
Liability and Compensation for Ship-Source Marine Pollution:

The International System

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Introduction

In an increasingly environmentally-conscious world, ship-source marine pollution has, for a long time, been singled out for special attention. This attention is hardly commensurate with its actual contribution to marine pollution, which, today, is considered to be about 12 per cent of the total.¹ In other words, it is land-sourced marine pollution that is today the major problem. This was already recognized a decade ago in an important preparatory document for the United Nations Conference on Environment and Development (UNCED), in which the UN Secretary-General stated:

Dramatic improvements have been made in controlling oil pollution in the past decade owing to the regulation of ship discharges under MARPOL 1973/1978 . . . Accidental spills are relatively isolated geographically so that, aside from tar balls, transient effects in the vicinity of accidents and more chronic conditions in localized sites in some parts of the world, **petroleum pollution does not now represent a severe threat to marine habitats and organisms.** However, since accidental spills cannot be totally avoided, contingency planning and effective response action are essential.²

This was also recognized in the deliberations of UNCED itself in Rio de Janeiro in 1992.³ However, nothing focuses policy-makers' and legislators' attention more directly than a marine disaster. When pollution is involved, a 'media-event' is often the result. The media love maritime accidents, which are gripping and exciting and provide great video images—permitting reporters, totally untrained in maritime matters, to wax eloquently at great length on what has happened—and which can often be used to embarrass government officials and politicians. If oil pollution is involved, all the better!

On the other hand, as strange as it may seem, marine pollution accidents also have positive effects! The former Secretary-General of the International Maritime Organization (IMO), C. P. Srivastava, mentioned on more than one occasion that without the *Torrey Canyon* disaster there probably would have been no IMO or any of its important pollution conventions, and that without the *Amoco Cadiz* oil spill there would probably be no Standards of Training (STCW) or new Salvage Conventions.⁴ In fact, national

legislative responses to marine pollution accidents are often directly attributable to the repercussions, political and otherwise, from such accidents. For example, many states, Australia, Canada, and the UK among these, revised their marine pollution legislation after the *Torrey Canyon* accident in 1967. Canada's Shipping Act was again extensively revised after the *Arrow* disaster in 1971, and France revised its legislation extensively after the *Amoco Cadiz* grounding in 1978. In the more recent past, the United States reacted strongly after *Exxon Valdez*; Australia after the *Kirki* and *Iron Baron* disasters; the North African states after the *Kharg V* spill; the Malacca Straits states after the *Nagasaki Spirit* and *Maersk Navigator* collisions; and the UK, again, after the *Braer* and *Sea Empress* groundings. Action at the IMO's international level was commensurately speeded up.

In other words, the periodic serious marine pollution accident appears to have indirect positive benefits for the marine environment by tightening up regulations, focusing attention, stimulating pollution control and related scientific research, and generally raising environmental consciousness in an industry that, despite the IMO's guiding principle of 'safer ships and cleaner seas', has concentrated more on the former than the latter. All of this is very good providing that revisions of laws and updating of responses occur at the international level and are then quickly implemented at the national level. It is hardly necessary to stress that shipping is an international industry that can only be regulated with globally accepted rules developed through intergovernmental organizations (IGOs). This approach ensures uniform solutions expressed in terms of international maritime law.

Unilateralism in an International Setting

Problems arise when states do not implement what they have agreed to internationally or, perhaps even worse, if they seek to take a unilateral approach that is often not based on a full appreciation of the repercussions of such action. The reasons for such action may, at times, be perfectly understandable. If a state has been at the receiving end of a serious pollution accident, there is bound to be

reaction, and often overreaction. Politicians will be requested 'to do something' and the international system will be regarded, often incorrectly, as inadequate, ponderous, and too complex. This is exacerbated by the fact that ship-owners do not enjoy a very good public image. The shipping industry is perceived by the public and, thus, by many politicians as a polluting industry which reaps huge profits, operates sub-standard ships under dubious flags crewed by down-trodden Third World citizens, 'fixes' freight rates, and is generally careless about the environment. Although there is a minority in the industry which conforms to all or some of these perceptions, in the modern context such a view is both harmful and erroneous. In general, shipping subscribes to the IMO's 'safer ships and cleaner seas' principle and goes about its business as an essential service to international commerce. Nevertheless, when a serious accident occurs, the temptation to achieve some rapid national political points through unilateral action is there.

