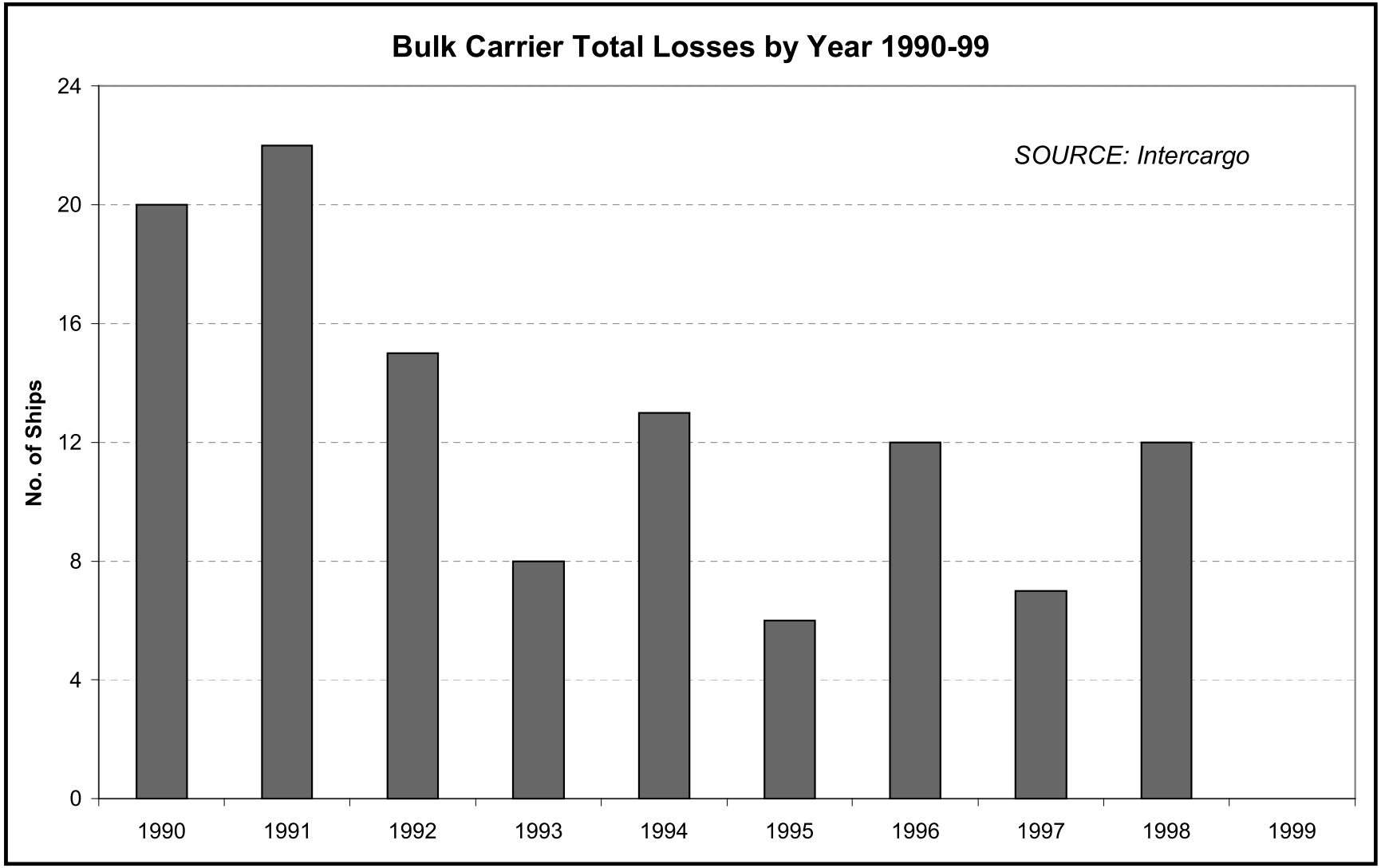

Total Losses by Vessel Type 1985-99
General cargo
Other
Fishing
Dry bulk*
Oil
Ore/bulk/oil
Containers
Ro-ro cargoes
Liquefied gas
Chemicals
"Bulk carriers" includes ore carriers
Includes absolute total losses and constructive total losses
SOURCE: Lloyd's Register of Shipping
No. of Ships
350
300
250
200
150
100
50
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999

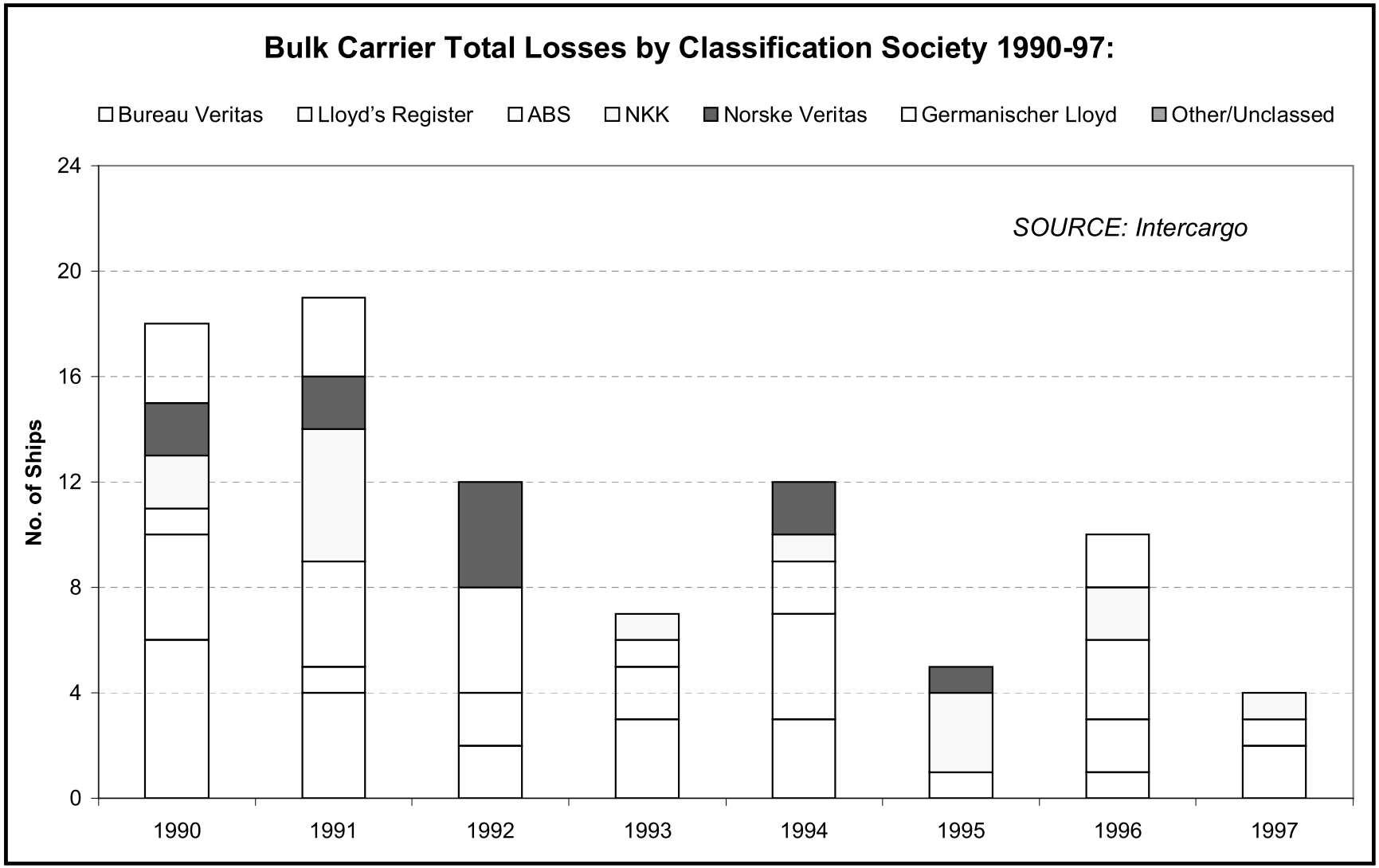
Bulk Carrier Total Losses by Classification Society 1990-97

	American Bureau of Shipping	Bureau Veritas	China Classification Society	Germanischer Lloyd	Hellenic Register of Shipping	Indian Register of Shipping	Korean Register of Shipping	Lloyd's Register of Shipping	Nippon Kaiji Kyokai	Norske Veritas	Registro Italiano Navale	Russian Register	Unclassed	Grand Total
1990	1	6	-	3	-	-	1	4	2	2	-	1	-	20
1991	4	4	-	3	1	-	1	1	5	2	1	-	-	22
1992	4	2	1	-	-	-	2	2	-	4	-	-	-	15
1993	1	3	-	-	-	-	1	2	1	-	-	-	-	8
1994	2	3	1	-	-	-	-	4	1	2	-	-	-	13
1995	-	-	-	-	-	-	-	1	3	1	-	1	-	6
1996	3	1	1	2	1	-	-	2	2	-	-	-	-	12
1997	1	-	-	-	-	1	-	2	1	-	1	-	1	7
1998	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	12
1999	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1990-97:	16	19	3	8	2	1	5	18	15	11	2	2	1	115

NB: 1998/99 data for losses by respective society have not yet been published.

Source: Intercargo, 1998.


Bulk Carrier Total Losses by Year 1990-99
SOURCE: Intercargo
No. of Ships
24
20
16
12
8
4
0
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999


Bulk Carrier Total Losses by Classification Society 1990-97:
Bureau Veritas
Lloyd's Register
ABS
NKK
Norske Veritas
Germanischer Lloyd
Other/Unclassed
SOURCE: Intercargo
No. of Ships
24
20
16
12
8
4
0
1990
1991
1992
1993
1994
1995
1996
1997

Merchant Vessel Total Losses by Ship Type 1989-98

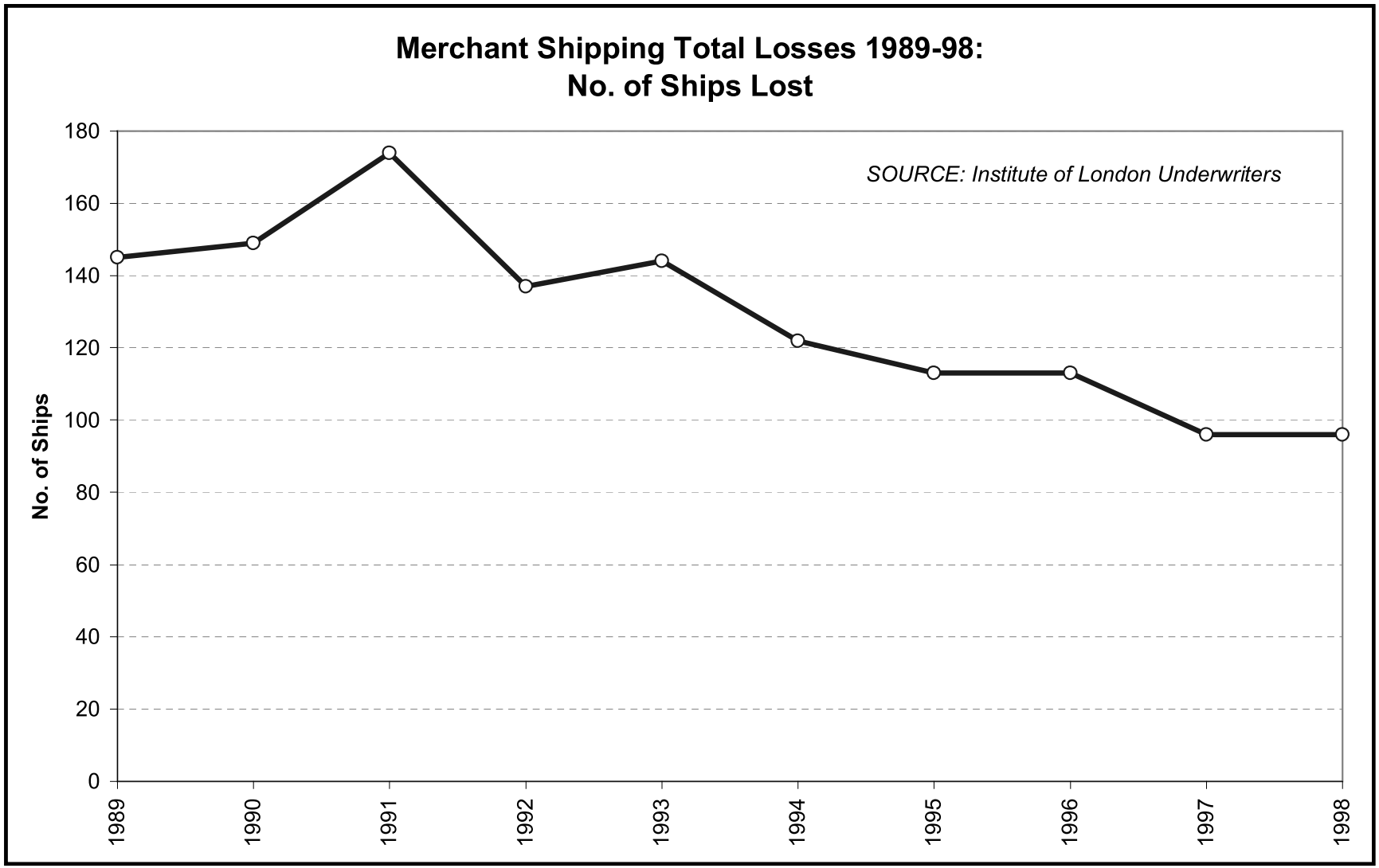
Ship/Cargo type:

