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COMMITTEE ON THE PEACEFUL USES OF  
THE SEA-BED AND THE OCEAN FLOOR BEYOND  
THE LIMITS OF NATIONAL JURISDICTION

COMPETENCE TO ESTABLISH STANDARDS FOR THE CONTROL OF VESSEL SOURCE POLLUTION

Working paper presented by the United States of America

I. SOURCES OF MARINE POLLUTION

There are many sources of pollution of the marine environment including outflow from rivers and outfall structures, atmospheric transport of pollutants from land, natural seepage, offshore mineral development activities, vessel oil discharge and the introduction of oil and other cargoes into the oceans from vessels due to collisions and other maritime casualties.

Land-based sources provide the largest quantities of pollutants to the marine environment. Land-based pollutants include riverborne substances from domestic sewage, industrial wastes and agricultural run-off, air-borne pollutants such as vaporized hydrocarbons, and direct discharges of sewage and other wastes from coastal communities. With regard to petroleum, for example, land-based sources account for an estimated 50 to 90 per cent of the estimated total of 2 to 5 million metric tons of oil which enter the oceans annually. <sup>1/</sup> There are significant quantities of oil entering the marine environment from air-borne hydrocarbons which are very difficult to detect and measure (and which may be considerably larger than the entire total shown above). Although international co-operative efforts such as the Stockholm Conference on the Human Environment and the London Conference on Ocean Dumping have begun to deal with these problems, further work is urgently needed to ensure effective protection of the oceans. The United States shares the view, however, that the Sea-Bed Committee does not have the expertise to deal adequately

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<sup>1/</sup> "Marine environmental quality", National Research Council, (National Academy of Sciences, August 1971); "Man's impact on the global environment", Report of the Study of Critical Environmental Problems (SCEP) (Massachusetts Institute of Technology, 1970); "Tankers and ecology", Transportation, vol. 79, (Society of Naval Architects and Marine Engineers, 1971).

with the technical aspects of these complex problems. While the general undertaking relating to all sources of marine pollution can be fruitfully discussed here, the specific problems involved in controls on land-based sources raise many issues of a very different order from those that will be discussed at the Law of the Sea Conference.

A second source of pollutants to the marine environment is the natural seepage of oil from the sea-bed. The amount of pollution from such natural seepage is not known although there is some evidence that it may be significant. There is, of course, no known method of controlling this source and it is thus not dealt with in this paper.

A third source is pollution from sea-bed mineral development. Such activities provide a small percentage of total marine pollution. For example, it is estimated that the predominant sea-bed resource activity of oil development produces less than 2 per cent of the oil pollution of the oceans. If only maritime sources are considered, sea-bed activities make up about 5 per cent of ocean oil pollution with vessels accounting for the other 95 per cent. <sup>2/</sup> Of course, sea-bed exploitation will intensify, and the United States has presented specific draft treaty articles for a régime and machinery to deal with pollution from the deep sea-bed as well as on the continental margin.

A fourth principal source of pollution to the marine environment is pollution from vessels. Such vessel source pollution has been a principal focus of this Subcommittee's work.

## II. VESSEL SOURCE POLLUTION

Vessels introduce pollutants into the marine environment in three principal ways - through oil and other cargoes entering the water due to collisions or other maritime casualties, through loading, unloading and bunkering operations, and through the intentional operational discharge of oil. There are, of course, other pollutants released from vessels such as sewage and garbage but these do not present problems of the same magnitude (there are international efforts underway to develop technical means of control for such pollutants).

### A. Collisions and Other Maritime Casualties

Most casualties occur in congested areas in internal waters, at port entrances or in heavily traveled shipping lanes close to the coast. Thus, individual States can and should act effectively to reduce pollution from such incidents by the provision of adequate navigational aids, warnings of dangers to navigation and other assistance to the mariner to ensure that collisions, groundings and other casualties are minimized. Also, such international actions as provision of compulsory traffic

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<sup>2/</sup> "Tankers and ecology", supra note 1.

separation schemes in congested areas, and requiring double-bottom construction for large tankers, as proposed by the United States in these and IMCO negotiations, can assist in solving these problems. 3/ In addition, authority to take remedial action is given to coastal States in the Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties (which is presently being revised to expand it to cover other substances in addition to oil). Oil spills resulting from casualties contribute about 10 per cent of vessel source oil pollution 4/ and methods for preventing such spills must continue to be developed.