This is most easily illustrated by an examination of what has occurred in the USA in the past decade. It provides a very important lesson for any state considering unilateral action.⁵ The US position is the result of overreaction to the *Exxon Valdez* disaster, one of the more serious and spectacular marine accidents in recent history, which occurred in US waters, causing serious environmental damage.⁶ Direct results of this reaction were the wholesale condemnation of US and international shipping operations, especially the tanker industry, the discarding of international agreements, which the USA had been instrumental in establishing, and new draconian legislation in the form of the US Oil Pollution Act of 1990 (OPA '90).⁷ This action resulted in international environmental law, especially as it relates to the compensation and liability for oil pollution regimes, being divided into two major groups—the United States v. the Rest! Unfortunately, this split may well result in the USA generally, and the marine environment specifically, both losing. In addition, there is evidence that this position has seriously affected US credibility in international negotiations. This is of obvious concern to the US Administration, the US State Department, the Maritime Law Association of the United States, and the US and international shipping and marine insurance industries, but, apparently, to few others. The US Coast Guard, which fought valiantly against OPA '90,⁸ is now in the unenviable position of having to enforce it.

Shipping: An International Industry

The *Exxon Valdez* grounding was, of course, a very serious accident, and there is no intention to suggest that this was not so. Furthermore, there is considerable merit in the US contention that there are too many serious tanker accidents, that there are too many sub-standard, elderly tank-

ers in operation, and that a serious or catastrophic marine pollution accident will place a severe environmental and economic burden on the coastal state which happens to be the victim. Recent accidents, such as those involving the *Aegean Sea, Haven, Nagasaki Spirit-Maersk Navigator, Mega Borg, Braer, Kirki, Kharg V, Iron Baron, and Sea Empress*, lend further credence to this view and, at the same time, provide little comfort to the international shipping industry and their liability insurers. On the other hand, it must also be borne in mind that over 1.4 billion tons of oil are moved annually by some 3000 tankers over an average distance of some 4700 nautical miles and that 99.9995 per cent of this cargo is delivered safely.⁹ Yet everyone, regardless of interest, would prefer that pollution incidents be prevented in the first place. In fact, there is no question that much more needs to be done to prevent shipping accidents and resulting pollution. On the other hand, there is no doubt that ship-owners are principally interested in delivering the cargoes entrusted to them without incident. They operate business enterprises that seek a reasonable return on very high investments in a very competitive business which has, especially in recent years, experienced a severe slump in earnings. This recession resulted in many shipping companies going out of business. The oil trade was not spared and too many tankers were chasing fewer and fewer cargoes.¹⁰ In such a competitive market those who spill oil cargoes do not remain in business for long, and even minor spills today often involve costly litigation, very high fines, and cancelled charters. Valuable vessels may be out of service for extended periods or, in serious cases, forever.

As already suggested, shipping is an international industry and, as such, has to be regulated internationally. As a result, the IMO has attempted, ever since its founding in 1958, to balance the various interests involved under its guiding principle of 'towards safer ships and cleaner seas', as already indicated above. At the base of this principle is the undeniable fact that shipping is an essential component of international trade and commerce and that, in the carriage of goods by sea, certain risks are involved. This risk is especially present in the carriage of pollutant cargoes, such as oil and oil products and hazardous and noxious substances that are potentially harmful to the marine environment. As a result, on account of increasing global environmental consciousness, the environmental risk factor has become of almost paramount importance for the maritime industry and its principal global agency, the IMO.¹¹ The IMO's states membership, including the United States, recognized long ago that an international industry, with transnational trading links, required a uniform international, rather than a unilateral national, regulatory system. If any doubt existed about this fact, it was laid to rest with the conclusion of the United Nations Convention on the Law of the Sea 1982 (UNCLOS), which