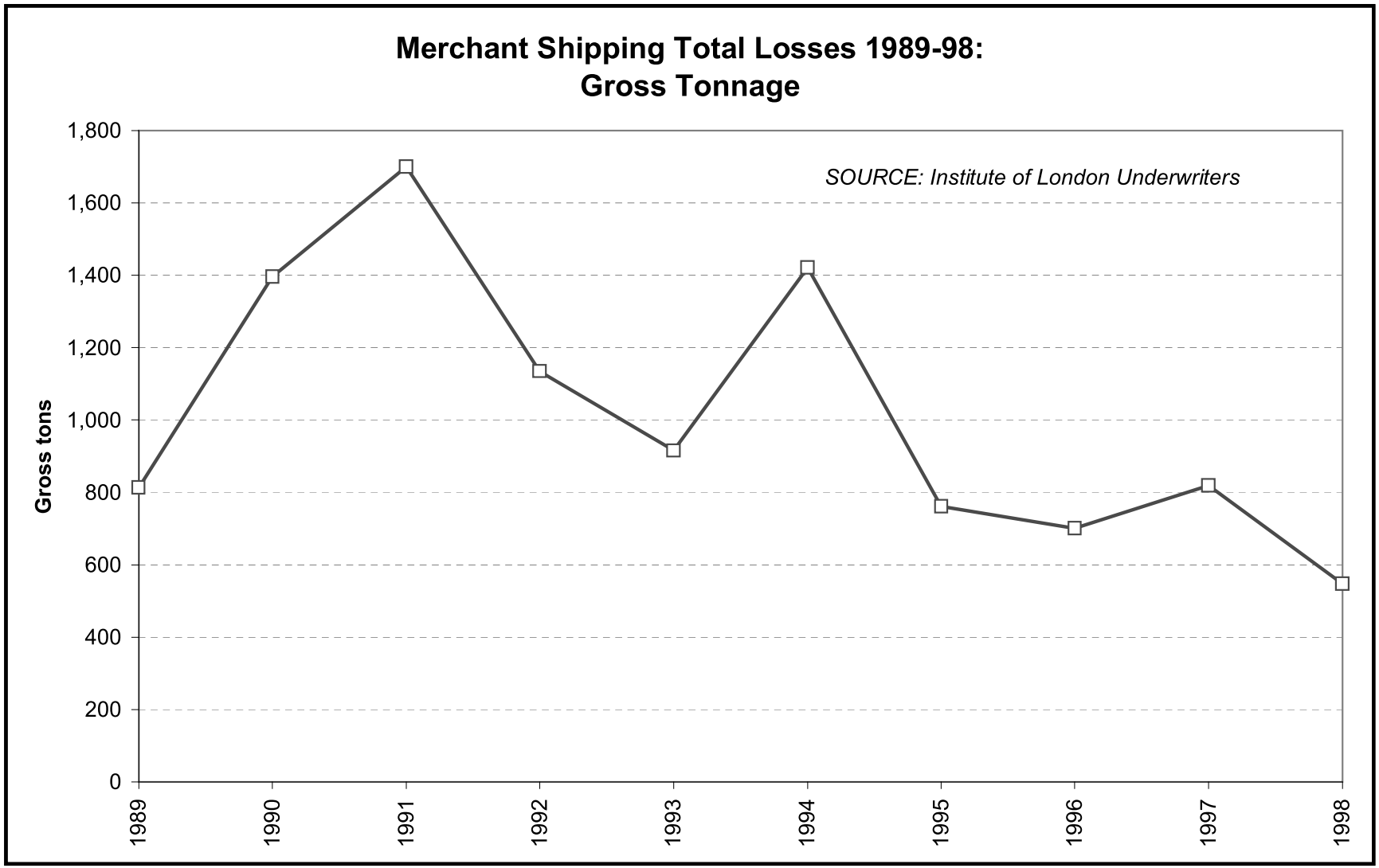
	Oil		Dry bulk + Combis		Other (cargo + non-cargo)		TOTALS	
	No.	**000 GT**	**No.**	**000 GT**	**No.**	**000 GT**	**No.**	**000 GT**
1989	13	115	18	336	114	363	145	814
1990	18	250	21	785	110	361	149	1,396
1991	16	507	26	699	132	494	174	1,700
1992	16	320	15	471	106	344	137	1,136
1993	17	269	10	266	117	381	144	916
1994	18	430	17	615	87	376	122	1,421
1995	9	190	6	261	98	311	113	762
1996	14	67	13	241	86	393	113	701
1997	16	336	7	144	73	339	96	819
1998	6	36	13	183	77	328	96	547

Preliminary data for latest years.

NB: 1999 data have not yet been published.

Source: Institute of London Underwriters.


Merchant Shipping Total Losses 1989-98:
No. of Ships Lost
SOURCE: Institute of London Underwriters
No. of Ships
180
160
140
120
100
80
60
40
20
0
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998


Merchant Shipping Total Losses 1989-98:
Gross Tonnage
SOURCE: Institute of London Underwriters
Gross tons
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998

Bulk Shipping Total Losses, 1988-2000 to Date

Date	Vessel Name	Dwt	Built	Age	Flag	Ship Type	Cause	Remarks
Dec-90	Elounda Day	38,350	1973	17	PAN	Bulk carrier	Sunk	Sank in heavy seas off Hawaii during laden voyage from west coast Canada, carrying potash.
Aug-90	Corazon	28,757	1972	18	MLT	Bulk carrier	Sunk	Sank off Cape Cod in Hurricane Bertha, while on cement-carrying coastal voyage.
Aug-90	Silimna	69,165	1978	12	LBR	Bulk carrier	Sunk	Sustained crack in hull, 5/90, and sank while in tow to Aden, laden with iron ore from India.
May-90	Tao Yuan Hai	126,579	1977	13	TWN	Bulk carrier	Sank	Sustained hull damage in heavy weather on voyage carrying iron ore from Port Kembla. Presumed sunk.
Mar-90	Alexandre P	94,351	1967	23	PAN	Bulk carrier	Sank	Sank on voyage from West Australia to Spain, while carrying iron ore.
Mar-90	Azalea	78,571	1969	21	KOR	Bulk carrier	Sank	Sank off Sweden while in tow after hull was holed on iron ore voyage from Norway to Germany.
Jan-90	Orient Pioneer	108,504	1971	19	LBR	Bulk carrier	Sank	Damaged in heavy weather carrying iron ore from Brazil to Taiwan. Sank in Indian Ocean.
Dec-89	Vulca	42,245	1968	22	CYP	Bulk carrier	Sank	Foundered in Pacific Ocean on laden voyage from New York to South Korea, carrying scrap iron.
Feb-90	Walter Leonhardt	42,805	1966	24	CYP	Bulk carrier	Sank	Sustained hull damage and sank in Atlantic, on voyage from Florida to Antwerp, carrying phosrock.
Jan-90	Charlie	29,246	1975	15	CYP	Bulk carrier	Sank	Presumed sunk in heavy seas in north Atlantic on voyage from EC Canada to Mozambique, carrying grain.
Feb-91	C. Eregli	16,635	1974	17	TUR	Bulk carrier	Sank	Sank off Yemen after collision with tanker "Mendana Spirit" while carrying Indian iron ore to Turkey.
Jan-91	Continental Lotus	54,202	1967	24	IND	Bulk carrier	Sank	Hull cracked in heavy weather off Malta and sank while carrying iron ore from India to Italy.
Jan-91	Demetra Beauty	11,972	1974	17	CYP	Bulk carrier	Sank	Explosion in engine room amid heavy seas in Gulf of Oman and sank, carrying tar from Germany to Iran.
Feb-91	Fairwind	25,505	1967	24	MLT	Bulk carrier	Sank	Sank in Red Sea after hitting submerged object while laden with Russian pig iron.
Sep-90	Gallant Dragon	123,126	1976	15	PAN	Bulk carrier	Sank	Struck submerged object off Tubarao in Brazil, after loading iron ore for Japan. Scuttled.
Jan-91	Protektor	80,184	1967	24	SGP	Bulk carrier	Sank	Missing, presumed sunk, in heavy weather off Newfoundland, carrying iron ore from Canada to Sweden.
Feb-91	Salvia	153,256	1970	21	KOR	Bulk carrier	Sank	Hull cracked on laden voyage carrying iron ore from Chile to South Korea. Sank in Pacific Ocean.
Feb-91	Sanko Harvest	33,022	1985	6	PAN	Bulk carrier	Sank	Stranded on reef on voyage from Florida to West Australia, carrying fertilisers. Broke in two & sank.
Oct-89	Pan Dynasty	36,650	1968	21		Bulk carrier	Sank	Received hull damage in heavy weather in Atlantic while carrying phosphate rock & later sank.
Oct-89	Porn Udom	16,504	1969	20		Bulk carrier	Sank	Sprang leak off Taiwan in Typhoon Angela and seemingly foundered.
May-89	Huron	16,895	1972	17		Bulk carrier	Sank	Foundered in heavy weather in Indian Ocean, carrying timber, steel & scrap from South Africa to Taiwan.
	Iran Fateh	16,894	1968	21		Bulk carrier	Sank	
Jan-89	Kronos	19,392	1973	16		Bulk carrier	Sank	Presumed sunk in heavy seas on laden voyage from Belgium to Greece while carrying steel products.
	Oltul	26,857	1967	22		Bulk carrier	Sank	
Apr-89	Sevasti	15,167	1971	18		Bulk carrier	Sank	Foundered off Namibia as cargo of timber shifted in heavy seas on voyage from West Africa.
Apr-89	Star of Alexandria	35,967	1966	23		Bulk carrier	Sank	Sank in heavy weather off US east coast while carrying cement from Piraeus to New York.
Jan-89	Kumanovo	39,674	1966	23		Bulk carrier	Sank	In collision with ship off Gibraltar while carrying coal from Philadelphia. Sank under tow.
Dec-88	Mega Taurus	30,413	1980	9		Bulk carrier	Sank	Believed to have sunk in rough seas on voyage from Taiwan to Japan carrying nickel ore.
Apr-91	Mineral Diamond	141,028	1982	9	HKG	Bulk carrier	Sank	Presumed sunk in Indian Ocean in Cyclone Fifi, carrying iron ore fines from W.Australia to Holland.
Jul-91	Manila Transporter	115,960	1976	15	PHL	Bulk carrier	Sank	Developed crack in hull while carrying iron ore from West Australia to UK. Sank in Indian Ocean.
Apr-91	Starfish	56,277	1970	21	PAN	Bulk carrier	Sank	Sustained crack in cargo hold on voyage from W. Australia to Poland, and sank off Mauritius.
Apr-91	Vasso	68,490	1967	24	BHS	Bulk carrier	Sank	Hull plating cracked on iron ore voyage from Saldhana Bay and sank off Durban.
Aug-91	Melete	72,063	1975	16	GRC	Bulk carrier	Sank	Hull cracked in heavy seas, carrying iron ore from West Australia to UK. Sank in Indian Ocean.
Oct-91	Erato	29,098	1968	23	MLT	Bulk carrier	Sank	Sank in heavy seas on laden voyage carrying phosphates from Israel to France.
Jul-91	Sunset	20,932	1970	21	CYP	Bulk carrier	Sank	Sank off Yemen as cargo shifted on voyage carrying steel products from Poland to Taiwan.
Nov-91	Sonata	79,681	1969	22	PAN	Bulk carrier	Sank	Flooded in heavy seas on voyage carrying iron ore pellets from Sweden to Germany. Sank under tow.
Nov-91	Hanjin Karachi	18,888	1973	18	KOR	Bulk carrier	Sank	Sank on ballast voyage as engine room flooded when ship hit submerged object off Philippines.
Dec-91	Entrust Faith	63,533	1973	18	GRC	Bulk carrier	Sank	Sustained heavy weather damage while carrying iron ore from Venezuela to Germany. Sank.
Jan-92	Arisan	135,748	1974	18	PAN	Bulk carrier	Sank	Engine failed on voyage from Narvik to Ymuiden carrying iron ore. Stranded off Sweden & broke in two.