B. Loading and bunkering operations

It is estimated that approximately 5 to 10 per cent of vessel source oil pollution is caused by spills occurring during bunkering and loading operations. 5/ This source of pollution is being reduced through provision of automatic loading controls on large tankers and improved personnel training. Also, significant advances are being made in the development of new techniques to clean up spills. Many ports are now providing the equipment and personnel to deal rapidly and effectively with such spills but continuing efforts are needed by maritime and port States.

C. Operational discharges

The major source of vessel pollution is the intentional operational discharge of oily wastes from commercial vessels. Operational discharge is due to the pumping of oily bilge wastes, tanker ballasting operations, and the cleaning of tanker cargo tanks prior to a change in the type of cargo or prior to overhaul. Such discharges are estimated to account for approximately three fourths of all oil pollution from vessels, with tank washings and ballasting providing about twice as much oil pollution as bilge pumping. 6/

After discharging a cargo of oil, a tanker must take aboard seawater in her cargo tanks for use as ballast to facilitate handling in port and to provide proper seakeeping characteristics. For example, safe navigation requires ballast of approximately 40 per cent of dead weight tonnage under normal conditions and as much as 80 per cent in extreme weather conditions. Since some oil remains in the tanks by adhering to the tank surface, the ballast water will mix with that residue and become "oily". As the tanks must be empty before a new cargo of oil can be taken aboard, the oily ballast water is disposed of in one of two ways - direct discharge at sea or separation of the oil and its retention on board under the "load-on-top" system. In tankers structurally equipped for "load-on-top", the tanks are washed with sea water which is then collected in a slop tank (the other tanks are then clean and can take on water for ballast). During the ballast voyage the oily water in the

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3/ Ibid.

4/ Ibid.

5/ Ibid.

6/ Ibid.

slop tank slowly separates into a layer of oil and a layer of water, after which the water can be discharged. A new cargo can then be loaded on top of the retained oil or the retained oil can be discharged into a shore reception facility. This procedure is not fully effective since settling is affected by turbulent sea conditions and other factors and since some voyages are simply not lengthy enough for the process to be completed, but it is estimated that the system is 80 per cent effective. Although "load-on-top" tankers carry three fourths of the oil transported by sea, they produce only about one fourth of the operational oil discharge due to ballasting and tank cleaning. 7/

Solutions to the tanker ballast and tank cleaning problems to be considered in the Conference on Marine Pollution to be held in London in October of this year include:

(1) Construction of large tankers with sufficient "segregated ballast" spaces, preferably through double bottom construction, to eliminate the need normally to put ballast water into cargo tanks; and

(2) Providing all other tankers with "load-on-top" facilities.

Construction of on-shore facilities to receive all oily residues would be required as a part of both of these solutions.

The United States recently prepared a study analyzing the effectiveness of "segregated ballast" tankers. 8/ It was found that segregated ballasting would eliminate approximately 95 per cent of the oil pollution from operational discharge. The other 5 per cent would result from the cleaning of tanks before undergoing repairs and before changes in type of cargo and from washing tanks to alleviate sludge buildup during normal operations. This 5 per cent would need to be handled by provision of shore reception facilities.

For existing tankers and for small new tankers not constructed with segregated ballast facilities, load-on-top would be required under the proposed 1973 Marine Pollution Convention. One method would be to retain the oily waste on board for discharge to shore facilities and another would be for a very low rate of discharge of small amounts of oil at sea. In certain special areas, where port States are prepared to undertake the necessary obligations, such as the Mediterranean, the draft Convention provides that the contracting littoral States will establish shore reception facilities to receive all oily wastes and prohibits any discharges at sea in such areas. In other areas, limitations would allow only a rate and amount of discharge at sea that would not produce any visible sign of oil. Shore facilities would be provided to receive the remaining residues.

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7/ Ibid.

8/ "Segregated ballast tankers employing double bottoms". (A supporting document to IMCO DE VIII/12 MP XIV/3 (c) submitted by the United States.)

With respect to oily bilge water (which produces almost one third of operational discharge), the draft Convention for the 1973 Marine Pollution Conference contains requirements which would severely limit discharge. These restrictions are identical to those set out immediately above relating to retention on board or minimum discharge and would apply to all or most commercial vessels.

The draft Convention also provides for the maintenance of an oil record book. All major operations such as shifting of cargo, discharges, tank cleaning, etc., would be required to be recorded in the book which will be open to inspection by flag or port state authorities.