recognized not only the need for 'generally accepted international regulations' for shipping and navigation, but also that the IMO would be the 'competent international organization' to develop these rules.¹² As a result, the IMO has developed some 50 international conventions, protocols, and related agreements concerned with 'safer ships and cleaner seas'. These treaties have been carefully prepared and negotiated, are widely accepted, and form today what can be called the basis of a significant sector of modern 'international maritime law'.¹³

The International Marine Pollution Liability and Compensation System: Phase I

For almost three decades a reasonable international liability and compensation system for oil-pollution damage has been in operation. Protection and indemnity insurers (P & I Clubs) cover their ship-owner/charterer members for about 30 different risks related to ship operation to a theoretically unlimited ceiling. This system is supported through a complex arrangement of reinsurance and through the International Group of P & I Clubs, which has access to reserves in excess of \$US 2 billion. An exception to unlimited coverage relates to oil pollution, with a limitation ceiling of \$US 500 million, which, under special circumstances, can be raised to \$US 700 million.¹⁴ This is part of a mutual liability system that has worked extremely well for over a century. It spreads the risk evenly across the world fleet, and all ship-owners benefit. In addition, the coverage provided appears to be quite sufficient for all but the most catastrophic accidents. However, P & I coverage for oil pollution damage claims has certain limitations as unlimited coverage for catastrophic accidents is not insurable.

Yet it appears that the mutuality of P & I coverage, and the beneficial service it offers to US and international shipping, has been either not sufficiently considered or ignored by those who have created OPA '90. Instead, OPA '90 attempts to provide coverage for the most catastrophic accident projections possible and, as a result, isolates the USA from a very successful, generally adequate, international liability system. As has been observed: 'In its rush to enact responsive legislation, Congress may have unwittingly compromised its original goal—to provide a simple, uniform program to ensure prompt compensation for oil pollution damage.'¹⁵ Although P & I coverage for ship operational liability is technically unlimited—marine pollution claims being the exception as already noted—all marine risks are subject to the unique maritime law principle of limitation of liability which allows a ship-owner to assess the total risk exposure in relation to the tonnage of the ship.¹⁶ Such limitation would only be disallowed if the accident which gave rise to the claims put forward would be found by a court to have occurred with the 'actual fault and privity' of,¹⁷ or

'intentionally and recklessly and with knowledge that loss would result',¹⁸ by the ship-owner. In other words, limitation is another well-developed example of an international maritime law principle which attempts to balance risk exposure with transportation costs.

Similar principles apply also to ship-source oil pollution, which, however, is subject to different international legal regimes. At this time two widely accepted international liability and compensation schemes are in existence. The first is the International Convention on Civil Liability for Oil Pollution Damage 1969 (CLC '69), in effect since 1975, and accepted by more than 100 states. The CLC governs the liability of ship-owners for oil pollution damage and makes them strictly liable within a limitation ceiling, also linked to the vessel's tonnage. The amounts recoverable under the scheme are calculated as Special Drawing Rights (SDRs) of the World Bank and are approximately \$US 200 per ton, up to a ceiling of \$US 18 million.