Bulk Shipping Total Losses, 1988-2000 to Date

Date	Vessel Name	Dwt	Built	Age	Flag	Ship Type	Cause	Remarks
Apr-90	Frotanorte	25,231	1969	22	BRA	Bulk carrier	Sank	Stranded off Belem on Brazilian coastal voyage, carrying grain. Broke in two under tow and sank.
May-92	Great Eagle	65,230	1968	24	PAN	Bulk carrier	Sank	Hull cracked in heavy seas in Indian Ocean, on iron ore voyage from South Africa to China. Sank.
Mar-92	Karadeniz S	115,280	1969	23	TUR	Bulk carrier	Sank	Engine room flooded in heavy seas on iron ore voyage from Brazil to Spain. Broke in two & sank.
Oct-92	Daeyang Honey	123,744	1970	22	KOR	Bulk carrier	Sank	Presumed sank on iron ore voyage from Yampi Sound to Japan, in Typhoon Colleen.
	Korean Star	30,900	1984	4		Bulk carrier	Sank	Broke in two following damage sustained during Hurricane at Cape Cuvier, W.Australia.
	Singa Sea	26,586	1976	12		Bulk carrier	Sank	Broke in two and sank on laden voyage from W.Australia to Rotterdam carrying mineral sands/copper ore.
Nov-92	Pegasus	23,423	1972	20	PAN	Bulk carrier	Sank	Engine trouble off Taiwan, on Indonesia-S.Korea voyage, carrying wheat pellets. Broke in two & sank.
Mar-93	Gold Bond Conveyor	26,549	1974	19	LBR	Bulk carrier	Sank	Sank in heavy seas off east coast Canada on voyage from Halifax to Tampa, carrying gypsum.
Apr-93	Atlas	18,915	1977	16	PHL	Bulk carrier	Sank	Sank in S.China Sea after fire in engine room on voyage from Thailand to South Korea, carrying tapioca
May-93	Nagos	74,596	1969	24	MLT	Bulk carrier	Sank	Took water and sank in storm off South Africa on coal voyage from Richards Bay to Antwerp. Sank.
Sep-93	Anderson	12,051	1975	18	MLT	Bulk carrier	Sank	Sank off Hong Kong in Typhoon Becky, on voyage from Russia to Guangzhou, carrying iron.
Aug-91	Petchomphoo	17,214	1969	24	THA	Bulk carrier	Sank	Presumed foundered as No. 1 hold flooded on voyage from Nakhodka to Bangkok carrying steel.
Jun-92	Flying Falcon	41,300	1970	23	MLT	Bulk carrier	Sank	Wrecked. Stranded in heavy seas in Gulf of Aden on voyage from Bangkok to Ghent carrying animal feed.
Feb-94	Christinaki	26,510	1973	21	MLT	Bulk carrier	Sank	Sank in storm in North Atlantic, on laden voyage from UK to Vera Cruz, carrying scrap.
Jun-93	Protoklitos 4	121,820	1974	20	CYP	Bulk carrier	Sank	Scuttled off Brazil after grounding on laden voyage carrying iron ore to China.
Jun-94	Apollo Sea	131,260	1973	21	PAN	Bulk carrier	Sank	Sank 40 nm NW of Cape Town after loading iron ore at Saldanha Bay.
Jun-94	Kamari	127,283	1973	21	CYP	Bulk carrier	Sank	Sank off Brazil, following severe weather damage sustained on iron ore voyage Venezuela to China.
May-94	Jag Shanti	27,071	1972	22	IND	Bulk carrier	Sank	Sank after engine room flooded off New Mangalore in laden voyage from India to Turkey, carrying iron ore pellets.
	Iron Antonis	93,355	1968	26	CYP	Bulk carrier	Sank	Sank in S.Atlantic carrying iron ore from Brazil to PRC. Owner reported this was final voyage prior to scrapping.
	Colmena	28,620	1968	26	VCT	Bulk carrier	Sank	
	Lorenzo	45,499	1969	25	CYP	Bulk carrier	Sank	
	Ocean Lucky	27,447	1971	23	VCT	Bulk carrier	Sank	Broke in two off Taiwan
	Wellborn	26,450	1971	23	LBR	Bulk carrier	Sank	Broke in two off Madagascar. Oil spillage occurred
Nov-94	Golden Chariot	22,076	1972	22	PAN	Bulk carrier	Sank	Sank in South Atlantic, while carrying grain from US Gulf to Africa.
	Paris	25,957	1971	24	MLT	Bulk carrier	Sank	Struck breakwater and sank in storm at Constantza Roads. Unladen.
	You Xiu	26,600	1992	3	HKG	Bulk carrier	Sank	Struck breakwater and sank in storm at Constantza Roads. Unladen.
	Sun River II	11,784	1976	19	PAN	Bulk carrier	Sank	Sank off Japan in heavy weather
Jun-95	Mineral Dampier	170,968	1985	10	LBR	Bulk carrier	Sank	Sank in East China Sea after collision with Hanjin Madras, while carrying iron ore from Brazil to S.Korea.
Aug-95	Iron Baron	37,557	1985	10	AUS	Bulk carrier	Sank	Scuttled off Tasmanian coast after going aground.
Feb-96	Seafaith	68,275	1973	23	MLT	Bulk carrier	Sank	Sank in bad weather north of Taiwan. Eleven of the 30 crew rescued. Laden with 59,000t iron ore.
	Anna Spiratou	26,098	1978	18	CYP	Bulk carrier	Sank	Sank off S. Korea after collision with bulk carrier Polydefkis P.
Feb-96	Innovator	20,009	1973	23	VCT	Bulk carrier	Sank	Sank in 18 08 N 108 35.
Jun-96	Million Hope	26,847	1972	24	CYP	Bulk carrier	Sank	Grounded on coral reefs near Sharm el-Sheikh. Vessel ripped apart and lying partially submerged on reef.
Aug-96	Al Hadi	16,659	1968	28	VCT	Bulk carrier	Sank	Sank 5km off Mumbai Harbour, due to crack in shell plating.
Sep-96	Iolcos Victory	132,597	1980	16	CYP	Bulk carrier	Sank	Sank off S. Africa whilst laden with iron ore on voyage from Brazil-China
Feb-97	Leros Strength	21,673	1976	21	CYP	Bulk carrier	Sank	Sank 30 miles west of Stavanger, laden with apatite from Murmansk to Poland. 20 crew lost.
Mar-77	Albion Two	29,676	1976	21	CYP	Bulk carrier	Sank	Sank carrying steel products from Antwerp to Jamaica. Wreck found off Brittanny. 25 crew missing.
Sep-97	ICL Vikraman	55,879	1979	18	IND	Bulk carrier	Sank	Sank after collision in Malacca Strait with OBO "Mount I" while carrying steel to Singapore.
Oct-97	Black Sea T	10,157	1969	28	VCT	Bulk carrier	Sank	Sank off Hios (Aegean Sea). One crew member missing
Oct-97	Corriente	158,178	1989	8	HKG	Bulk carrier	Sank	Sank in typhoon having previously grounded at Okinotorishima, Japan. Crew rescued, Pollution.
Jan-96	Flare	29,222	1975	23	CYP	Bulk carrier	Sank	Stern sank in bad weather with the loss of 21 crew, four crew members rescued.
Feb-96	Fei Cui Hai	32,818	1973	25	CHN	Bulk carrier	Sank	Sank in abt 09 31 N 110 33 E, 31 crew lost, 3 rescued. Vessel on voyage New Mangalore-Nanjing
Apr-98	Chian Mariner	35,224	1974	24	LBR	Bulk carrier	Sank	Sank off Angola. Vessel on route from Takoradi for Jubail with a cargo of 25,500t of manganese ore.