### III. THE NEED FOR AN INTERNATIONAL SOLUTION

A fundamental objective of the Law of the Sea Conference is to reach agreement on effective measures which will protect the marine environment. This objective is shared by all nations. Another fundamental objective, shared by all nations, is protection of the freedom of navigation - an objective which is vital for international trade, communication and peaceful relations among nations.

A principia issue in the consideration of standards to control vessel source pollution is the authority to establish standards which will eliminate or minimize environmental damage caused by vessels. Only a system of exclusively international standards will provide an effective means to control vessel source pollution while protecting the community interest in both of these fundamental objectives. There are at least five principal reasons which support exclusively international standards.

First, the international community has basic interests which should be represented in the formulation of such standards. One basic concern, of particular interest to coastal States, is to protect the marine environment from pollution. A second basic concern, of particular interest to exporting States, importing States, and maritime States, is the avoidance of unnecessary increases in transportation costs. Participation by these concerned States in the establishment of standards will ensure that a proper balance is maintained.

On the other hand, if coastal States were to be given the authority to establish standards by themselves, such standards might not adequately reflect either the interests of existing maritime States or the developing States as they become maritime nations or the interests of the international community in effective protection of the marine environment.

Second, because of the difficulty or impossibility of a vessel complying with several sets of different, and possibly inconsistent standards, there should be a single set of uniform standards observed by all States. Although vessels utilizing major ocean routes pass close to shore for only a fraction of a normal voyage, they could be subject to many separate sets of standards if coastal States were authorized to establish standards in an area adjacent to the territorial sea.

For example, on a voyage from the Persian Gulf to Europe, a heavily traveled oil transport route, a vessel might be subject to as many as 15 different sets of standards. Since compliance with differing standards would be difficult and costly, vessels may try to avoid these areas, if possible, thus increasing voyage length and time. Avoidance of these areas might even force a vessel into a different load line area, thus requiring a lighter cargo load. The result would be higher shipping costs, which in the end would be passed on to producers and consumers. A legal régime which accords coastal States the authority to supplement international standards does not avoid these problems. Moreover, it should be kept in mind that the higher costs associated with divergent standards will not necessarily result in improved protection for the marine environment.

Third, exclusively international standards are required for effective protection of the full marine environment. Since ocean currents carry some amounts of pollution from one ocean area to another and from far offshore to inshore areas, individual coastal State standards could not as effectively reduce such pollution. All of the principal oceans have major currents flowing generally from one continent to another and across broad expanses of open ocean. To demonstrate the magnitude of these currents, the major North American current system washes the shores of 23 coastal states of Africa, South America, North America and Europe. In crossing any major oceans, ships will encounter one or more of these major currents and may discharge oil into them many miles from shore. Inshore currents may carry quantities of oil onto beaches and inshore areas hundreds of miles away from the point of discharge. Because of the size of the areas and the distances involved, individual coastal State pollution control standards cannot possibly cope with the entire problem. Moreover, individual coastal State standards may simply transfer the effects of pollution from one State to another. Such a transfer could add to friction between nations and would not meaningfully contribute to the protection of the marine environment. Certain areas, of course, may require special measures for effective protection. Such measures, however, could and should be internationally established.

Fourth, an exclusively international approach is better able to respond to changes in the technology for the control of pollution and to new knowledge about threats to the marine environment. Our concern, of course, must be protection of the entire marine environment. In meeting that concern, it is far more efficient to continually update one set of international standards than to alter over 100 national standards. Moreover, an international approach provides a focus for utilizing the expertise of all nations in establishing international standards.

Fifth, concerns regarding economic advantage and disadvantage among States are increasingly evident in attempts to deal effectively with environmental problems. Individual States may fear the economic effects on themselves of imposing environmental controls that others may not impose. A system of exclusively international standards would largely eliminate these competitive economic concerns and would encourage a willingness to impose higher standards on an agreed basis.

## IV. SUMMARY

Standards for the control of vessel source pollution must effectively protect the fundamental environmental and navigational interests of all nations. If authority to establish such standards were given to coastal States, whether such authority were exclusive or only supplemental, there could be no assurance that adequate account would be taken of the need to accommodate such interests. There could also be no assurance that such standards would effectively serve either interest. This does not mean that special standards could not be established to deal with the problems of special areas, but such standards should be established internationally. The global nature of the marine pollution problem requires that solutions to this problem, as with other international problems, must be international.

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