In cases where the CLC coverage is insufficient, another international scheme comes into operation. This is the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage 1971 (FUND), which entered into force in 1978 and has been accepted by more than 80 states. The FUND is financed by a state levy on oil imports in contracting states and is thus based on 'oil at risk at sea'. It is administered by the International Oil Pollution Compensation Fund (IOPCF), an international organization composed of FUND member states. The funds available are also calculated in SDRs, and are approximately \$US 50 million, which, in special circumstances, can be increased to about \$US 100 million. As already indicated, it appears that these schemes provide adequate coverage for all but the most catastrophic oil spills. In fact, to date, only three out of 70 major claims handled by the IOPCF have exceeded available limits.¹⁹ The IOPCF has an excellent reputation in settling claims. Its most difficult claim, the *Tanio* case, took two years for settlement, but most are settled within weeks or months. This must be compared to the lengthy litigious process in the USA. For example, the *Amoco Cadiz* claim took over ten years to settle! It should also be noted that states considering that the FUND upper limits may be insufficient for very serious accidents have the option to develop their own, additional, national schemes.²⁰

In 1984 the IMO concluded two important protocols to the CLC and FUND Conventions.²¹ The prime mover behind this initiative had been the USA, which had consistently stated that it could not accept the CLC or FUND regimes unless the upper limits were substantially raised. During the IMO Diplomatic Conference, the US delegation negotiated with considerable skill and achieved almost everything it wanted in terms of raised limits. The new CLC limits were raised to approximately \$US 80 million and the

FUND limits to about \$US 250 million. In addition, coverage was extended into the Exclusive Economic Zone area. Although there was considerable resistance to these higher limits, the US delegation argued successfully that the higher limits could be achieved if they were based on the aggregated quantity of oil imported in three major contracting states. It thus became quite clear that the protocols, and therefore the FUND and CLC limits, could not be achieved unless the USA, the world's major oil importer, became a party! In the end the US position prevailed, particularly as the US delegation assured the Conference that the United States was determined to become a party to the protocols and, thus, the CLC and FUND. At the time the USA was congratulated on what was considered to be a remarkable environmental breakthrough! Following this IMO Conference many states prepared to accept the new protocols. There was considerable feeling that pollution liability, in an environmentally more conscious world, must be subject to a uniform global regime which would have upper limits, but which would, nevertheless, provide adequate coverage for all but the most extreme catastrophic pollution damage, and which would also be within the capacity of the international liability insurance market.

The US Unilateral Approach to Oil Pollution Liability and Compensation

Despite the US success at the IMO Conference, there was immediate difficulty at home. Firstly, the environmental movement was categorically opposed to anything but total and unlimited liability. This was consistent with the movement's 'polluter pays' principle, which ignores or disregards the realities of the shipping industry and its insurance market, as well as the fact that the USA is the most 'energy-hungry' nation on earth, importing over 400 million tons of oil per annum. Secondly, there was also opposition from several US states on the basis that a uniform, global agreement, entered into by the US Federal Government, would pre-empt the right of states to take their own action against polluting vessel owners. Perhaps even these difficulties could have been overcome had it not been for the *Exxon Valdez* and two later serious and highly publicized tanker disasters in US waters.²² Once the Alaska spill occurred, the relatively modest opposition to the protocols strengthened significantly. The realities of global uniformity, insurance market capacity, and the US dependence on the international tanker industry were quickly swept away, and the undertakings given by the US delegation at the 1984 IMO Conference were disregarded. Yet even at this stage a study, commissioned by the US Coast Guard, summed up the importance and viability of the international system by concluding that: 'The Protocols in con-

cert with domestic legislation, offer unique solutions that cannot be found in domestic law alone. . . . key provisions of the Protocols have met the tests set by the United States . . . concerns over state pre-emption have been resolved at the state level.'²³