Bulk Shipping Total Losses, 1988-2000 to Date

Date	Vessel Name	Dwt	Built	Age	Flag	Ship Type	Cause	Remarks
Jul-98	Osool	19,427	1974	24	BLZ	Bulk carrier	Sank	Sank 230 miles off Ratnagiri coast after water ingress into engine room and No1 hold. All crew rescued.
Jun-98	Golden Harvest	20,203	1975	23	VCT	Bulk carrier	Sank	Reported sunk, off Porbandar
Aug-98	Sea Prospect	21,297	1996	2	PAN	Bulk carrier	Sank	Capsized and sank in 24 29 N 130 37 E. 11 of the 21 crew rescued.
Aug-98	Asean Carrier	16,873	1969	29	PAN	Bulk carrier	Sank	Vessel abandoned in Arabian Sea due to listing after flooding in two cargo holds. Crew rescued. Presumed sunk.
Jan-99	Peace	64,912	1971	28	BLZ	Bulk carrier	Sank	Had Leakage through crack in hull and sank about 32 miles off Colombo. All crew safe.
Jul-99	Maritime Fidelity	25,406	1984	15	PAN	Bulk carrier	Sank	Sank after collision with m.t. New Venture off Horsburgh Light.
Aug-99	Meliksah	17,677	1977	22	TUR	Bulk carrier	Sank	Sank off southern coast of Sri Lanka, en route from China to Russia carrying fertiliser. 27 crew rescued.
Sep-99	Well Speeder	26,587	1976	23	VCT	Bulk carrier	Sank	Sank after water ingress into holds 1 & 2 in heavy weather.
Jan-00	J.Marion Sky	42,258	1991	9	SGP	Bulk carrier	Sank	Sankafter collision in the western Caribbean - Two missing
Dec-99	Xin Zhu Jiang	35,500	1976	23	CHN	Bulk carrier	Sank	Sank after water ingress into a cargo hold resulting in a list. Crew rescued - master missing.
Mar-00	Leader L	69,120	1977	23	PAN	Bulk carrier	Sank	Sank after collapse of No.4 hatch.
May-00	Evelyn	22,546	1979	21	MLT	Bulk carrier	Sank	Caught fire onBlack Sea-Malaysia voyage, laden with fertiliser. Later sank in the Gulf of Aden. All crew rescued.
Jun-00	Treasure	143,731	1983	17	PAN	Bulk carrier	Sank	No. 4 hatch flooded, taken in tow and later sank off Cape Town. All crew rescued.
Jun-00	Kastor Too	17,666	1977	23	CYP	Bulk carrier	Sank	Sank on voyage Aqaba-India.
Sep-00	Eurobulker X	35,264	1974	26	KHM	Bulk carrier	Sank	Broke in two while loading cement in vicinity of Lefkanti. Sank two days later.
Sep-00	Madona	33,037	1982	18	LBR	Bulk carrier	Sank	Took on water in cargo hold, reported sunk.
Jul-90	Petingo	80,580	1967	23	VUT	Bulk carrier	Sank	Sank off Saldhana Bay after sustaining heavy weather damage while carrying iron ore.
Aug-90	Pasithea	155,407	1971	19	GRC	Combined carrier	Sank	Sank off Japan in Typhoon Vernon while carrying West Australian iron ore to Wakayama.
Sep-90	Algarrobo	169,623	1971	19	LBR	Combined carrier	Sank	Missing, presumed sunk, on voyage from Chile to Japan, carrying iron ore.
Dec-92	Aegean Sea	114,036	1973	19	GRC	Combined carrier	Sank	Ran aground in heavy seas off Cadiz, carrying Norwegian crude to Spain,. Broke in two and sank.
Jan-94	Marika	169,140	1973	21	LBR	Combined carrier	Sank	Sank in storm in North Atlantic on laden voyage, carrying iron ore, from Canada to Netherlands.
Nov-94	Trade Daring	145,053	1972	22	CYP	Combined carrier	Sank	Vessel's back broken whilst loading iron ore at Ponta de Madeira.
Jun-91	ABT Summer	267,801	1974	17	LBR	Tanker	Sank	Explosion & fire 500 miles off Angola, carrying crude oil from Kharg Island to Rotterdam. Sank.
	Ain Zalah	36,330	1972	19	IRQ	Tanker	Sank	Sank off Mina Abdullah, Kuwait during Gulf war, 1q91. Unladen.
	Al Fao	89,188	1969	22		Tanker	Sank	Gulf war casualty, 1q91.
	Amuriyah	155,211	1977	14		Tanker	Sank	Sank at Mina al Bakr, Iraq, during Gulf war, 1q91. Apparently unladen.
Apr-91	Haven	232,163	1973	18	CYP	Tanker	Sank	Sank off Genoa after explosion and fire aboard, while laden with crude oil.
Jul-91	Blue River	16,800	1973	18	CYP	Tanker	Sank	Capsized, broke in two and sank in Typhoon Amy, carrying molasses from Thailand to Taiwan.
Dec-90	Bow Reidun	31,501	1975	15	NOR	Chemical tanker	Sank	Sank off Taiwan after explosion during laden voyage from Japan to Singapore, carrying chemicals.
Sep-90	Caribica	31,185	1975	15	PAN	Tanker	Sank	Sank off Malaysia after explosion during ballast voyage from Singapore.
Jan-90	Raad Al Bakry VIII	21,032	1960	30	SAU	Tanker	Sank	Experienced explosion and fire off Port Sudan, on ballast voyage from Jeddah. Broke in two and sank.
Nov-91	Svangen	17,610	1968	23	PAN	Tanker	Sank	Sank on ballast voyage from Caen to Piraeus after developing leak in engine room.
	Alina P	53,003	1965	26		Tanker	Sank	Experienced explosion off Brazil during laden coastal voyage. Broke in two.
Apr-92	Katina P	69,992	1966	26	MLT	Tanker	Sank	Damaged in heavy weather off Mozambique on laden voyage from Fujairah. Broke in two & sank under tow.
	Mabrouk	63,132	1965	27		Tanker	Sank	
Mar-89	Maasgusar	38,679	1984	5		Chemical tanker	Sank	Sank off Japan after explosion in engine room, while carrying chemicals.
Feb-89	Maassluis	37,440	1982	7		Tanker	Sank	Struck breakwater and sank in heavy weather at Skikda, while in ballast condition.
Jan-89	Sagheera	36,380	1961	28		Tanker	Sank	Sank after striking mine in Strait of Hormuz, while in ballast condition.
Apr-88	Athenian Venture	30,526	1975	13		Tanker	Sank	Vessel exploded and broke in two off Nova Scotia while carrying gasoline from Amsterdam to New York.
Nov-88	Oriental Phoenix	138,392	1971	17		Tanker	Sank	Broke in two amid heavy seas in north Atlantic on crude oil voyage from UK North Sea to Canada.
Jan-93	Braer	89,730	1975	18	LBR	Tanker	Sank	Engine failed off Shetland Is. in heavy seas, on Norway-Canada crude voyage. Stranded & broke in two.
	Run	11,660	1955	34		Tanker	Sank	
Sep-93	Altair	20,848	1982	11	PAN	Tanker	Sank	Broke in two and sank off Malaysia following explosion during tank cleaning.
Aug-92	Borburata	30,500	1981	12	VEN	Tanker	Sank	Wrecked. Fire in pump room & engine room on ballast voyage from Curacao to Punta Cardon.

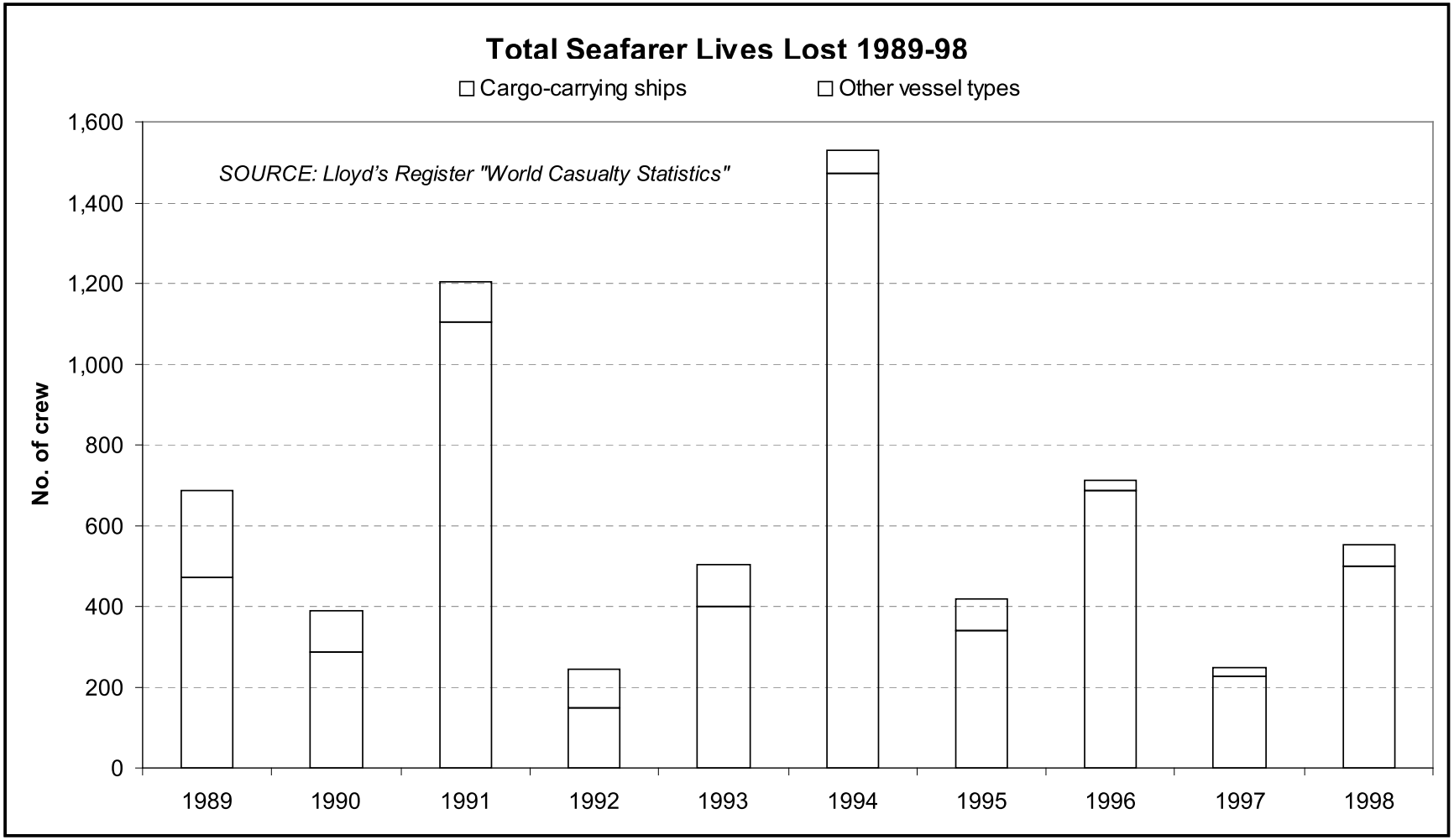
Bulk Shipping Total Losses, 1988-2000 to Date

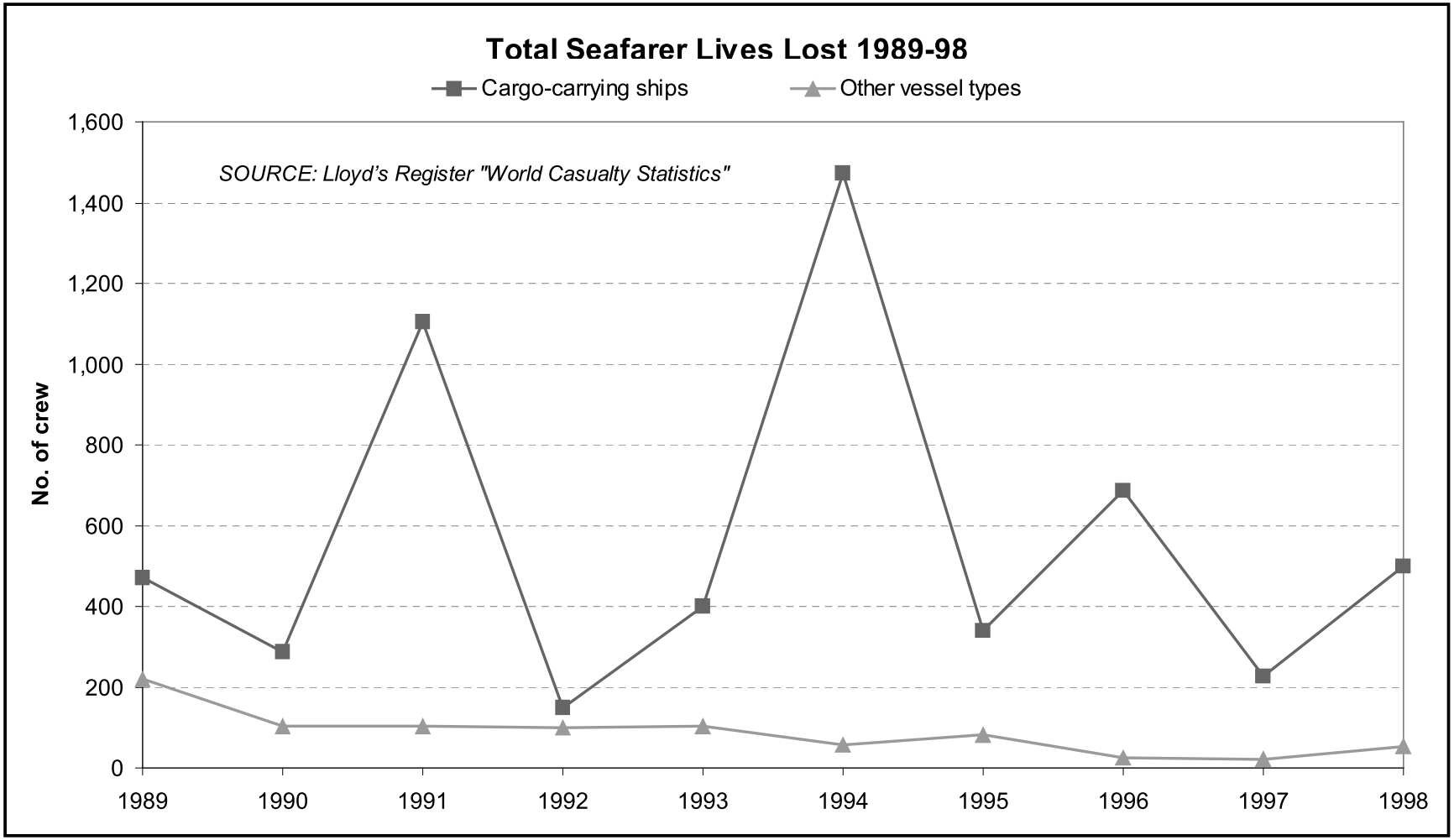
Date	Vessel Name	Dwt	Built	Age	Flag	Ship Type	Cause	Remarks
Jan-94	Cosmas A	27,643	1974	20	MLT	Tanker	Sank	Sank in South China Sea after explosion during laden crude oil voyage from Dumai to Shanghai.
Feb-94	Albinoni	16,900	1976	18	BHS	Tanker	Sank	Broke in two after explosion during ballast voyage from Dominican Republic to Venezuela,.
Sep-94	Burak M	132,250	1976	18	TUR	Tanker	Sank	Sank off Sierra Leone on ballast voyage from Turkey to West Africa.
Oct-94	Thanassis A	38,263	1976	18	MLT	Tanker	Sank	Broke in two and sank in heavy weather in South China Sea on laden voyage from Nakhodka to Singapore.
Dec-95	Sea 1	275,782	1990	5	CYP	Tanker	Sank	Grounded off southern coast of South Korea. Declared total loss. Later sank under tow to Subic Bay.
	Nakhodka	20,471	1970	27	RUS	Tanker	Sank	Stern sank after vessel broke in two 110 km north east of Oki Islands in the Sea of Japan
Dec-99	Erika	37,283	1975	24	MLT	Tanker	Sank	Broke in two in Bay of Biscay and sank.

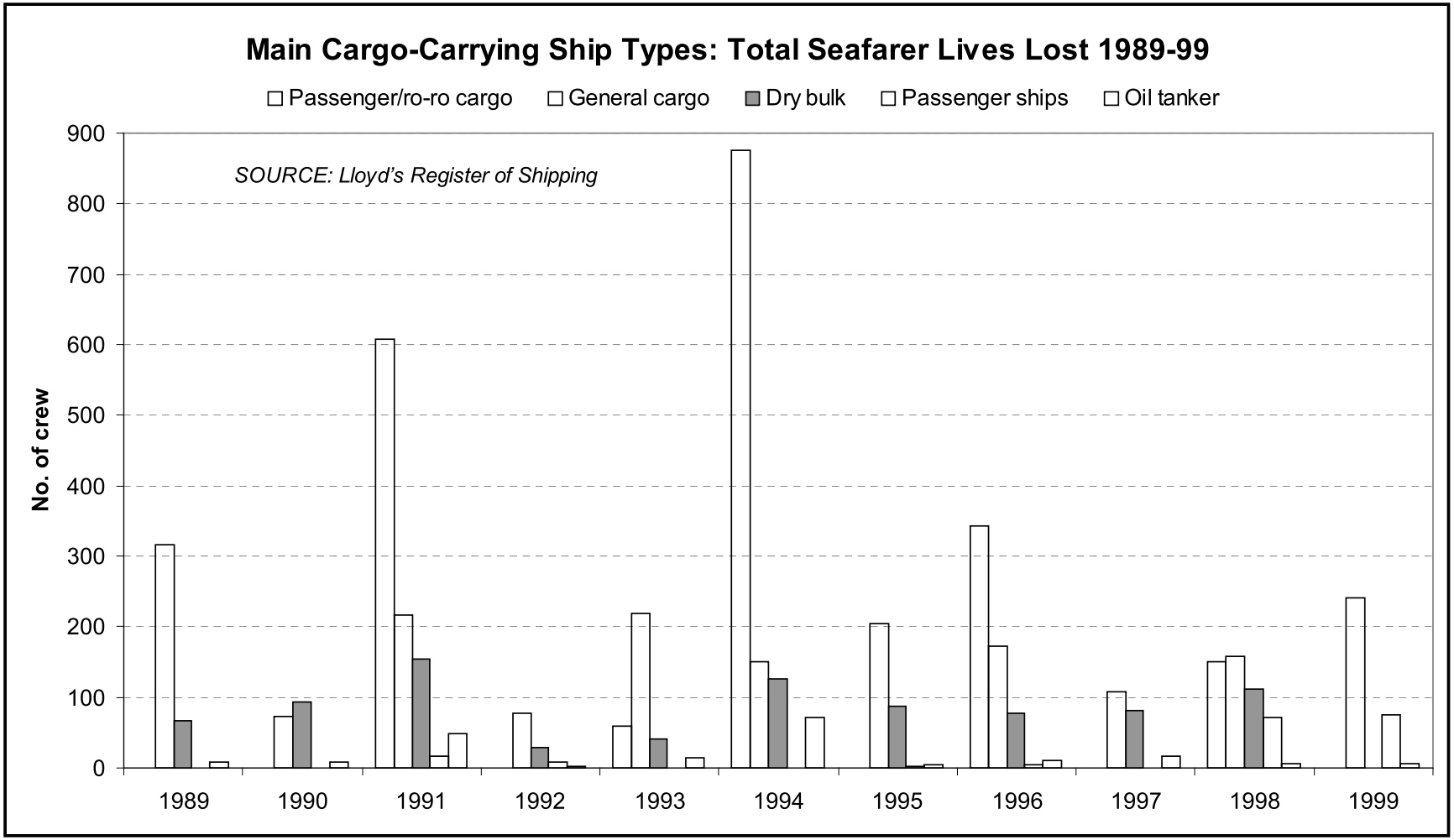
APPENDIX B

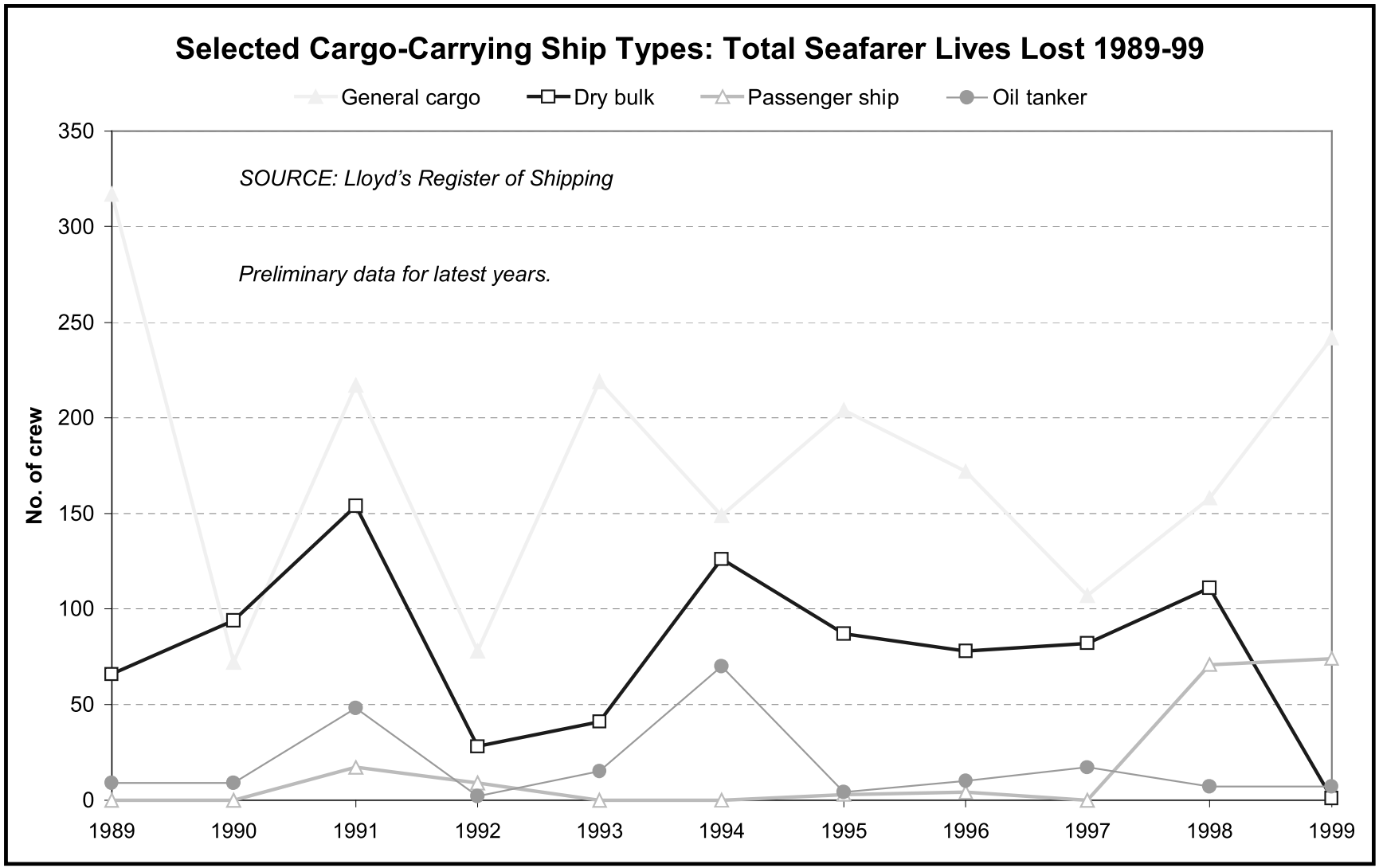
LOSS OF SEAFARER LIVES 1989-99

Cargo-carrying ships: total seafarer lives lost 1989-99											
	Oil tankers	Dry bulk carriers	General cargo ships	Passenger/ general cargo ships	Roll-on, roll-off cargo ships	Passenger/ ro-ro cargo ships	Passenger ships	Other cargo-carrying ships	Total cargo-carrying ships	Other vessel types	Total lives lost
1989	9	66	317	-	-	1	-	77	470	218	688
1990	9	94	72	13	15	-	-	85	288	101	389
1991	48	154	217	39	-	608	17	20	1,103	101	1,204
1992	2	28	78	-	-	1	9	30	148	98	246
1993	15	41	219	-	5	58	-	63	401	103	504
1994	70	126	149	145	51	876	-	57	1,474	55	1,529
1995	4	87	204	2	28	-	3	11	339	80	419
1996	10	78	172	-	1	342	4	78	685	25	710
1997	17	82	107	2	2	-	-	15	225	23	248
1998	7	111	158	-	2	150	71	1	500	52	552
1999	7	1	242	-	-	-	74	5	329	74	403
Total	198	868	1,935	201	104	2,036	178	442	5,962	930	6,892
% of total:	*2.9*	*12.6*	*28.1*	*2.9*	*1.5*	*29.5*	*2.6*	*6.4*	*86.5*	*13.5*	*100.0*
	Preliminary data for latest years.										
	Source: Lloyd's Register of Shipping "World Casualty Statistics."										


Total Seafarer Lives Lost 1989-98
Cargo-carrying ships
Other vessel types
SOURCE: Lloyd's Register "World Casualty Statistics"
No. of crew
1,600
1,400
1,200
1,000
800
600
400
200
0
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998


Total Seafarer Lives Lost 1989-98
Cargo-carrying ships
Other vessel types
SOURCE: Lloyd's Register "World Casualty Statistics"
No. of crew
1,600
1,400
1,200
1,000
800
600
400
200
0
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998


Main Cargo-Carrying Ship Types: Total Seafarer Lives Lost 1989-99
Passenger/ro-ro cargo
General cargo
Dry bulk
Passenger ships
Oil tanker
SOURCE: Lloyd's Register of Shipping
No. of crew
900
800
700
600
500
400
300
200
100
0
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999


Selected Cargo-Carrying Ship Types: Total Seafarer Lives Lost 1989-99
General cargo
Dry bulk
Passenger ship
Oil tanker
SOURCE: Lloyd's Register of Shipping
Preliminary data for latest years.
No. of crew
350
300
250
200
150
100
50
0
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999