It is neither necessary nor appropriate to provide much detail here of OPA '90. However, the process that led to it is of greater relevance. Even before OPA '90, the US law regarding oil pollution had never been straightforward and was often considered a veritable 'lawyer's paradise'. Usually US litigation costs in the area form a major part of the overall claim. Before OPA '90, liability for clean-up and removal costs for polluting substances discharged from vessels in US waters, which include the US 200-mile fishery zone and waters over the US Continental Shelf, had been covered principally by the Federal Water Pollution Control Act (FWPCA).²⁴ Under this act limited strict liability to the US Government for pollution damage and related costs was imposed on the owner or operator of a vessel which discharged polluting substances. The FWPCA required vessels trading to the USA to carry certificates of financial responsibility which indicated that the vessel was able to meet the requirements of the act. These certificates were normally issued by the vessel's P & I Club, as the act's requirements were considered to be generally equivalent to CLC requirements. In other words, for a number of years, although it was not party to the CLC, the USA tacitly, yet expressly, recognized it! However, the FWPCA did not cover questions of civil liability to those damaged by pollution. This was a significant difference from the CLC provisions. Under the FWPCA, if a discharge with resultant damage occurred, the plaintiff was required to establish culpable negligence in order to recover damages. As already indicated, the inherent weakness in the FWPCA was the need to litigate to establish liability under basic tort/delict principles. Under the CLC/FUND system, as well as under the CLC and FUND protocols, it is generally sufficient to connect spill damage with a covered vessel and quantify the damage claim, which would then be quickly settled.

OPA '90 solves none of these problems and simply lays the groundwork for much lengthier litigation due to the increased stakes, as the act increases the ship-owner's liability from \$US 150 to \$US 1200 per ton. Even more litigious is the act's provision that, if a spill occurs due to the gross negligence, wilful misconduct, or violation of *any* federal operating or safety regulation, the spiller's liability is *unlimited*. It is suggested that, in most cases, it would be relatively easy to show *some*, even minor, breach of a federal rule. Accordingly, OPA '90 virtually ensures unlimited liability in many cases! Like the FWPCA, OPA '90 specifically does not pre-empt state laws, which may impose ad-

ditional or other, heavier liabilities. Thus, if the battle is won at the federal level, the war may be lost in a state court! Recoverable damage categories have also been considerably broadened. Included are not only federal government clean-up claims, but state government claims and private claims for property damage, taking into account economic loss. Recovery for loss of profits or impairment of earning capacity is allowed for, even in cases where there is no provable property damage on the part of the private claimant. In order to ensure compliance, OPA '90 requires the filing of evidence of financial responsibility sufficient to meet the *maximum* 'limited' liabilities set out in the act. Furthermore, insurers providing such evidence are subject to direct legal actions not only for pollution removal costs, but for all pollution damages recoverable under the act.

Liability insurers have so far categorically rejected direct action, which is perceived, particularly by P & I Clubs, as exposing their mutual, non-profit systems to potentially unlimited liability. As a result, P & I Clubs have refused to issue certificates of financial responsibility in compliance with OPA '90 and continue to issue such certificates only with CLC limits. At present the International Association of Independent Tanker Owners (INTERTANKO), joined by the US Federal Government, is also involved in litigation against the state of Washington concerning OPA '90 interpretations. At the heart of the problem is the spectre of unlimited liability. It has been suggested that 'absolute liability subject to limitation may be insurable or reinsurable up to a point. Unlimited liability is not even theoretically insurable on the scale implied by the *Exxon Valdez* experience.'²⁵

This difficulty is, to a great extent, a result of the US approach of calculating natural resource damage under OPA '90. Under this approach a system of 'contingent valuation methodology' (CVM) would quantify pollution damage in a much more complex and comprehensive way. Resulting damage assessments could reach billions of dollars in serious cases.²⁶ The assessment and quantification of realistic environmental damages remains a serious problem.²⁷ At this stage a 'new liability industry' providing vessel owners trading to US ports with 'Certificates of Financial Responsibility' (COFRs), acceptable to US authorities, has emerged.²⁸ These schemes are purport to provide the type of liability coverage guarantees required under OPA '90. However, as there has been no serious oil spill in US waters since they went into operation, it remains to be seen how they will operate in practice.