APPENDIX C

LARGE OIL SPILLS 1967-99

Major Oil Spill Incidents, 1967-2000									
Spill Date:	Vessel Name	Dwt	Vessel Flag	Year of Build	Ship Age	Spill ('000 tonnes)	Cargo Type	Location of Spill	Cause of Spill
07/79	Atlantic Empress	292,666	Gr	1974	5	287	Crude	West Indies, off Tobago	Collision
06/91	ABT Summer	267,802	Li	1974	17	260	Crude	Off St Helena Island, 700 miles off Angola	Explosion
08/83	Castillo de Bellver	271,540	Sp	1978	5	252	Crude	South Africa, off Saldhana Bay	Fire/explosion
03/78	Amoco Cadiz	237,439	Li	1974	4	223	Crude	France, off Brittany	Structural/mechanical failure
04/91	Haven	232,163	Cy	1973	18	144	Crude	Italy, Genoa	Explosion
11/88	Odyssey	140,612	Li	1971	17	132	Crude	Canada, off Nova Scotia	Fire/explosion
12/72	Sea Star	120,300	Ko	1968	4	123	Crude	Gulf of Oman	Collision
03/67	Torrey Canyon	118,285	Li	1959	8	119	Crude	UK, off Isles of Scilly	Grounding
05/76	Urquiola	111,125	Sp	1973	3	100	Crude	Spain, Corunna	Grounding
02/77	Hawaiian Patriot	101,038	Li	1965	12	95	Crude	Off Hawaiian Islands	Structural/mechanical failure
11/79	Independenta	147,631	Rm	1978	1	95	Crude	Turkey, Bosporus	Collision
01/75	Jakob Maersk	88,000	Da	1966	9	88	Crude	Portugal, Oporto	Grounding
01/93	Braer	89,730	Li	1975	18	85	Crude	UK, Shetland Islands	Grounding
02/80	Irenes Serenade	99,688	Gr	1965	15	82	Crude	Greece, Navarino Bay	Fire/explosion
04/91	AGIP Abruzzo	149,599	It	1977	14	80	Naphtha	Italy, Livorno	Collision
12/89	Khark V	284,632	Ir	1975	14	80	Crude	Morocco, Atlantic	Fire/explosion
12/92	Aegean Sea (OBO)	114,035	Gr	1973	19	74	Crude	Spain, Corunna	Grounding
04/92	Katina P.	69,998	Ma	1966	26	72	Crude	Mozambique, off Maputo	Structural/mechanical failure
02/96	Sea Empress	147,273	Li	1993	3	72	Crude	UK, off Milford Haven	Grounding
08/85	Nova	239,435	Li	1975	10	70	Crude	Iran, off Kharg Is.	Collision
05/75	Epic Colocotronis *	64,000	Gr	1965	10	58	Crude	West Indies	Grounding
01/83	Assimi	59,032	Gr	1964	19	53	Crude	Oman, off Muscat	Fire/explosion
08/74	Metula	210,035	NA	1968	16	50	Crude	Chile, Magellan Strait	Grounding
01/78	Andros Patria	218,665	Gr	1970	8	48	Crude	Spain, north coast	Fire/explosion
06/68	World Glory	45,000	Li	1954	14	46	Crude	South Africa	Structural/mechanical failure
01/75	British Ambassador	44,929	Br	1958	17	46	Crude	Japan, off Iwojima	Structural/mechanical failure
12/83	Pericles G.C. (OBO)	59,096	Gr	1967	16	44	Crude	Qatar	Fire/explosion
11/74	Yuyo Maru No 10	52,836	Ja	1966	8	42	Naphtha	Japan	Collision
11/79	Burmah Agate	61,674	Li	1963	16	41	Crude	US Gulf	Collision
02/68	Mandoil II	45,000	Li	1958	10	41	Crude	US, west coast	Collision
02/71	Wafra	49,762	Li	1956	15	40	Crude	South Africa, off Cape Agulhas	Grounding
12/80	Juan Antonio Lavalleja	131,663	Ur	1975	5	38	LPG residue	Algeria	Grounding
03/89	Exxon Valdez	214,861	Am	1986	3	37	Crude	US, Alaska, Prince William Sound	Grounding
12/73	Napier	38,561	Li	1957	16	37	Crude	Chile	Grounding
10/94	Thenassis A.	38,263	Ma	1976	18	37	Product	South China Sea, off Philippines	Structural/mechanical failure
01/75	Corinthos	56,882	Li	1963	12	36	Crude	US, Delaware River	Collision
11/72	Trader	35,000	Cy	1957	15	36	Fuel oil	Greece	Structural/mechanical failure
02/76	St Peter	34,730	Li	1957	19	33	Crude	Ecuador	Fire/explosion
04/79	Gino (OBO)	48,760	Li	1969	10	32	Carbon black	France, Atlantic	Collision
01/72	Golden Drake	30,004	Li	1950	22	32	Crude	Bermuda	Fire/explosion
08/79	Ionnis Angelicoussis	68,106	Gr	1964	15	32	Crude	Angola, Malongo	Fire/explosion

Major Oil Spill Incidents, 1967-2000									
Spill Date:	**Vessel Name**	**Dwt**	**Vessel Flag**	**Year of Build**	**Ship Age**	**Spill ('000 tonnes)**	**Cargo Type**	**Location of Spill**	**Cause of Spill**
12/70	Chryssi	29,653	Pa	1953	17	** 32	Crude	Bermuda	Structural/mechanical failure
01/77	Irenes Challenge	24,884	Li	1956	21	31	Crude	Pacific Ocean	Structural/mechanical failure
11/69	Pacocean	30,016	Li	1949	20	31	Crude	N.W. Pacific Ocean	Structural/mechanical failure
02/76	Scorpio	42,000	Gr	1957	19	31	Crude	Mexico, east coast	Grounding
04/76	Ellen Conway	47,566	Li	1961	15	31	Crude	Algeria	Grounding
05/77	Caribbean Sea	30,661	Pa	1958	19	30	Crude	East Pacific Ocean	Structural/mechanical failure
03/71	Texaco Oklahoma	35,072	Am	1958	13	29	Fuel oil	US, east coast	Structural/mechanical failure
12/76	Argo Merchant	28,691	Li	1953	23	28	Fuel oil	US, east coast	Grounding
07/76	Cretan Star	30,372	Cy	1955	21	27	Crude	India, west coast	Unknown
12/76	Grand Zenith	29,930	Pa	1953	23	26	Fuel oil	Off South Africa	Structural/mechanical failure
04/88	Athenian Venture	31,016	Cy	1975	13	26	Gasoline	Canada, Newfoundland	Fire/explosion
12/77	Venoil	330,954	Li	1973	4	26	Crude	Off South Africa	Collision
	Pegasus	37,173	Gr	1981		** 25	Clean product	US, east coast	Unknown
12/89	Aragon	238,959	Sp	1975	14	24	Crude	Madeira	Structural/mechanical failure
03/68	Ocean Eagle	18,824	Li	1953	15	21	Crude	Puerto Rico	Grounding
12/99	Erika	37,283	Ma	1975	24	14	Heavy diesel	Bay of Biscay, off coast of Brittany	Structural failure
	** Ore/oil carrier*								
	Sources: ITOPF, Lloyd's of London Press Ltd, SSY								

Annual Oil Spill Volumes, 1970-1999

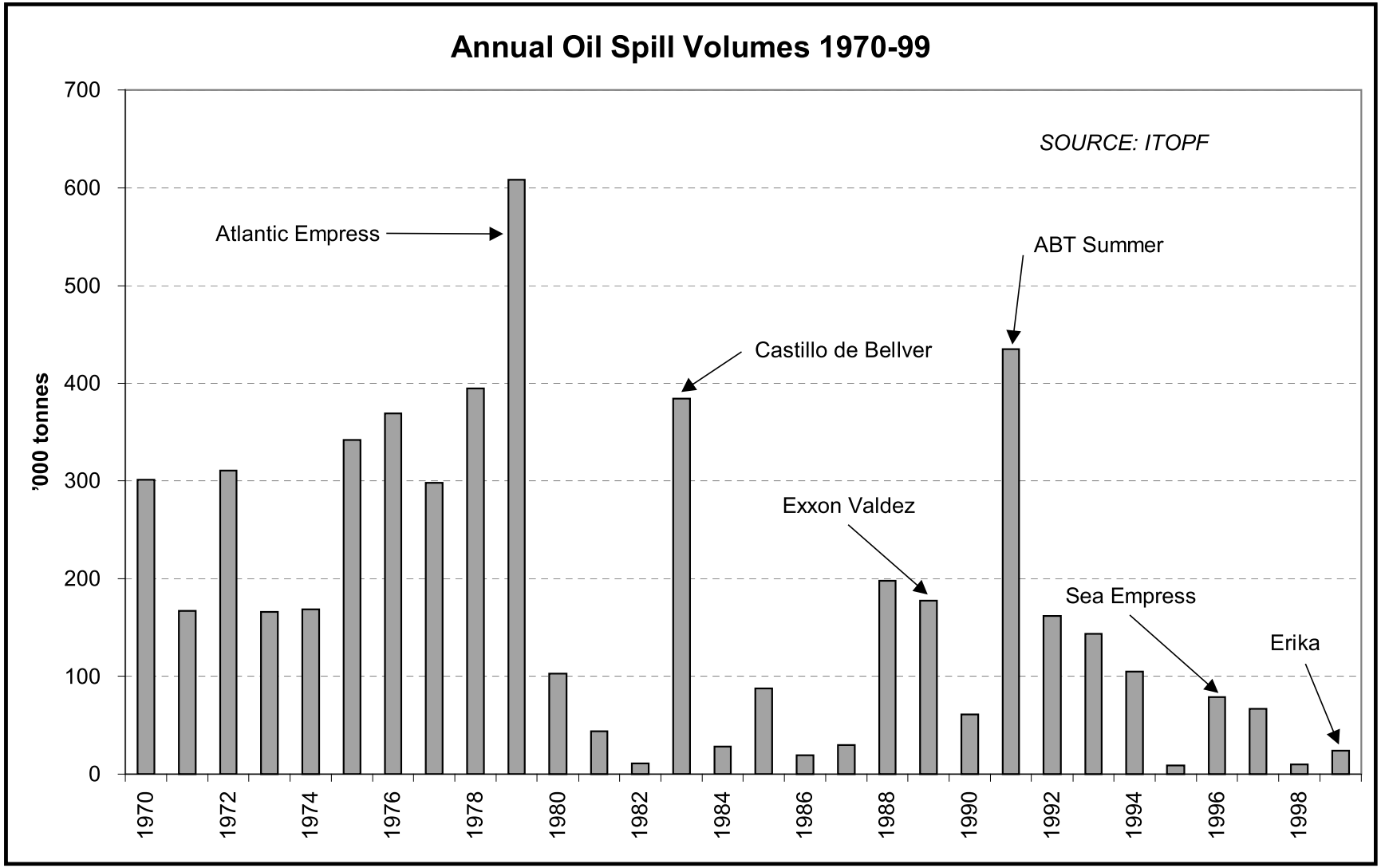
	Quantity ('000 tonnes)
1970	301
1971	167
1972	311
1973	166
1974	169
1975	342
1976	369
1977	298
1978	395
1979	608
1980	103
1981	44
1982	11
1983	384
1984	28
1985	88
1986	19
1987	30
1988	198
1989	178
1990	61
1991	435
1992	162
1993	144
1994	105
1995	9
1996	79
1997	67
1998	10
1999	24

SOURCE: ITOPF.

Number & Volume of Oil Spills p.a., 1970-1999

	No of Spills (7-700 tonnes)	No of Spills (>700 tonnes)	Total Spills (>7 tonnes)	Quantity ('000 tonnes)
1970	6	29	35	301
1971	18	14	32	167
1972	49	24	73	311
1973	25	32	57	166
1974	91	26	117	169
1975	97	19	116	342
1976	67	25	92	369
1977	65	16	81	298
1978	54	23	77	395
1979	59	34	93	608
1980	51	13	64	103
1981	49	6	55	44
1982	44	3	47	11
1983	52	11	63	384
1984	25	8	33	28
1985	29	8	37	88
1986	25	7	32	19
1987	27	10	37	30
1988	11	10	21	198
1989	32	13	45	178
1990	50	13	63	61
1991	27	8	35	435
1992	31	9	40	162
1993	30	11	41	144
1994	27	7	34	105
1995	21	2	23	9
1996	20	3	23	79
1997	27	10	37	67
1998	22	4	26	10
1999	19	5	24	24

Source: ITOPF.


Annual Oil Spill Volumes 1970-99
SOURCE: ITOPF
'000 tonnes
700
600
500
400
300
200
100
0
Atlantic Empress
Castillo de Bellver
Exxon Valdez
ABT Summer
Sea Empress
Erika
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998

APPENDIX D

"ERIKA" OIL SPILL: IMPACT ON TANKER AND SALE & PURCHASE MARKETS

APPENDIX D

"Erika" Oil Spill: Impact on Tanker and Sale & Purchase Markets

The main commercial consequences of the "Erika" oil spill have so far been:

1. A dramatic rise in freight rates, resulting partly from a surge in chartering demand for modern, and particularly double-hulled, tankers.[50] In the period 1990-99 inclusive, period charter earnings for modern VLCCs had averaged US$26,900/day. This fell well below the earnings required to support the costs of an investment in newbuilding tonnage. For example, we estimate current break-even levels (including an 8% IRR) for a VLCC newbuilding to be US$32,500[51]. By comparison, in October 2000, these ships were commanding around US$45,000/day in the period market and up to US$80-90,000/day on some spot trades. Large proportional increases have also emerged in the earnings of Suezmax and Aframax tonnage. Moreover, based on present market fundamentals and barring any major disruption to international oil supplies, *vessel earnings for all sizes of oil tanker appear poised for further gains in 2001. The duration of this tanker freight "boom" rests heavily on the speed at which the existing single-hulled fleet is phased-out. Clearly, elimination of sub-standard tanker shipping implies higher transportation costs for charterers.*

2. The development of a significant differential between worldscale rates for "modern" vessels (ships of less than 15 years old) and older tonnage. At the end of 1999, there had been no discernible difference in the rates paid for these respective age groups.[52] This is illustrated by the accompanying chart for rates on the Mediterranean-NW Europe dirty tanker trades. This divergence between rates for newer and older ships on key Atlantic trades emerged almost immediately that the seriousness of the "Erika" incident became apparent and arose from a fundamental change in chartering policy by many oil companies, especially in Europe. These were no longer prepared to risk the adverse publicity that would ensue if a major maritime casualty befell an older vessel that they had chartered, particularly given the criticism from the European Commission following the sinking of the "Erika" [53].