The International Marine Pollution Liability and Compensation Regime: Phase II

At the IMO in 1992 the international maritime community completed a revised version of the failed 1984 CLC and FUND protocols, but without US support. The new 1992 protocols provide an increased level of liability for marine oil-pollution claims, as originally set out in the 1984 protocols and entered into force in 1996.²⁹ The CLC Protocol provides the following limits—expressed in Units of Account (UOA), i.e., the Special Drawing Rights (SDRs) of the World Bank system:

Vessels up to 5000 GT—3 million UOA
Vessels over 5000 GT—520 UOA/ton up to 59.7 million UOA.

The FUND Protocol can increase the maximum compensation available to 135 million UOA. However, in cases where at least three FUND members have received at least 600 million tons of contributing oil in the previous year, the limit may be increased to 200 million UOA. In other words, the international system now provides a relatively easily accessible oil-pollution compensation regime providing funds with an upper limit in excess of \$US 250 million. Barring catastrophic disasters, this regime should be adequate for all marine oil pollution incidents.

Also in 1996 a new International Convention Relating to the Liability for the Carriage of Hazardous and Noxious Substances at Sea (HNS Convention) was concluded at the IMO. There has been concern for some time that the concentration on oil pollution had neglected pollution damage from other substances, which, in some cases, might be even more harmful to the marine environment than hydrocarbons. A first attempt to conclude an HNS Convention in 1984 failed, and after almost 12 years of further work the 1996 HNS Convention was successfully concluded. It is not yet in force. It basically follows the 'two-tier' liability system developed under the CLC and FUND schemes for oil pollution.³⁰ The regime provides the following coverage:

- Tier I: Vessels up to 2000 GT—10 million UOA
Vessels up to 50,000 GT—1500 UOA/ton in addition
Vessels over 50,000 GT—360 UOA/ ton in addition, up to 100 million UOA
- Tier II: International HNS Fund providing compensation up to 250 million UOA if Tier I is insufficient or unavailable.

Conclusions

There is also ample evidence that the combination of high liability limits, more extensive national, regional, and port state enforcement systems, and commensurate high fines and detentions and delays have resulted in much-improved tanker operational standards, better training systems, and, overall, greatly increased environmental consciousness in the shipping industry.³¹ This was confirmed by the UN Secretary-General in the report already cited in the introduction, which confirmed that 'dramatic improvements have been made in controlling oil pollution in the past decade owing to the regulation of ship discharges'.³²

This is not to suggest that there should be a lessening of concern or vigilance in this area. It was indicated at the outset that there are still too many sub-standard vessels in operation and that the tanker accident record does not provide a real sense of achievement. The human-error cause of most of these accidents is of particular concern to the industry, and there is ample evidence that tougher measures have positive results. However, there are some basic economic problems within the shipping industry, especially the bulk oil sector, that continue to contribute to the 'availability' of sub-standard ships in the global transportation markets. There are two very basic economic reasons: firstly, as already indicated, international oil and bulk freight rates are so low that it is simply not good business for an owner to invest in new building; secondly, although some of the international oil companies are now much more careful about the vessels they charter to carry their cargoes, many charterers are not. Most oil receiving, trading, and refining charterers, as well as bulk commodity charterers, are still too 'bottom-line oriented'—i.e., they will charter the cheapest vessel offered. That vessel is often sub-standard. Also that type of business keeps freight rates artificially low and, in turn, keeps good owners from building new vessels.

In other words, the US reaction or overreaction has a very sound basis of concern, which should not be dismissed. Yet it has to be remembered that the *Exxon Valdez* was a modern state-of-the-art 'very large crude carrier' (VLCC), crewed by highly qualified individuals and owned by the largest corporation in the world, which apparently could absorb a \$US 5 billion-plus loss without too much effort. Instead it could easily have involved a 'fly-by-night' VLCC, about 23 years old, poorly maintained, with its eleventh owner, which happens to be a filing cabinet in the Bahamas, and which would disappear at the same rate as the ship! Yet the pollution results from an accident involving

either vessel could be similar. However, the sub-standard vessel is much more likely to be involved in an accident. It is in this area that much greater effort has to be concentrated, instead of seeking unrealistic compensation coverage for remote catastrophic accidents. There must be much better voluntary efforts by charterers, importers, and exporters to hire better vessels, even at greater cost. Furthermore, if this sector of the industry will not do this then it is inevitable that much stronger government action must result. If charterers, especially oil companies, would take this step, then most sub-standard vessels would disappear from the seas virtually overnight!

Nevertheless, there is no doubt that the US approach is attractive to policy makers in other states when faced with a difficult pollution problem and an environmentally sensitive electorate, and when it does not have much knowledge of the internationally shipping sector, which appears remote and complex and is, often, conveniently foreign. Added to this is the attractive 'polluter pays' principle, which is much more easily imposed on an international shipping industry than a local polluting industry. Australia, Canada, and the UK have all, in the last decade, experienced serious oil pollution accidents that resulted in searching inquiries into the tanker shipping industry.³³ Although all three states have decided to continue to support the international system, the inquiries held all revealed serious shortcomings in maritime safety and marine pollution control and concluded that further serious pollution incidents are simply unacceptable.

It is hoped that the STCW revisions, the entry into force of the International Safety Management Code (ISM Code) in 1998, and the expansion of the port state control inspection systems will further tighten the enforcement net to ensure maximum compliance with international regulations. It is essential that the uniform international marine pollution compensation system, which is best suited to spread liabilities as evenly as possible among all interested parties, should continue. If the upper limits of such compensation are not considered adequate, then negotiations must take place at the international level to increase these. There must also be more concentration on prevention than on compensation. Whether this is achieved by addressing the serious human-error problems, which are the major cause of maritime accidents, or through attempts to drive sub-standard vessels from the seas, or both, it should be done through a uniform system and not through unilateral action driven by considerations harmful to the health of the maritime industry on which global trade and prosperity depend.