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50 Higher rates have also reflected the strength of the global economy, higher levels of oil exports on long-haul Middle East trades and greater imports by the Asia-Pacific region as recovery continues from the region's 1997 financial crisis. Limited growth in the tanker fleet has been a further influence. This improvement in supply/demand fundamentals is evident in the fact that freight earnings by older tankers have also increased this year.

51 Furthermore, and despite some post-"Erika" firming in shipbuilding prices, current breakeven requirements are still at historically modest levels as VLCC newbuilding prices are more than US$9-10 million (11%) below their (Korean) average for the 1990s and roughly US$25 million below their early 1990s peaks.

52 In the aftermath of the "Erika" incident, this had been one of the European Commission's main criticisms of the tanker trades.

53 For example, the Commission claimed "The fact that ships of appalling condition continue to be employed for transportation of oil shows that charterers do not have sufficient disincentives to give up their intolerable practice of deliberately selecting low quality tonnage".

The Commission has also urged "…oil companies without waiting the adoption of the first package of directives should undertake by voluntary agreement to refrain in future from chartering tankers older than 15 years (unless appropriate inspections show them to be in a satisfactory condition)."

3. A significantly greater emphasis on fixing of modern tonnage within European markets. SSY's analysis of all reported tanker voyage fixture business in 2000, showed that the average age of tankers fixed on the European trades has fallen since last year (from 16 to 15 years in the Mediterranean and 12 to 10 years in North West Europe[54]). The share of older tonnage within total spot chartering – even in a traditional "haven" for such vessels as the Mediterranean – has declined sharply from 1999 levels. For example, in the year to date 15+ year old vessels have accounted for less than 15% of reported dirty spot tanker fixtures on Mediterranean-NW European trades, compared with 30% in 1999.

4. A tiering of charter markets along regional lines. Many of the older vessels displaced from European trades by tougher charterer policies and disbarred from mainland US ports by OPA '90 have found employment in developing markets (such as India and China where, for example, Suezmax crude carriers are now trading). This may, of course, yet prove a temporary lease of life for these vessels if the authorities in the developing markets resist being used as a "dumping ground" for the world's old tanker fleet.

5. A greatly increased interest in newbuilding ordering, with a resultant rise in tanker contract prices. Since the end of 1999, the price quoted by Korean shipyards for a VLCC has hardened from US$70 million to a two-year high of US$76 million (see accompanying chart).

6. Higher second-hand prices, reflecting the buoyancy of the freight market and owners' optimism concerning future trading prospects in this sector. However, the gains in prices have been more pronounced for newer ships. For example, the second-hand price of a five year old (double-hulled) Aframax is currently estimated at US$35.5 million. This is US$10 million above its pre-"Erika" level and its highest since first quarter 1992. By comparison, even though the value of 10-year-old units have also risen (by approximately US$6 million since December 1999), these have recovered only to levels last seen in the first half of 1998. In fact, such has been the desire of some companies to acquire tonnage at the earliest opportunity, rather than await delivery of a newly-built vessel, that bids for modern, second-hand units have on occasion been in excess of present newbuilding prices[55].

7. Based on the above, price differentials between 5-year-old (i.e. double-hulled) and 10-year-old (single-hulled) ships have risen to their widest levels since 1992. In that year, such differentials had grown in response to the expected impact of OPA '90 on the prospective trading horizons of older tonnage. However, in the mid- to late-1990s, when hydrostatically-balanced loading (HBL) appeared likely to become a feasible (and IMO-approved) means of life extension for single-hulled tankers beyond their 25th anniversary, the differential had narrowed. Since the "Erika" oil spill, the differential has become more pronounced again.

8. Following from the above, it is no longer the case that low-cost, low-quality operators are setting the market, to the prospective detriment of owners of good-quality, well-maintained vessels.

9. It is now even harder for tanker owners to obtain bank finance for single-hulled ships. Apart from the inherent greater threat of pollution that these vessels pose, much single-hulled tonnage now has a very limited prospective trading life on routes to or from the USA and Europe.

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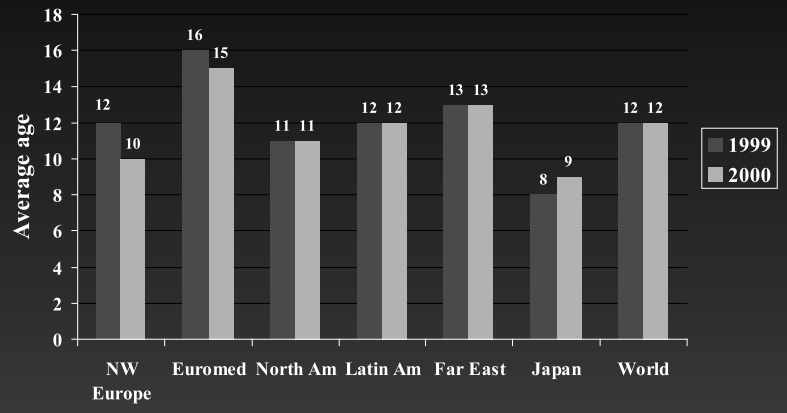
54 Further analysis of average age by discharge area for all the main tanker size groupings is available to the OECD Secretariat upon request.

55 Indeed in the case of Suezmax crude carriers, five year values during the 3q00 (of US$48 million) were almost identical to prevailing newbuilding costs for this of vessel.

Voyage Market All Tankers

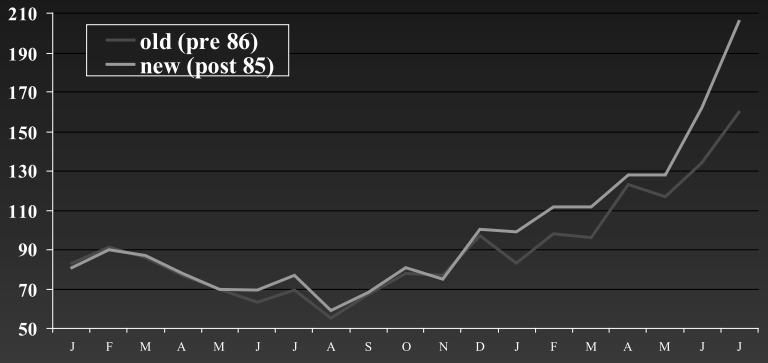
Average Age by Main Discharge Area



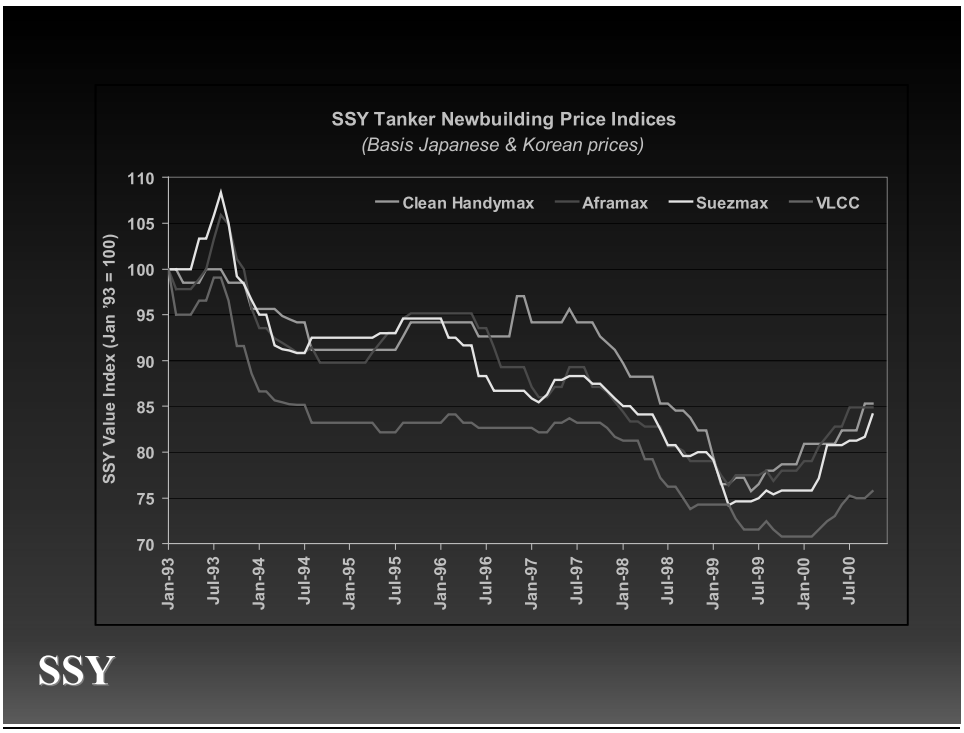
SSY

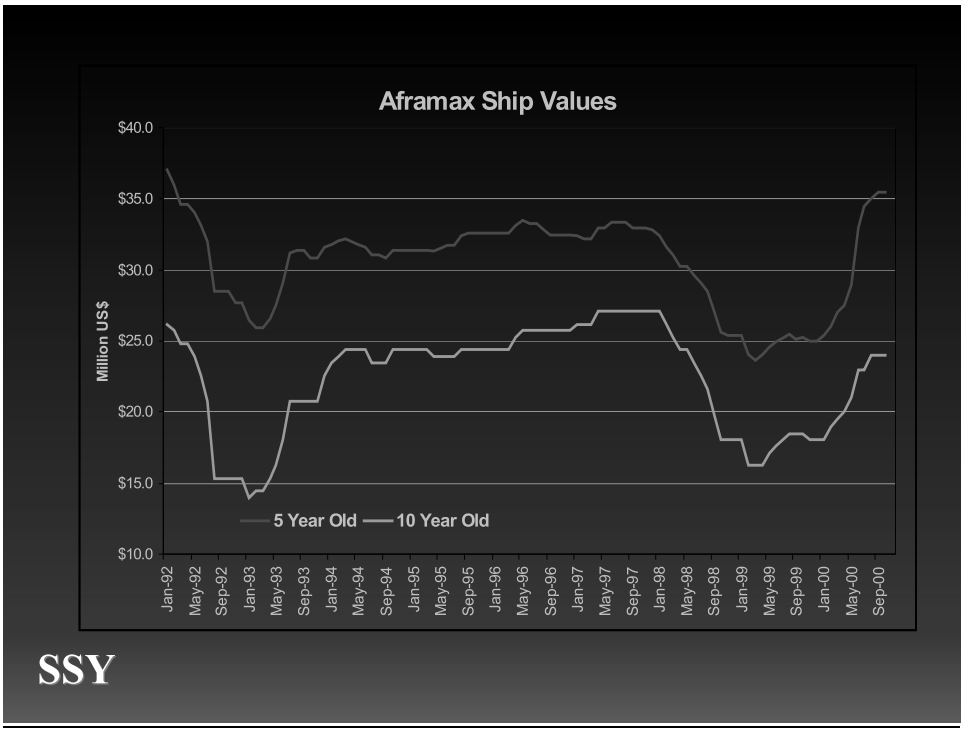
Average Freight Rates Suezmax

-Med/NWE 1999-2000 (Worldscale)



SSY


SSY Tanker Newbuilding Price Indices
(Basis Japanese & Korean prices)
SSY Value Index (Jan '93 = 100)
Clean Handymax
Aframax
Suezmax
VLCC
110
105
100
95
90
85
80
75
70
Jan-93
Jul-93
Jan-94
Jul-94
Jan-95
Jul-95
Jan-96
Jul-96
Jan-97
Jul-97
Jan-98
Jul-98
Jan-99
Jul-99
Jan-00
Jul-00
SSY


Aframax Ship Values
Million US$
$40.0
$35.0
$30.0
$25.0
$20.0
$15.0
$10.0
5 Year Old
10 Year Old
Jan-92
May-92
Sep-92
Jan-93
May-93
Sep-93
Jan-94
May-94
Sep-94
Jan-95
May-95
Sep-95
Jan-96
May-96
Sep-96
Jan-97
May-97
Sep-97
Jan-98
May-98
Sep-98
Jan-99
May-99
Sep-99
Jan-00
May-00
Sep-00
SSY

APPENDIX E

IOPC OIL POLLUTION LIABILITY PROVISIONS

APPENDIX E

IOPC Oil Pollution Liability Provisions

Existing provisions for compensation for oil pollution damage are embodied in the IMO's Civil Liability Convention and the IOPC Fund Convention. The latter of these was devised to establish a fund from which additional compensation could be paid if the damage caused by oil pollution exceeded the limits specified under the CLC. NB: *these Conventions explicitly exclude any allowance for pollution arising from spills of bunkers from non-tank vessels.* As a result, some European countries have introduced domestic legislation to cover such sources of marine pollution. In general, however, liability is again confined to the ship-owner and is subject to strict limits.

Under present provisions for compensation for oil pollution damage, the owner of a tanker that has spilt persistent oil is legally liable, along with his P&I club, for the "first tier" of compensation paid.[56] In November 2000, it was announced that present limits on this first tier of liability would increase, with these changes "probably" taking effect on 1 November 2003. The sum payable for spills from ships exceeding 140,000 gt would then rise by 50%, from 59.7 million SDRs at present to 89.77 million SDRs.

If pollution damage exceeds these figures, a second tier of payment is made from the 1992 IOPC Fund. This supplements the compensation paid by the vessel owner and/or his P&I club to a current maximum of 135 million SDRs, regardless of ship size. From November 2003, this is also set to increase, to 203 million SDRs.

Hence, oil pollution compensation is paid as follows:

IOPC Compensation Limits

(Current and proposed)

All figures in million SDRs:

	Actual **(Nov 2000)**	***Proposed*** **(Nov 2003)**
Tankers of up to 5,000 gt:		
Ship-owner*:	3.0 million	4.51 million
Tankers of 5,000-140,000 gt:		
Ship-owner*:	3.0 million + 420 SDR per gt	4.51 million + 631 SDR per gt
Tankers larger than 140,000 gt:		
Ship-owner*:	59.7 million	89.77 million
Maximum compensation:	135.0 million	203.0 million

[56] It is compulsory for owners of ships carrying 2,000 tonnes or more of persistent oil to have this oil pollution insurance and to carry on board the certificate to prove so. *In the event of an accident, the owner of a tanker that has spilt persistent oil is strictly liable, i.e. regardless of whether or not his ship was at fault and irrespective of the vessel's flag or ownership.*

These sums are deducted from a total of 135 million SDRs, with the IOPC Fund paying the balance. From November 2003, the ship-owner's liability will be deducted from a maximum payment of 203 million SDRs. (This is subject to such an increase being approved by the requisite number of IOPC member states).

* If the ship-owner has insurance cover, his P&I club pays.

At present, proposals exist for the introduction of a "third tier" of oil pollution compensation. This is because, as the Independent Tanker Owners' Pollution Federation (ITOPF) has noted, even relatively small spills in ecologically sensitive areas ". . . can easily exceed available compensation."[57] If total claims exceed the maximum compensation available under existing arrangements, actual payments are scaled down proportionately. (NB: all claimants are treated equally: no category of claim is given priority over any other).

Claims for redress in the event of oil pollution damage can be filed under the following categories:

- Preventative measures (including the costs of clean-up).
- Damage to property.
- Economic losses.
- Reinstatement/restoration of impaired environments.

The last of these items is restricted to the costs of "reasonable" measures to rectify any damage sustained.

One of the criticisms of existing rules is that these take no account of the individual properties of respective grades of oil, and thus their respective capacities to damage the marine environment. Nonetheless, various parties defend the current status quo, with OCIMF arguing against the introduction of such a third tier. It justifies this by claiming that this:

> *". . . could ultimately lead to a dilution of ship-owners' responsibility" and that it could be ". . . a disincentive for insurers to take a proactive interest in the condition and operation of the vessels insured."*

The European Transport Commission is considering the possible introduction of new legislation within Europe to make cargo owners liable for any oil pollution damage that exceeds current IOPC provisions.

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57 The two instances to date when this has occurred were the oil spill from the "Nakhodka" in the Sea of Japan during January 1997 and from the "Erika" in December 1999. Neither of these ships was especially large by the standards of the tanker fleet. Moreover, the volumes of oil spilt were far smaller than previous major incidents. In both instances, however, the cargoes were particularly persistent.

APPENDIX F

COSTS OF SUBSTANDARD SHIPPING

FOR RESPECTIVE PARTIES

(SUMMARY)

Direct Costs of Substandard Shipping: Implications for Respective Parties

Scenario: Total Loss of Vessel

Party	Potential Costs Incurred	Consequences / Remarks
Seafarers / Passengers	Loss of life / personal injury	P&I club settles claims, up to specified limits, unless owner is proven to have acted negligently. National governments may have to support victims and dependant relatives if these cannot provide for themselves.
Vessel Owner	Loss of insured vessel	Extent of loss depends on whether the insurer has reason to oppose the claim (e.g. due to alleged negligence of shipowner).
	Higher H&M insurance	Applicable only if the shipowner replaces the lost ship and/or if he owns other vessels.
	Third-party compensation claims	P&I club pays, subject to specified limits for some categories of claim. Pollution claims partly settled from IOPC funds.
	Higher P&I insurance	Owner may try to find cover with an alternative P&I club. Scope for doing so depends on how efficient other clubs are in their risk assessments.
	Adverse publicity	Applicable only if a) the vessel owner is well known and/or b) he owns other ships that prospective charterers then believe may be unreliable.
	Financial penalties	Depends on the location of the incident, whether pollution occurs and the "traceability" of the true owner. "Corporate veils" can disguise ultimate ownership and so make it impossible for authorities to derive full payment of any penalties imposed.[1]
	Litigation	Depends on jurisdiction. Legal penalties vary significantly in different countries.[2]
	Reduction in credit rating	Depends on whether owner requires funds and, if so, whether he has access to non-bank finance.
Cargo Owner / Charterer / Shipper	Loss of cargo	Compensation is paid by P&I club unless the company is found to have been negligent by using a substandard vessel.
	Possible disruption to operations at facility to which cargo is being delivered	Depends if adequate stocks are available at facility to prevent any disruption to output.
	Adverse publicity	Applicable only if the company is well known. NB also: some organisations charter under names other than their main corporate identity.
Banks	Loss of vessel	Partial loss of value of mortgage finance, but only if ship is uninsured and compensation claims force vessel owner to default on debt. Repossession and subsequent sale of ship by bank is unlikely to realise its full market value.
	Financial penalties	Only apply if bank is involved in *operating* the ship.

Direct Costs of Substandard Shipping: Implications for Respective Parties

Scenario: Total Loss of Vessel

Party	Potential Costs Incurred	Consequences / Remarks
Marine Underwriters	Payment of insured value of vessel, provided that loss is not proven to have resulted from shipowner's negligence.	Underwriter reclaims outlays by raising premiums for all shipowners.
P&I Clubs	Payment of third-party compensation claims for loss of life, personal injury, loss of cargo & environmental damage.	Club reclaims outlays by raising premiums for all members.
Classification Societies	Adverse publicity	Publicity could theoretically bring intervention by flag state government. NB: accidents are likelier to befall ships classed with societies that are lax in enforcing standards. Quality-conscious societies are less likely than "substandard" rivals to attract owners of low-quality ships.
	Financial penalties	Applicable only if society is found to have acted negligently in classing the ship. Classification societies' liabilities are not currently uniform.
Shipbrokers	Compensation claim from charterer / cargo owner	Claim is paid by P&I club unless broker is found to have been negligent in failing to advise of prospective vessel deficiencies.

[1] *If ultimate ownership is successfully hidden by a name-plate company, this will help to limit effective liability.*

[2] *NB: limits are set on the liability for oil spills by tankers in the event of oil pollution. These are specified under the Convention on Civil Liability for Oil Pollution Damage (CLC) and the Convention on the Establishment of an International Fund for Oil Pollution Damage.*

Direct Costs of Substandard Shipping: "Erika" Case History

Party	Identity	Liabilities & Costs	Reported Costs	Remarks
Seafarers	Crew of "Erika"	None.	None.	All 26 crew members rescued and no injuries reported.
Vessel Owner	Giuseppe Savarese	Loss of vessel plus any related third-party claims for compensation, i.e. for oil pollution damage and for loss of cargo.		Shipowner's liability for oil pollution damage is specified by IOPC limits. As owner has insurance cover, compensation claim is settled by P&I club.
Vessel Operator	Amarship	No liability for oil pollution damage.	None.	Liability for damage caused by oil pollution lies only with *registered owner* of vessel.
Ship Manager	Panship (as agents for time-charterer Selmont)	No liability for oil pollution damage.	None.	No liability for damage caused by oil pollution. NB: RINA has recommended to the Maltese and Italian authorities the cancellation of Panship's ISM compliance certificates.
Spot Charterer	TotalFina	Costs of counteracting adverse publicity caused by oil spill, plus contribution towards clean-up expenses. (*But: most of the latter are recoverable from TotalFina's P&I club*). Also any compensation claims from cargo owner / shipper.	*FFr320 million towards clean-up costs* [1]	Loss would be covered if charterer has P&I cover and has not knowingly chartering a defective ship.
Cargo Owner / Shipper	Total Bermuda	Loss of cargo plus voluntary payment towards costs of its attempted recovery. (Cargo owner has no legal liability for oil pollution damage in this particular case).	FFr400million for cargo recovery	Loss of cargo is covered if cargo owner / shipper has P&I insurance.
Cargo Recipient	ENEL	Possible disruptions arising from non-delivery of cargo.	None.	Potential for disruption depends on extent of cargo recipient's operating stockpiles.
Classification Society	RINA	Potential costs arising from third-party compensation claims.		European Commission is currently seeking to harmonise class societies' financial liabilities in the event of their negligence or non-fulfilment of duties.
Shipbroker	Petrian Shipbrokers	Loss of commission on voyage.	None.	No apparent liability, unless the broker had reason to believe vessel was unseaworthy.
Shipowner's P&I Club	Steamship Mutual P&I Club	Oil pollution damage claims, as specified under Civil Liability Convention.	FFr76 million	Payment covers compensation for oil pollution damage.
Cargo Owner's P&I Club	Unknown	Any compensation claim from cargo owner.		
Pollution Compensation Authority	IOPC Fund	Any difference between shipowner liability and IOPC Fund limits on claims related to oil pollution damage.	FFr1,195 million	Payment covers compensation for oil pollution damage.
Marine Underwriter	Unknown	Insured value of ship.		Hull & machinery insurance cover is invalidated if owner has been negligent. Underwriter's outlays on vessel owner's claim for compensation can be recouped via general increase in premiums for *all* shipowning clients.
Bank	Bank of Scotland	Any outstanding debt on ship if owner defaults or if loan is not insured.		Banks generally insist on owners taking out mortgage protection insurance as precondition to providing a loan.
Shipbuilder	Kasado Dock, Japan	None.	None.	No apparent liability, despite ship's apparent "progressive structural failure,"as vessel was in class and had passed inspections by port states and charterers.
Flag State	Malta			
Port State	France	Any clean-up costs exceeding IOPC Fund provisions and contributions received from TotalFina.	FFr40 million committed to date	IOPC provisions only allow payment for "reasonable" measures to treat results of an oil spill.
Private Individuals & Companies	Unidentified	Any compensation claims oil pollution-related damage that exceed levels covered by IOPC Fund provisions.	Unknown	Total compensation claims arising from "Erika" oil spill are set to exceed IOPC Fund levels. Actual compensation will therefore be scaled down on pro rata basis.

[1] *Cargo owner's contributions to clean-up expenses are recoverable from its P&I club.*

Sources: Various.