Notes and References

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1. International Chamber of Shipping (1993), *Shipping and the Environment: A Code of Practice* (London: ICS), 5; see also, A. Boyle and P. Birnie (1992), *International Law and the Environment* (Oxford: Clarendon Press), 263, 300.
2. *Law of the Sea—Protection and Preservation of the Marine Environment*. Report of the UN Secretary-General, UN Doc. A/44/461, 18 September 1989. Emphasis added.
3. United Nations (1993), *Agenda 21: Programme of Action for Sustainable Development—The Rio Declaration on Environment and Development* (New York: UN), Ch.17.
4. International Convention on Standards of Training, Certification and Watchkeeping, 1978 (STCW 1978) and International Convention on Salvage, 1989 (SALVAGE 1989).
5. Edgar Gold, 'Marine Pollution Liability after *Exxon Valdez*: The US 'All or Nothing' Lottery!', *Journal of Maritime Law & Commerce*, 91/22, 423.
6. Although recent studies now consider the actual extent of longer-term damage to be far less than predicted. See, for example, Richard Stone, 'Dispute over 'Exxon Valdez' Cleanup Data gets Messy', *Science*, 93/260, 749.
7. Pub.L. 101-380, 104 Stat. 484 (1990).
8. See Report prepared for the US Coast Guard by Temple, Barker, and Sloane, *The International Oil Spill Protocols: Should the United States Ratify?*, 2 October 1988, Pt. II.
9. James Anderson, 'Clean Seas/Oil Pollution: An Independent Tanker Owner's View', 6th National Marine Conference, Vancouver, October 1990.
10. Tanker rates dropped again in the latter part of 1998. In the first half of the year VLCC rates to the Far East were Worldscale 70-80 (\$US 35,000-40,000), but these dropped in the second half to Worldscale 50-55 (\$US 25,000-28,000). Rajesh Joshi, 'Building on Strong Foundations', *Lloyd's List 'Maritime Asia'*, October 1998, 55.
11. Edgar Gold (1998), *Gard Handbook on Marine Pollution*, 2nd edn. (Arendal: Assuranceforeningen Gard), Ch. 1.
12. United Nations Convention on the Law, 1982, Parts VII and XII.
13. Edgar Gold (ed.) (1991), *Maritime Affairs: A World Handbook*, 2nd edn. (London: Longman), Chs. 4 & 5.
14. See, for example, Simon Poland and Tony Rooth (1996), *Gard Handbook on P & I Insurance*, 3rd edn. (Arendal: Assuranceforeningen Gard).
15. Thomas Wagner, 'The Oil Pollution Act of 1990: An Analysis', *Journal of Maritime Law & Commerce*, 90/21, 587.
16. As codified in the International Convention Relating to the Limitation of Liability of Owners of Sea-Going Ships 1957 and the International Convention on Liability for Maritime Claims 1976. Although the USA has accepted neither of these widely accepted conventions, the USA instead developed its own limitation of liability regime, the Limitation of Liability Act, 46 App. USC. Para.183.
17. Under the 1957 Limitation Convention.
18. Under the 1976 LLMC Convention.
19. The *Tanio* (France, 1980), *Haven* (Italy, 1991), and *Braer* (UK, 1996) incidents.
20. For example, Canada has developed such a scheme. Under the Canadian Ship-Source Oil Pollution Fund an additional amount of approximately SCA175 million is available to 'top up' the claims fund.
21. Protocol of 1984 to Amend the International Convention on Civil Liability for Oil Pollution Damage 1969; and Protocol of 1984 to Amend the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage 1971.
22. The *American Trader* accident off California and the *Mega Borg* explosion in the Gulf of Mexico.
23. See Temple, Barker, and Sloane, *The International Oil Spill Protocols*.
24. USC, Para.1251, as amended.
25. Protocol of 1992 to Amend the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage 1971 (CLC PROT 1992) has been accepted by 34 states; and Protocol of 1992 to Amend the International Convention on Civil Liability for Oil Pollution Damage 1969 (CLC PROT 1992) has been accepted by 32 states. States parties to the revised CLC and FUND regimes include almost all the major maritime states with the exception of the USA.
26. Ran Hettena, President, Maritime Overseas Corporation and Chairman, Gard P & I Club. Cited in Middleton and Lyons (1990), 'An Industry Pressganged?', *Seatrade Business Review*, May/June, 4.
27. National Oceanic and Atmospheric Administration, 'Natural Resource Damage Assessments under Oil Pollution Act of 1990', 15 CFR Chapter IX. Federal Register, vol. 58, no. 10, 15 January 1993, 4601.
28. An attempt to address this problem was made at the CMI's XXXVth International Conference in Sydney, which produced the 'CMI Guidelines on Oil Pollution Damage'.
29. Among these schemes are SIGCo, Shoreline Mutual, ARVAK, ISL, and COFRSURE. Amongst these schemes are SIGCo, Shoreline Mutual, ARVAK, ISL, and COFRSURE.
30. See Gold, *Gard Handbook on Marine Pollution*, 242-3.
31. John R. Dudley, Barry J. Scott, and Edgar Gold (1994), *Towards Safer Ships & Cleaner Seas—A Handbook for Modern Tankship Operations* (Arendal: Assuranceforeningen Gard), 509.
32. Report of the UN Secretary-General, 'Law of the Sea-Protection and Preservation of the Marine Environment' U.N.Doc.A/44/461, 18 September 1989.
33. Canada: Public Review Panel on Tanker Safety and Marine Spills Response Capability, *Protecting our Waters, Final Report* (Ottawa: Government of Canada, 1990); Australia: Parliament of the Commonwealth of Australia, *Ships of Shame: Inquiry into Ship Safety*, Report from the House of Representatives Standing Committee on Transport, Communications, and Infrastructure (Canberra: Government Publishing Service, 1992); United Kingdom: UK Government, *Safer Ships and Cleaner Seas*, Report of Lord Donaldson's Inquiry into the Prevention of Pollution from Merchant Shipping (London: UK Government, 1994).

